

# The Internet, Social Media and Citizen Politics

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In Loving Memory of Blackie Lee

## **Abstract**

At the heart of democratic processes, political participation is fundamental for many social and political goals. When new communication mediums emerge, we wonder to what extent it influences political participation, whether it affects various social groups in an equal manner, which socioeconomic groups benefit more from the use of new information technology, and what the implications are for democracy. With these broad questions in mind, this thesis systematically examines the meaning for citizen politics from the use of the Internet and social media for political purposes. Specifically, the empirical papers assess the impact of Internet usage on civic competence, how social media influences citizenship by shaping effective political participation and social capital, and individual reception to online misinformation. The analyses build upon existing literature on the effect of social media use and provide novel insights into the conceptual and methodological development of the scholarly debate on the digital divide. The findings reveal that the opportunities and the challenges from digital use have different practical meanings and consequences based on social group. Individuals with more education, income, and political knowledge are better equipped than others to effectively use the Internet and social media for information and political participation and are less receptive to online misinformation. The results find more support for reinforcement effects between digital media use and political participation. Taken together, these findings suggest that we should not overstate the capability of information and communications technology, which alone cannot achieve the democratic goal of digital equality and an informed citizenry.

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When I was a child, I looked up to Condoleezza Rice and Madeleine Albright. I admired the fact that they were successful academics capable of serving on high-level government positions, solving real world problems, and having practical policy impact. Years later, my PhD journey started when Donald Trump was elected to the White House and concluded in the midst of a global pandemic – it was never meant to be easy. I want to thank my supervisors Professor Cees van der Eijk and Dr. Siim Trumm for their commitment and tireless efforts in improving my critical thinking, writing, and quality of research. I also owe a special debt of gratitude to a number of professors who taught, encouraged, and inspired me as an academic – Sean Richey, Ryan Carlin, Charles Hankla, Peter Lindsay, Daniel Franklin, Jason Reifler, Greg Lewis, and Pamela Collier. I am grateful to many colleagues and brilliant minds that I have met during the international conferences and summer schools, where I learned new things and received valuable feedback to my research.

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As always, responsibility for any intellectual errors and impenetrable language in the resulting work remains my own.

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## Chapter 1: Introduction

At the heart of democratic processes, political participation is fundamental for many social and political goals. When new communication mediums emerge, we wonder to what extent it influences political participation, whether it affects various social groups in an equal manner, which socioeconomic groups benefit more from the use of new information technology, and what the implications are for democracy. With these broad questions in mind, this thesis systematically examines the meaning for citizen politics from the use of the Internet and social media for political purposes.

The overarching question addresses what roles new information and communications technologies (ICT) play in the democratic goal of an informed and active citizenry. More specifically, it assesses how ICT mediated online political communication, learning, and activities affect political participation, interest, efficacy, knowledge and social capital. The thesis consists of three separate studies that are conducted in the contexts of the United States and Great Britain. In the following chapters, these empirical studies use multiple data to assess the impact of Internet usage on civic competence, how using social media for news influences citizenship by shaping political participation and social capital, and individual susceptibility to fake news.

The Internet has played an important role in political activities and daily life. Individual access to political information has dramatically changed over the last few decades. On the effects of Internet use, there are two opposite streams of theories in the academic research. The *mobilisation* theory from the literature asserts that the Internet

mobilises the less interested to participate in politics and creates a political learning space where people can exercise civic skills and obtain political knowledge ; the *reinforcement* theory claims that Internet resources exacerbate existing inequality in participation and a digital divide between the well-informed and the ill-informed (Norris, 2001). Those who are already active might participate more while the apathetic might stay politically unengaged. This thesis seeks to answer the question whether the impact of Internet and social media use has a ‘mobilisation’ or ‘reinforcement’ effect on civic engagement during the two stages of the digital divide. Specifically, the three empirical studies assess the effects of Internet usage on political attitudes, knowledge, and social capital, and the challenges it brings to political participation.

The goal is to understand the implications on citizen politics from the use of the Internet and social media for political purposes. In doing so, the analyses build upon existing literature on the effect of Internet use and provide novel insights into the conceptual and methodological development of the scholarly debate on the digital divide. The findings reveal that the opportunities and the challenges from digital use have different practical meanings and consequences based on social group. The effect of getting informed on social media on political participation is significantly stronger for the older, the more politically interested, and those with stronger partisanship than their counterparts. Individuals with more political knowledge are better equipped than others to effectively use the Internet and social media for information and are less receptive to fake news. Taken together, these findings suggest that we should not overstate the capability of information and communications technology, which alone cannot achieve the democratic goal of digital equality and an informed citizenry.

## **The Digital Divide**

Over the last few decades, citizen access to political information has undergone dramatic changes. When television gained popularity in households in the 1950s, it had a substantial influence on public opinion. The scholarly interest at that time focused on the television ownership and who benefited most from the television as an information source. The 1990s witnessed the emergence of the World Wide Web, a new information system that entered public life. The term *information and communications technology* (ICT) refers to a wide range of technological elements such as computer hardware and software, mobile devices, digital broadcast technologies and network connections (Selwyn, 2004). The development of the ICT lead to an exponentially growth of information transmission and processing. Along with it, there are changes in citizens' social and political behaviour as they adapt to life in cyberspace. On the one hand, the emergence of commercial Internet services sparked enthusiasm and expectations towards attitudinal and behavioural changes in citizen engagement. On the other hand, the gap between those who have material access to computers and the Internet and those who do not became a central topic for scholarly and political debates of new media and political behaviour. It is argued that the poor, the minorities, and the less educated are less likely than others to be able to own computers or get access to the Internet, which could result in a technology gap between 'information haves' and 'information have-nots' (Wresch, 1996). This became the so-called first level "digital divide" in the late 1990s that was claimed to be caused by the unequal access to computers and the Internet (Bucy, 2000; Gunkel, 2003; Jung et al., 2001; Selwyn, 2004; van Dijk & Hacker, 2003).

The digital divide phenomenon has attracted considerable public attention over its impact on social and political equality. The UK Department for Education and Employment stated in 2000, “The very technology that has the power to empower us all also has the potential to increase the problems of social exclusion unless we act to bridge the digital divide;” therefore, “The Government is determined to help bring us all into the information age” (DfEE, 2000). Around the same time, civil rights leaders in the United States were concerned about the gap of digital divide and the so-called “cyber-segregation” (Gates, 2000) between the well-resourced and less-resourced. William E. Kennard, the Chairman of the Federal Communications Commission from 1997 to 2000, emphasised that, “I believe one of the main civil rights challenges of this new millennium is the challenge of ensuring equal access to technology. The problem of the 20th century is the problem of the colour line. At the dawn of this century, our challenge is preventing the colour line from determining who is online” (Labaton, 2000).

Social scientists believe that effective participation in a democracy relies upon the voices of individuals in politics to be clear, loud, and equal (Verba et al., 1995). However, it is long argued that political participation is unequal, as those with lower education and income tend to be less likely to take part politically. There are many reasons that individuals do not participate in politics. For example, they do not have the necessary resources or skills to take part in politics, they may not be interested in politics, or they do not have adequate political choices and incentives (Brady et al., 1995; Downs, 1957; Rosenstone & Hansen, 1993; Verba et al., 1995). When a new information technology emerges, it provides an opportunity to reduce the participation costs and increase the chance of political participation.

In political science and communications studies, the initial scholarly debate focused on how Internet usage might affect civic and political engagement. Early studies looked at whether Internet use had a positive or negative effect and whether these effects were negligible or substantial. Access to ICT was an important factor in academic and political discussions. Optimists argued that the new information technology subsidises the costs of obtaining political information and civic engagement and therefore could potentially rejuvenate participation (Polat, 2005; Sudulich, 2011; Ward et al., 2003). It is theorised that the free information on the Internet provides a “window opening” opportunity for citizens to better understand how governments work and to further reflect on it (Bailard, 2012). Meanwhile, others cast doubts on the potential positive effects by arguing that only those who are already interested or actively involved in politics are going to move or complement their offline participatory activities online; those who are not interested in politics will continue to use the Internet for non-political purposes such as entertainment (Lupia & Philpot, 2005).

Early research on Internet use since the late 1990s identifies a pattern of small, positive effects of digital media on civic and political participation (Boulianne, 2009). These first stage studies find mostly positive effects from Internet use, such as increased political knowledge, interest, efficacy, online and offline political participation (Gil de Zúñiga et al., 2012; Jennings & Zeitner, 2003; Mossberger et al., 2007). Boulianne’s (2020) meta-analysis of studies from two decades spanning 50 countries shows that digital media has an increasingly positive effect on civic engagement over the years (see similar results from the meta-analysis of repeated-wave panel data studies in Oser & Boulianne, 2020). This growing, larger effect is claimed to be accounted for by the

intense popularity of social networking sites and websites that facilitate political participation (Bimber et al., 2015; Stromer-Galley, 2019; Vaccari, 2013).

Another important question is what changes a new information technology bring to individual political behaviour and its subsequent implications for a democratic society. On the one hand, when the Internet became popular in the late 1990s, there were hopes that its easy access, openness, and unhindered communication could overcome the barriers between civil society and political establishment and facilitate civic engagement and political participation. On the other hand, the “knowledge gap” hypothesis asserts that when mass media information is introduced to public life, it widens the existing knowledge gap between those with lower and higher socioeconomic status, as the latter are better positioned to acquire new information faster and gain more knowledge (Tichenor et al., 1970). Similarly, the “communication effects gap” hypothesis claims that mass media accounts for deepening gaps between the higher and the lower segments of society (Shingi & Mody, 1976). Those who are already well-resourced are claimed to be capable of making use of the new media technology for information, while the ill-equipped are further marginalised during this process.

Around the year of 2010 the price of computers and other digital devices became much more affordable; they were widely provided in schools, offices, libraries, and workplaces aside from households. Digital technology moved from dial-up Internet to 5G Wi-Fi, from beepers to smartphones. As Karpf (2016, p.17) argues, “The Internet of 2016 is, in important respects, different from the Internet of 2012 or 2006, or 1996. The devices we use to access the Internet, the sites that we frequent on the Internet, and the ways we use those sites are all in a state of flux. And this is all happening while the

medium itself diffuses to broader segments of the population.” Statistics show that 5% of world population were Internet users in 2000, the portion increased to 28% in 2010 and 64% in 2020 (Internet World Stats). In particular, Internet penetration reached 96% in Great Britain and 87% in the United States in 2020 (Kemp, 2020).

When Internet technology has become widely accessible in many countries, the disparities in the material access to the technologies began to fade. Policymakers and researchers in many developed countries declared that the gap in the first level digital divide began to close as the majority of their citizens has obtained access to digital technologies. As the Internet is used for multiple purposes in social, political, and civic activities, scholarly attention shifted from the availability of Internet access to the digital divide between those who use the Internet to seek political information and those who do not (Boukes 2019, Wei & Hindman, 2011). The so-called second level digital divide shifts public debate from material access to the kind of informational use of digital technologies (Attewell, 2001; Hargittai, 2001; Hargittai & Hinnant, 2008; Wei & Hinderman, 2011). Rather than material access to ICT, the focus shifts to social access, which refers to knowledge, skills, and economic resources that are necessary informational use of communication technologies (Kling, 2007). Studies find that those with higher socio-economic factors such as education, income, and age are more capable of using Internet for news information (Wei & Hindman, 2011). DiMaggio and Hargittai (2001) used the term “digital inequality” to reflect the complexity of sundry inequalities in not only the access but also the actual use of ICT. With the introduction of social networking sites that offer new ways of obtaining political news and social connection,

studies on Internet and democratic politics looked at the evolving relationship between digital media and democratic practices.

The debate on the digital divide has been the focus of political agenda since the emergence of the Internet. It is, however, established largely on an observational and descriptive basis and lacks sufficient theoretical and empirical basis to look into the nuances of inequality in the information society as a consequence (van Dijk, 2006). This is a complex issue as the digital technologies keep evolving, and so does participatory behaviour. The literature analysed digital inequalities is largely based on inconsistent survey based studies and often use simple demographic factors of individuals who have access to computers and the Internet (Van Dijk, 2013). The digital divide was first attributed to a problem of material access to computers and then a disparity of skills and societal resources that provide them (Epstein et al., 2011; Selwyn, 2004; van Dijk, 2006). With the fast-changing digital technology, it is unclear whether there are any new forms of inequality emerging in the information and network society and what characteristics of it are differ from the existing participatory gaps. The goal of this thesis is to offer new insights and reflections on the effects of Internet and social media use in contemporary times.

## **The Main Concepts**

There are a few key terms being used throughout the thesis. It would be useful to have an overview of their definitions, correlations, and measurements.

Democratic citizenship has many aspects. The term *citizen politics* in this thesis is a conceptual framework that covers a range of elements such as civic competence, political

participation, social capital, values and attitudes of the public towards democratic goals (Dalton, 2013). The purpose of citizen politics is to develop and enhance societal capacity to effectively engage in civic and political activities. It emphasises on the democratic notion of individual capability to participate as active citizens and responsibility for the common good (Wagner, 1996).

Putnam (2000) defines *social capital* as ‘connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them’ and proposes two distinct types: bonding and bridging social capital. In the thesis, social capital is measured based on the questions along bonding and bridging types such as professional relations, personal connections, social networks and resources. Social capital provides important social networks and foundations for political participation. In return, social trust and interpersonal connections built upon political participation facilitate the accumulation of social capital.

*Political participation* is the cornerstone of representative democracies where citizens are involved in the effective communications of public policy making. It refers to “activity that has the intent or effect of influencing government action, either directly by affecting the making or implementation of public policy or indirectly by influencing the selection of people who make those policies” (Verba et al., 1995, p. 9). The conventional political participation consists of voting, electoral campaign activities, community activities, and contact with political administration (Verba & Nie, 1972). The forms of political participation keep evolving with the development of new information communications technology. From the emergence of the Internet in the 1990s to the use of smartphones and the popularization of social media in the 2000s, the new mediums

and incentives for political activities result in an expansion of what we perceive as political participation. There are new ways of participating in politics such as posting or sharing political content on social media. It remains unknown whether political participation online constitutes an entirely new mode of participation or acts as a supplement to the conventional offline participation. Taken together, the existing work underscores the importance of empirical improvement in measuring forms of online and offline participation.

To date, there is a lack of consensus on the definition of civic engagement (Gibson, 2000). The scope of the concept largely depends on the perspective of the definer. I adopt a useful definition of *civic engagement* from Adler and Goggin (2005, p. 236) that it is “the ways in which citizens participate in the life of a community in order to improve conditions for others or to help shape the community’s future.” As Delli Carpini (n.d.) describes, civic engagement can manifest in many forms, including individual voluntary activities, organizational involvement, and electoral participation. Political participation, for example, is a form of civic engagement. There are non-political forms such as voluntary work for a charity, community problem solving and professional membership activities. Altogether, the individual and collective actions from civic engagement contribute to the accumulation of social capital (Putnam, 2000), which itself serves in return as a foundational basis for resource sharing, collective actions, and civic and political engagement.

A relative term, *civic competence*, according to Robert Dahl (1992, p. 46), refers to citizens be aware of “what they want their government to achieve and predisposed to act in ways intended to bring it about.” The aspects of civic competence include political

knowledge, communication and cognitive skills, attitudes (e.g., political interest and efficacy), values (e.g., human rights and democracy), and a sense of an identity (Hoskins et al., 2008, p. 21). I measure civic competence in Chapter 2 with three indicators: political interest, political efficacy, and political knowledge. As Dahl argues (1992, p. 45), the functioning of democracy would require a certain level of competence on the part of its citizens. Civic competence includes but is not limited to a desirable level of political knowledge. Individuals with strong civic competence are expected to have the capacity to effectively participate in politics.

I use Delli Carpini and Keeter's (1996, p. 10) definition of *political knowledge* that it is the range of factual information about politics that is stored in long-term memory. Measuring political knowledge is notoriously difficult as scores from a few fact-based survey questions can hardly be generalized to predict citizen competence in political choices (Boudreau & Lupia, 2011). The discipline does not have a generally accepted method to assess the public's knowledge about national politics. Studies tend to use factual knowledge as the most reliable indicator of political sophistication (Delli Carpini & Keeter, 1993; Fiske et al., 1990; Smith, 1989). As such, political knowledge in this research is measured by an additive index of several factual questions on current affairs, political institutions, and prominent political figures.

## **Methodological Issues**

### **Data and Selected Cases**

The thesis focuses on the contexts of the United States and Great Britain to address the above research questions. Specifically, the empirical studies use data from the 2008-2010

American National Election Studies data, the 2015 British Election Study (BES) Internet Panel, and an original MTurk online survey conducted in 2017 with a sample of 1,003 respondents from the United States.

It is important to acknowledge that the data selection is to some extent driven by the availability of relevant data at the time of research. In the first study, the 2008-2010 American National Election Studies data has a delayed provision of Internet device and access. It enables me to conduct an innovative control-waitlist quasi-experiment to disentangle causality. In the second study, the 2015 British Election Study (BES) Internet Panel contains a large number of measures of online and offline political participation. As such participation is of central interest in my analysis in Chapter 3, this dataset is superior to most other studies, which ubiquitously underrepresent the domain of participation in their indicators. For the third study reported in Chapter 4, at the time of conducting the Mturk survey, no publicly accessible survey data were available that included the necessary variables to empirically test my proposed hypotheses on individual susceptibility to fake news. The most practical way of collecting data is to use online surveys with a designed set of questions pertaining to my hypotheses. Given the fake news phenomenon was most prominent in the United States at that time, it is theoretically meaningful to investigate this subject using an American sample.

The fact that these data are from two different countries should not cause a concern over the validity or generalizability of the overall findings of the thesis. Both the United States and Great Britain are representative democracies with similar political values. The difference that one country has a presidential system and the other has a parliamentary system of government has little relevance or possibility to interfere with

the relationship between the use of the Internet, social media, and effects on citizen politics that this research focuses on.

We should note that the three studies in this thesis are conducted in affluent established democracies where the Internet penetration and distribution of information are highly advanced. It is easy for their citizens to gain access and obtain social and political information. Therefore, I would expect that the overall findings from this research to be generalizable to other western democracies with similar political environments, but not to countries with non-democratic political systems or do not have freedom of speech.

### **Addressing Endogeneity Problem**

Academic research on effects of Internet use must deal with potential endogeneity problems, particularly when it is based on survey data. Experimental methods are one of the options, but relevant experimental designs would be exceedingly difficult and expensive. It would also be challenging to find the very small percentage of participants who do not yet have Internet access and assign them devices to use over a long period. Further, an alleged causal stimulus (e.g., use of social media for political purposes) cannot be expected to have an immediate effect on outcome variables (e.g., political participation and social capital). The time period between cause and effect would far exceed the period during which confounding factors can be held at bay in an experiment. The few experimental studies conducted in this area have external validity problems (e.g., Foos et al., 2015).

The problem of endogeneity is addressed in different methodological approaches in the following chapters. In this instance the ubiquitous conundrum is whether Internet use

increases one's political interest, political knowledge, and efficacious feelings, or is it the other way around, that those who already are interested in politics, knowledgeable and have highly efficacious feelings are more likely than others to make use of the Internet for political purposes? Previous findings of a positive, significant relationship are taken to mean that Internet usage has generated beneficial results to civic competence. However, if the causality would flow in the opposite direction, such findings would reveal nothing about the effect of Internet use but only that those who are already politically active would use the Internet for political purposes more than their counterparts who are less active politically.

To deal with the well-known endogeneity problems in political communication studies, the first study of the thesis in Chapter 2 uses an innovative control-waitlist research design to test whether first time Internet users develop more political interest, efficacy, or knowledge over several months of Internet usage using the 2008-2010 American National Election Studies (ANES) data. This quasi-experimental design makes use of the fact that the ANES survey allocated free Internet access to those who have never had the Internet before in staggered waves, to create a novel control-waitlist research design for the effect of the Internet. A delayed provision of Internet device and access creates a treatment and comparison group of participants. This method is similar to a randomised trial experiment and gets around the tricky causality problem that the discipline has struggled with.

The second study of the thesis in Chapter 3 looks at whether social media usage contributes to political participation and social capital. The main methodological challenge lies in identifying the sequence of causal direction: does social media usage

contribute to more political participation and social capital, or does social media usage merely reflect pre-existing difference in participation and social capital? This chapter uses block-recursive modelling to deal with the potential endogeneity problem. The plausibility of this approach relies on two assumptions. First, the distinction of explanatory factors in terms of causal antecedence is substantively convincing. Second, that the blocks of independent variables used before the inclusion of social media use variables exhaust the pool of relevant antecedent factors sufficiently to dispel serious endogeneity concerns. Specifically, causal antecedence determines the allocation of predictor variables to the respective blocks of independent variables. By doing so, we can see how much variance in the outcome variable is accounted exclusively by social media use. Despite that block-recursive modelling does not solve causality problems, it offers useful insights into the magnitude of effects that social media usage has on political participation and social capital.

### **Latent Variable Analysis**

The thesis uses latent variable analysis to operationalize on the concept of political participation in Chapter 3 and test the validity and reliability of fake news categorization in Chapter 4.

Political participation is a fundamental element in representative democracies and a main dependent variable in this thesis. How to properly measure political participation conceptually and empirically is important before drawing any conclusion on Internet effects. With the rapid development of digital technology, there are new forms of participation taking place online. The existing studies usually treat online and offline

participation separately, but whether this conceptual distinction has any empirical basis is not being properly tested. Some researchers use factor analysis to assess whether multiple indicators of political participation reflect one or more latent variables and identified digitally networked forms of participation as a new mode in the taxonomy of participation (see, e.g., Bakker & De Vreese, 2011; Gibson & Cantijoch, 2013; Theocharis & van Deth, 2018). However, whether factor analysis is an appropriate methodology in this instance is open to debate. As the categorical character of survey data violates the assumption of factor analysis that the items must be metric, there is a high risk of over-dimensionalisation (Van der Eijk & Rose, 2015). There is a need for empirical improvement in measuring forms of online and offline participation.

Chapter 4 looks at the individual susceptibility to fake news, a term that refers to ‘news articles that are intentionally and verifiably false and could mislead readers’ (Allcott & Gentzkow, 2017, p. 213). To date, the literature has yet to establish a commonly acknowledged classification of fake news types, which, however, is theoretically important in facilitating a nuanced understanding of fake news elements and human cognitive reception of various aspects of misinformation, and providing insights into public efforts in combating fake news.

To overcome the existing methodological shortcomings in assessing what kind of distinctions are warranted for the types of participation and fake news, I use an ordinal nonparametric item-response model of Mokken scale analysis (MSA) to assess the latent structure of these items. In this instance, political participation is a latent variable that is not directly observed, but rather, inferred from a set of manifest variables that are directly measured in the survey. The participation items and fake news items in this research are a

small number of categorical indicators. The Mokken scaling is most appropriate method for assessing the latent structure of ordered categorical survey data. The items that are regarded as reflecting a unidimensional latent variable can be combined to form a scale. This is a measure of the latent variable that is more reliable and provides more discrimination than any of its constituent items (Mokken, 1971; Van Schuur, 2003).

## **The Outline of the Thesis**

The thesis seeks to address the overarching question on the use of Internet and social media for political purposes and the subsequent implications for democratic citizenship. Chapter 1 reviewed and outlined the theoretical framework, main concepts, data and methodological designs.

In the following, Chapter 2 speaks to the debates and discussions on the first level digital divide that has a focus on the effects of material access to the ICT. Using a quasi-experiment survey design with the 2008-2010 ANES data, the study assesses the impact of newly obtained Internet access on individuals' political interest, political efficacy, and political knowledge. The findings show null effects on these elements, which is contrary to the common positive findings in the previous studies. It turns out that for those who do not want to seek political information, using a new information method does not increase their likelihood of political engagement. The findings cast doubts on the reliability of results from previous observational studies. The extent of practical influence that new communication technology could have in mobilising the mass public for political engagement is also worth reflecting upon.

Chapter 3 speaks to the second level digital divide by investigating the effects of a relatively new online behaviour – using social media for news. After the high Internet penetration rates and affordable Internet access are achieved in developed countries, the contemporary problem has shifted its focus from information availability to how to manage information and use it for civic and political purposes. With the growing popularity of social media platforms, a large portion of citizens started to use social media for obtaining political information as well as social networking (Shearer & Mitchell, 2021). Chapter 3 examines whether the use of the Internet and social media encourages political participation and increases social capital, using the 2015 BES Internet Panel. The results show a reinforcement effect for those who are proactively using social media for news and that using social media for political news is a positive and significant predictor of social capital accumulation and political participation.

In line with the findings of Chapter 2, this suggests when people do seek to be informed by making use of social media networks, they are more likely to have better civic competence. Only when Internet users actively use the online platforms and resources for the purpose of seeking political information are there positive effects in civic engagement and social capital accumulation which reflects the connections between individuals including social networks and the reciprocal norms and social trust. Using Mokken scaling analysis, I find no basis for the frequently used conceptual (and thus also operational) distinctions between online and offline participation. As online and traditional offline participation become inextricably intertwined, it is theoretically or conceptually meaningless to distinguish between online and offline forms of participation.

When various Internet platforms became sources for political information, one of the major challenges for mass deliberation is the presence of misinformation and the lack of information gatekeeping mechanisms. For instance, widespread fake news and misinformation was unprecedentedly prominent during the 2016 United States presidential campaign and the Brexit referendum in Great Britain. It allegedly swayed public opinion on key issue positions and vote choices. Chapter 4 looks at a timely issue on who is more receptive to what type of fake news and the cognitive patterns of user clicking behaviour. I conducted an online survey on Amazon Mechanical Turk (N=1,003) to empirically address these research questions. My research for the first time distinguishes three types of fake news: satirical, conspiratorial, and fear-mongering. Apart from the conceptual contribution to the literature, this typology of fake news is also empirically supported and validated by Mokken scaling analyses. The findings show that the individual tendency to click on a news headline is partly determined by item characteristics (e.g., fake vs. non-fake) and partly by one's personal characteristics (e.g., political knowledge, trust, and efficacy). I find that when individuals click on a fake item, they are very likely to click on other fake items as well. People tend to click on the same or similar types of fake items. It also shows the more knowledgeable read more and are less susceptible to misinformation. The overall results support a reinforcement effect from digital media use. As the portion of citizens use social media for political information grows, potential problems and challenges arise from the new information platforms. Fake news and misinformation, for example, presents new challenges for the present times of online information seeking and news consumption.

The overall findings from these three empirical studies suggest that the opportunities and the challenges from digital use have different practical meaning and consequences for individuals from different socioeconomic backgrounds. Those who have more education, income, and political knowledgeable are better positioned than their counterparts to effectively use the Internet and social media for information and political participation and are less receptive to online misinformation. The empirical results find more support for reinforcement effects between digital media use and political participation. In summary, these findings indicate that relying on information and communications technology alone cannot achieve the democratic goal of digital equality or a better-informed public.

Chapter 5 discusses the findings, contributions, and implications of the overall results, reflects on the debate on the digital divide, and suggests useful directions for future academic research.

From the utopian thinking of Internet access in the 1990s, to the analyses of social media use in the early 2010s, to the post-2016 investigation of digital threats, there has been a profound change in the way that scholars think about the implications of digital media for democracy. In what follows, this thesis seeks to examine the relationship between the Internet and social media use and citizen politics and understand the role that demographic, attitudinal, and behavioural factors play in this discourse.

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## Chapter 2: Internet Access Does Not Improve Political Interest, Efficacy, and Knowledge for Late Adopters<sup>1</sup>

### **Abstract**

We predict that the Internet will have little effect on political interest, efficacy, and knowledge. We use American National Election Survey monthly panel survey data from 2008-2010 to test the role of Internet. The fact that the firm who conducted the survey—Knowledge Networks—gives out Internet access for free to those who have never had the Internet before in staggered waves allows us to create a novel Control-Waitlist research design. We subsequently analyse the quasi-random-assignment of the Internet to new users for a period of nine-months compared to a group that has not yet been given free Internet access. We find that nine months of Internet usage does not increase political interest, political efficacy, or political knowledge. An additional wave done after two and a half years of access also shows little change. Our findings thereby raise serious doubts about the previous observational findings of the benefits of Internet usage for political interest, efficacy, and knowledge.

**Keywords:** Internet; civic competence; quasi-experiment

Recent studies examine how widespread Internet usage has fundamentally transformed the traditional ways of civic communication and how people participate in politics (Weber et al., 2003). Scholarship shows that citizens often do not follow the news, lack civic engagement, and know little about politics and public affairs. Given the time, financial and intellectual requirements, rational individuals have little incentive to participate in politics (Downs, 1957). The emergence of the World Wide Web was hoped to change this by lowering the costs of participation (Hampton & Wellman, 1999, 2003). Abundant web resources are available for citizens to search information and exchange thoughts. Especially important for democratic theory is that lowering financial costs makes the Internet and PCs affordable for most people, so access is no longer an upper-class privilege. Compared with traditional media, cyberspace provides an interactive platform for exchanging views, researching political issues, and never has it been so convenient for average citizens to communicate to policy-makers (Day et al., 2005).

The potential of the Internet to inform and change political behaviour is clear (Ward & Vedel, 2006), and research findings have consistently shown a positive impact from Internet usage (see, e.g., Mossberger et al., 2007). Indeed, researchers have consistently found that web users correlate with greater interest in political affairs, greater political knowledge, a higher likelihood to be involved in politics, and greater turnout than average citizens (for a summary of these findings see Chadwick, 2006; Bonchek, 1997; Bimber, 1997; Hill & Hughes, 1998; Johnson & Kaye, 1998, 2000). While there are some skeptics such as Sunstein (2007), most of the debate so far has been about the digital divide and issues of differential populations having access, with the assumption being that once access is gained, it will benefit those who currently lack it

(Norris, 2001; Wresh, 1996). Boulianne (2009) conducts a meta-analysis the impact of the Internet, which shows a consistent finding of greater civic competence across many observational studies. Thus, while some may have found alternative findings, Boulianne (2009) shows empirically that a positive finding is a very common finding. But these previous studies do not randomly assign Internet access and are rife with well-known potential endogeneity and omitted variable bias concerns.

We predict that both Internet access and usage will not improve political interest, efficacy, and knowledge. We develop a framework for a prediction for null effects for the Internet based on prior research about motivated selection in who chooses to go online. We use American National Election Study (NES) monthly panel survey data from 2008 presidential election to test the role of Internet. Most research up to this point has not been able to disentangle causality, but the panel data we use with quasi-random assignment of the Internet allows us to test causal complexities in a clearer way. We exploit the fact that the firm who conducted the survey—Knowledge Networks—gives out Internet access for free to those who have never had the Internet before in staggered waves, to create a novel Control-Waitlist research design for the effect of the Internet. We analyse this quasi-random-assignment of Internet access to new users for a period of nine-months compared to a group that has not yet been given free Internet access. Our results show that after using the Internet for over nine months, new users do not demonstrate greater political interest, political knowledge, or efficacy, when compared to the control group. After recontacting these groups after two and a half years, there is no change from their starting levels before they had access. These findings raise serious

doubts about the previous observational findings of the benefits of the Internet for those who are not currently having access.

It seems plausible that this group that has findings of a null relationship of Internet use on civic competence may not be generalizable to the larger population. The “last adopters” were those who were basically the final quintile in Internet access. We show below that while there is a large amount of diversity in this group, they are older, poorer, and about 15% less white than those that have the Internet already in 2008. There may be heterogeneous effects, whereby the Internet has beneficial effects for the early adopters more than the last adopters, but we cannot test this with this design, and as such are results are limited to this remaining 20%. Using panel data has advantages over survey data in exploring causality, but we are still not able to control for every possible confounding variable, which might present a threat to internal validity of the outcome.

## **The Role of Internet**

Does the Internet have an effect on civic life? Positive assessments focus on how people will have greater access to political information through the use of new information technologies. Importantly, this information provision comes not simply from websites, but also online interpersonal communication (Hampton & Wellman, 1999), or blog reading (Gil de Zúñiga et al., 2010). Scholars using survey data find a significant positive effect between Internet usage and democratic citizenship (Best & Wade, 2009; Nisbet et al., 2012). In contrast to non-users, Internet users demonstrate higher levels of political trust, higher likelihood of political participation and expanded social networks (Uslaner, 1999; Hampton & Wellman, 2000; Burt et al., 2001). Accessible information online correlates

with political involvement and produces a higher likelihood of voting (Johnson & Kaye, 2003; Tolbert & Mcneal, 2003). More Internet usage is associated with more civic and political participation (McLeod et al., 1996; Norris, 2000; Weber et al., 2003). Using 2000 National Annenberg Election Survey, Kenski, and Stroud (2006) show a positive, significant association between Internet access, online exposure to campaign information, internal efficacy, external efficacy, political knowledge, and participation. Important work by Mossberger, Tolbert, and McNeal (2007) show a largely beneficial impact of Internet usage on democratic citizenship. Other forms of information technology, such as mobile phones, have been convincingly shown to affect behaviour (see, e.g., Pierskallaa & Hollenbach, 2013). Boulianne's (2009) meta-analysis discusses 38 previous studies and finds that a majority of the research shows positive relations between Internet use and political engagement. In sum, much research finds a positive relationship between the Internet and political behaviour.

Early critics argued that information online can be misleading, and therefore threatens the functioning of a deliberative participatory democracy. Critics also asserted that Internet use can drain social capital and accelerate civic decline (Putnam, 2000). Internet may corrode social capital by leading users into a virtual world, as there is less time for offline social interaction and traditional media consumption. Individuals tend to spend more time on social websites and online chatting instead of networking in real life (Kraut et al., 1998; Nie & Erbring, 2000). Other concerns include that Internet would polarize existing political ideology, as like-minded people or those with shared interests tend to cluster in virtual communities (Wellman & Gulia, 1999; Sunstein, 2007). Among those who go on-line, there is a systematic difference in the websites they are likely to

visit based on users' demographics (Hargittai, 2007). Additionally, some argue that the Internet usage and its influence are polarized due to the existing power disparities (DiMaggio et al., 2001; Norris, 2001). Wealthier, more educated, white, males are more likely to afford and use the resources of the Internet to represent their best interests, whereas the less educated, the less well-off are marginalized in this process (Chadwick, 2006). While important, our research does not, specifically test these debates, so we leave them for other scholars to consider.

Three areas of particular importance for civic competence are theorized to improve with Internet usage: political interest, political efficacy, and political knowledge. The ease of access to information combined with the stimulative interactive environments are supposed to spark interest, enable efficacious feelings, and disseminate knowledge. Most scholars find a positive effect on the Internet for these characteristics, but a few have not. Those who are not interested in politics may not pay attention to politics regardless of the ease of access to the information (Norris, 2001). Lupia and Philpot (2005) find that the young people are most likely to be online, yet least likely to engage in political learning, and consequently, the Internet has little effect on their political participation (see also Bimber, 2001). More broadly, meaningful online deliberation in most situations only occurs occasionally (Wojcieszak & Mutz, 2009).

More recently, the causal modelling of previous studies on Internet use and political consequence is being doubted and the significant positive effects that have been discovered are relatively small in size (Jennings & Zeitner, 2003). Tellingly, research that uses panel data to more accurately get at causality shows weak effects for political knowledge and Internet usage (Dimitrova et al., 2014; see also Kroh & Neiss, 2012).

Most important perhaps for our research design was an actual field experiment conducted with 140 Tanzanians in 2010, where half of the participants were randomly invited to use the Internet and had a tutorial on how to use it (Bailard, 2012). This study was the only example of a field experiment we could find, and it shows mixed results, where users felt worse about the corrupted election in Tanzania (which may be a form of learning in a contested election), but then used these feelings to vote less often. Thus, the effects of the Internet are debated. We now develop three predictions for null effects.

## **Predicting Null Results**

We predict that the Internet has no influence on political interest, efficacy, and knowledge for three basic reasons. First, there is the well-known problem with motivated selection. Almost exclusively, the prior positive studies involve correlating survey data derived from questions about Internet usage with questions about some normatively-beneficial political behaviour or attitude (e.g., Xenos & Moy, 2007). The finding of a positive significant correlation is taken to mean that Internet usage has created these beneficial properties. These data, however, have potential problems with omitted variable bias and endogenous causal relationships (see Farrell, 2012, for a related critique). For example, take the finding of higher Internet usage among those with greater political interest: it is highly plausible that those who are politically interested are more likely to look up subjects they are interested about online. If so, the positive correlation has revealed nothing about the effect of the Internet, as it only shows that those who are politically interested have used the Internet to find out about politics. Additionally, some omitted variable could be causing both Internet usage and interest

(or efficacy or knowledge). These common problems of endogenous covariates and omitted variables are very familiar to social scientists, yet the existing literature has not effectively dealt with these selection biases. The few experimental lab studies that have randomly-assigned Internet access suffer from the typical Hawthorne effect and associated issues involving lab research. Finally, several studies have actually also found null effects from the Internet (Bimber, 2003; Kroh & Neiss, 2009; Quintelier & Vissers, 2008; Schlozman et al., 2010), which suggests that the positive results are at the very least unstable and open to potential critique. Thus, the previous positive findings are plausibly explained by endogeneity and omitted variable bias.

Second, there is a crowding-out problem. Time is limited and opportunity costs are real. There are many things to do online, and politics is a relatively small part of the Internet. Due to time constraints, people who spend more time on online social networks and online recreation are probably going to be less likely to engage in off-line civic activities (see related arguments in Shah et al., 2001). Thus, we do not expect an effect on political attitudes and behaviours from simply being online, because access may crowd out off-line political activities. Political learning through research, media, or social networks takes time, and being online is thought to ease both research and social networking. It also, however, takes time away from other traditional sources of off-line research, media, or social networks<sup>2</sup>. People who used to debate politics off-line may instead have their debates on cyber communities. People who used to get political information from newspapers may instead read news online. These online sources are not necessarily better or worse, so we should not expect an increase in interest, knowledge, or efficacy from reading the same story online that we could read offline. If

true, Internet often replaces off-line stimuli with online stimuli, and we should expect no change from the Internet. When considering the crowding-out problem, we can expect some replacement of traditional learning sources with online sources and thus we should have a null effect.

Third, there is an information overload problem. We know from cognitive psychology that people get distracted by information overload, and this is particularly true of environments like the Internet where there are many distractions occurring simultaneously (Speier et al., 1999). Information overload produces little learning and more frustration with topics, so it is possible that vastness of the Internet actually is less conducive to learning. Optimists claim that after sufficient experience with using a new communication medium, users will develop skills of screening incoming information to cope with overwhelming information (Hiltz & Turoff, 1985). Nielsen (1995) also proposes a series of strategies to deal with information overload, such as improving user interface design, information retrieval, and information filtering (see also Belkin & Croft, 1992). Further, the emerging networked information economy promoted peer production and sharing, which served as a filter to the way people access information (Benkler, 2006). Nevertheless, there are billions of websites available, and numerous online arguments being made, but human attention span is limited. Studies in psychology suggest that increasing the amount of information does not guarantee that people are able to make a good use of that information. The complexity and volume of the Internet may create an information overload that makes learning so difficult that we should expect little of it, and there should be a null effect.

If our three potential problems are true, then the previous positive findings are plausibly the results of endogeneity and omitted variable bias. We predict that the Internet has no influence on political interest, efficacy, and knowledge due to problems of motivated selection, crowding out, and information overload. Based on these ideas, we now state three hypotheses that test the basic positive findings on the Internet increasing political interest, political efficacy, or political knowledge. Hypothesis 1 is that those given Internet access do not become more interested in politics than those not given Internet access. Hypothesis 2 is that those given Internet access do not have more political efficacy than those not given Internet access. Hypothesis 3 is that those given Internet access do not have more political knowledge than those not given Internet access. We discuss now how to test these hypotheses.

### **Control Waitlist Design**

What is needed to test the impact of Internet access is something akin to a field experiment where over a long time period, in their homes, citizens are randomly assigned Internet access, and then compared to a control group who does not have access. But this optimal study would entail tremendous costs as well as difficulty finding participants. First, to provide Internet access, one would need to provide hardware as well as a connection, and do this in a large sample. This would be extremely expensive, far beyond the reach of most researchers. Second, with almost 80% of the public having Internet access, finding participants who do not now have access – a crucial requirement to test the random provision of access – would require a costly search for participants.

We suspect that these reasons are why this optimal study has not been attempted (but see Bailard, 2012; Gershuny<sup>3</sup>, 2002).

To get around these issues, we exploit how the survey-research firm Knowledge Networks collects data to approximate this optimal field experiment. Knowledge Networks tries to conduct nationally-representative surveys online. To get around the problem of biased Internet samples, they start with a nationally-representative random phone sample survey. They then invite the respondents of the representative phone sample to go online and fill out surveys for monetary rewards. About 20% of the phone respondents do not have Internet access because about 20% of the national population does not have access. For these people, Knowledge Networks offers to pay for Internet access and give them a web-enabled device to go online. They refresh this online pool of respondents based on need.

This process was used to collect data for the special online monthly NES Panel study for 2008—not to be confused with the traditional face-to-face Time Series NES<sup>4</sup>. Knowledge Networks had an initial phone sample including a group that was given free Internet access in January 2008, and they were surveyed monthly after that. Another group of respondents was added in September 2008, and some in this group were also provided free Internet access. Respondents in either cohort have had no Internet access at home, school, or workplace according to their self-reported data. We take out those who have a PC or have Internet access not from a computer, but for example, from smart phones. We take the rest of respondents to be new Internet users. The first cohort received Internet access and a web-enabled device (an MSN TV2) to get online in January 2008, and while the second cohort did not get it until September 2008. Respondents can

use free Internet access on the MSN TV2, which features broadband connection speeds. This machine allows fully-enabled web browsing, where sites such as Google or Facebook can be used freely, and the screen display of MSN TV2 is shown on the respondent's television<sup>5</sup>. Both cohorts were recruited in nearly identical ways, and filled out surveys until June 2010, which we take as a third wave (DeBell et al., 2010).

This delayed provision is similar to a research design in biostatistics called the Control-Waitlist design (also called a stepped wedge design) (see Brown & Lilford, 2006 for a detailed review). In this design, a treatment is administered to a selected group, and another group has to wait to get treatment. This method is often used due to ethical concerns. For example, a drug that is believed to prevent the spread of cancer cannot be ethically withheld from people in the control group, but it can be delayed. The Control-Waitlist design has been used often in educational and medical research (See Mikami et al., 2005; Yeomans et al., 2010; Blikman et al., 2013), but it is new in political science research. To conduct a Control-Waitlist design, the control group is pre-tested at the outset and then again right before they get treatment after waiting a certain amount of time. And then, the control group is compared to a treatment group that has received treatment from the start of the study. We use a similar approach here with a few differences and explain it much more in-depth below. We show in Table 1 that on observable variables (such as familiarity with computers, reason for joining the survey, trouble using the web enabled device, education, socioeconomic status, and demographics), these two groups have unit homogeneity, which suggests that this research design approximates a randomized trial experiment. Using this research design, we compare two groups in terms of three commonly investigated and normatively important aspects of political behaviour:

political interest, political efficacy, and political knowledge. Our study is an important contribution as it takes causality seriously, in a field which “remains nearly devoid of actual causal tests” (Bailard, 2012, p. 331).

We find that new Internet users after nine months of usage do not demonstrate greater interest in politics, efficacy, or political knowledge. These findings also hold true when we examine the results split by those who start out politically interested and those who are not, those who are satisfied with the Internet service that was given to them, those who used online news, and re-examine these groups after two and a half years of access. The results suggest that previously found positive effects were possibly spurious. It is worth noting that there is now a large push to give universal Internet access by 2020—the current plan of the United States government is to be providing 100% access in 10 years (Federal Communications Commission, 2010). This may be a valuable goal in terms of equity in access to jobs or other benefits, but our results show that we should not expect any large gains in political interest, efficacy, and knowledge due to the expansion of Internet access.

## **Methods and Data**

This study uses NES survey data<sup>6</sup> from the presidential election year of 2008 to test the hypotheses. We employ a quasi-experimental design, which resembles a Control-Waitlist method. The NES hired the survey research firm Knowledge Networks to conduct this survey. They provided a free Internet web-enabled device called MSN TV2 for those who do not have Internet access at home, school or workplace<sup>7</sup>.

The first cohort (n=178) that did not have the Internet at home or work was recruited in January 2008, and the sampled respondents were asked to participate in a subsequent monthly survey<sup>8</sup>. The second no-access cohort (n=97) was recruited in September 2008 and also asked to participate in the subsequent monthly survey<sup>9</sup>. We conducted statistical power tests<sup>10</sup> that show these are nearly sufficient numbers of respondents to test the effect size common in the literature; however, the sample size could be a potential limitation to our research<sup>11</sup>. All sampled individuals filled out a pre-test questionnaire before they used MSN TV2 for the duration of survey. With this delayed provision, we are able to obtain a treated and untreated comparison of two groups in September 2008. It is important to note that there is no selection mechanism for respondents to join into either cohort other than having their randomly-selected phone numbers being dialed by the CATI computer system in either January or September. Thus, we should see very similar groups, as if in a randomized experiment.

In Table 2.1, we conduct independent sample t-tests using the 95 percent confidence interval of the mean difference, to test significant differences between Cohort 1 and Cohort 2 prior to treatment, which is, Cohort 1 in January 2008 and Cohort 2 in September 2008. Table 2.1 contains means and standard deviations for a set of variables that might impact the hypotheses if they differ between the treatment and control groups. We test respondents' age, gender, race, education, income, the intention of completing the survey to obtain an MSN TV2 or get free Internet access, computer use frequency, familiarity with computers, home Internet access and MSN TV2 use difficulties. None of the mean differences are statistically significant at the 0.05 level. Therefore, there is no significant difference between two cohorts across these observed variables.

**Table 2.1.** Independent sample t-tests between treatment and control group

| <b>Variable</b>                      | <b>Cohort 1</b> | <b>Cohort 2</b> |
|--------------------------------------|-----------------|-----------------|
| Age                                  | 55.496(17.568)  | 56.475(16.727)  |
| Gender                               | 0.460(0.499)    | 0.431(0.496)    |
| White                                | 0.662(0.474)    | 0.638(0.482)    |
| Education                            | 2.529(1.074)    | 2.556(1.086)    |
| Income                               | 8.038(4.211)    | 7.889(3.801)    |
| Wanted MSN TV2                       | 0.150(0.358)    | 0.147(0.355)    |
| Wanted Internet Access               | -3.049(3.158)   | -3.370(3.110)   |
| Computer Use Frequency               | 1.746(0.743)    | 1.749(0.759)    |
| Familiarity with Computer            | 1.795(0.834)    | 1.68(0.667)     |
| Difficulty in Connecting MSN TV2     | 4.092(1.033)    | 4.00(1.170)     |
| Called MSN TV2 Technical Support     | 0.128(0.335)    | 0.098(0.298)    |
| Have Internet Access at Home or Work | 1.749(0.825)    | 1.736(0.873)    |

Note: Cells represent means and standard deviations of the variable for cohort 1 in January 2008 and cohort 2 in September 2008. Standard deviation in parentheses. None are statistically significant at  $p < .05$  level.

We also use the ANES 2010 Panel Recontact Study data for a third wave examination to see if differences emerge over time. The 2010 NES Survey conducted a reinterview of the 2008 panelists who had completed at least one wave of the survey before November 2008. With the 2010 recontact data, we can test whether there is any effect on political interest, efficacy, and knowledge up to two and a half years later.

Another issue is how different are these non-users who requested the MSN TV2 device are from current Internet users. To assess this, we compared the demographics, media consumption per week, political discussion in a typical week, political interest, internal efficacy, and external efficacy at wave 1 between MSN TV2 users and PC users in the NES sample<sup>12</sup>. MSNTV2 users on average have the same distribution of gender as PC users, are 6 years older, about 15% more non-white, and have an average of a high school education compared with an average of some college level education for PC users, and have around \$30,000 less per year in income, and spend 0.3 day less per week

than PC users reading news, talk about politics as much as PC users do, while have slightly lower political interest, internal efficacy and external efficacy than PC users at wave 1. So these new users of the Internet (MSN TV2 users) are different from general PC population, but there is plenty of diversity in the MSN TV 2 group in terms of gender, age, race, education and income. Overall, we expect that they are equally capable of using the Internet effectively as general PC users.

### ***Data***

Our first dependent variable is political interest, measured as, “How interested are you in information about what’s going on in government and politics?” The answers are scaled from (1) *not interested at all* to (5) *extremely interested*. Second, we examine the effect of Internet use on political efficacy. The measure of external efficacy is derived from a survey question “How much do government officials care what people like you think?”, with answers ranging from (1) *not at all* to (5) *a great deal*. Internal efficacy is measured by a survey question of “How much can people like you affect what the government does?”, with answers ranging from (1) *not at all* to (5) *a great deal*.

Political knowledge is defined as the range of factual information about politics that is stored in long-term memory (Delli Carpini & Keeter, 1996, p. 10). Here, we measure political knowledge as an additive index of six open-ended knowledge questions about the candidates. It includes “what state does John McCain represent in Congress”; “what state does Barack Obama represent in Congress”; “what is Barack Obama’s religion”; “what is John McCain’s religion”; “before elected to US congress where did Obama work”; and “before elected to US congress where did McCain work.” For each question, the correct

answer is coded (1), otherwise (0). NES only listed six open-ended factual questions on political knowledge. Whether those questions or scales are the optimal measures of political knowledge or voter competence is open to debate (see Lupia, 2006). Thus, we are cautious about the potential threats that are elicited by the composition of survey questions to the internal validity of our results. Additionally, internal and external efficacy are better measured through scales, but these NES data only have one question for each. These data limitations threaten the internal validity of third study and should be kept in mind when considering our results.

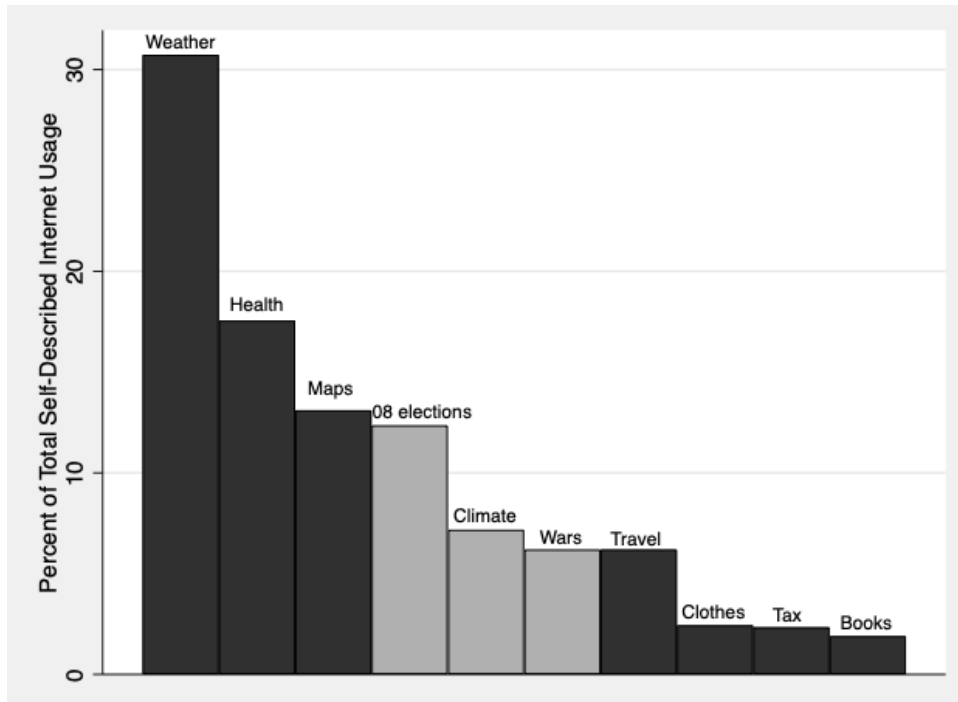
## **Results**

We start by examining a closed-ended question on the types of activities respondents do on the Internet, from a list of possible things to do online. We find that people in the treatment group mostly engaged in non-political activities with their new Internet access<sup>13</sup>. This question was included on wave 5, after five months of Internet access<sup>14</sup>.

Figure 2.1 shows that the treatment group used the Internet most often to get weather forecasts, look for medical or health information and look for directions or for a map. In contrast, searches about political candidates in the historic 2008 election, climate change or the wars in Iraq or Afghanistan were relatively low. Thus, having Internet access does not guarantee political research online. As most Internet usage was non-political, it is to be expected that little effects exist between Internet use and political interest, efficacy, and knowledge. Note this distribution of searches for the treatment group is very similar to the larger sample of NES respondents who had Internet access already (See Figure 1 in the Appendix for Chapter 2), which shows that our results are

probably not driven by either the sample selection or a function of the Knowledge Networks Internet provision system.

**Figure 2.1.** Self-described Internet usage



Note: This graph shows the treatment group mostly used the Internet for non-political usage. Political topics researched online are in light grey. Non-political usage is in dark gray.

### ***Direct effects***

We show summary results in Table 2.2 in this section, but due to concerns about the distributions of these ordinal and count dependent variables, we also use ordered probit and negative binomial regression for these dependent variables. We find non-significant results for all<sup>15</sup>, except a significant *negative* result for the Internet on external political efficacy<sup>16</sup>.

In Table 2.2, we see the respondents in Cohort 1 have no more political interest than those in Cohort 2. Compared with the non-users in Cohort 2, Cohort 1

demonstrated no significant difference in political interest after using MSN TV2 for nine months. The mean of Cohort 1 in September 2008 was 3.537 for political interest (on a scale of one to five), while Cohort 2 was 3.717, and the difference was not statistically significant. Considering that nine months may not be enough learning time for new users, we also examine whether political interest in both cohorts changed by June, 2010. There was no statistically significant change in their political interest after two and a half years of access in June, 2010. Thus, the Internet had no impact on these respondents' political interest.

**Table 2.2.** Results of internet access at 9 and 21 months

|                            | <b>Jan. 2008</b> | <b>Sept. 2008</b> | <b>June 2010</b> |
|----------------------------|------------------|-------------------|------------------|
| <b>Political Interest</b>  |                  |                   |                  |
| Control (C2)               | .                | 3.717(0.094)      | 3.586(0.168)     |
| Treatment (C1)             | 3.451(0.083)     | 3.537(0.097)      | 3.694(0.173)     |
| <b>Internal Efficacy</b>   |                  |                   |                  |
| Control (C2)               | .                | 2.768(0.121)      | 2.793(0.152)     |
| Treatment (C1)             | 2.64(0.089)      | 2.559(0.096)      | 2.75(0.180)      |
| <b>External Efficacy</b>   |                  |                   |                  |
| Control (C2)               | .                | 2.394(0.099)      | 2.621(0.152)     |
| Treatment (C1)             | 2.251(0.072)     | 2.346(0.084)      | 2.278(0.167)     |
| <b>Political Knowledge</b> |                  |                   |                  |
| Control (C2)               | .                | 4.275(0.145)      | .                |
| Treatment (C1)             | .                | 4.313(0.120)      | .                |

Note: Cells represent means and standard errors of the variable. Standard error in parentheses. No difference was statistically significant at the .05 level.

Respondents in Cohort 1 scored lower than Cohort 2 on the measure of how much people can affect government, but it was not statistically significant. The mean of Cohort 1 in September 2008 was 2.559 for internal efficacy while Cohort 2 was 2.768. The null results were reaffirmed by examination of the third wave in 2010 both between these groups and changes within them over time. This shows that Internet access did not influence these respondents' internal political efficacy. Likewise, there was no difference

in Cohort 1's opinion on how much government officials care about what people think after using Internet for nine months, when compared to Cohort 2. The mean of Cohort 1 in September 2008 was 2.346 for external efficacy while Cohort 2 was 2.394, which was not statistically significant. The non-significant difference between these groups and within these groups also holds true when re-examined in June 2010.

Similarly, we find a non-significant minimal difference in political knowledge in Cohort 1 after nine-months of Internet exposure. The mean of Cohort 1 in September 2008 was 4.313 for political knowledge while Cohort 2 was 4.275, which was not statistically significant. This shows also that the Internet did not improve respondents' political knowledge<sup>17</sup>.

In sum, these direct effects show little impact on political interest, political efficacy, or political knowledge. Now let's examine important sub-groups of the data to see if the effects manifest for only some populations.

### ***Results by Starting Political Interest***

Prior (2007) shows that more choice in media environment lowers interest for those with already low interest and increases interest for those with high interest. Some may think that our null results could actually be a mix of the positive effects for highly interested users and the negative effects for lowly interested users. If true, then our findings balance out in aggregate and show a null finding, when actually the true effect is conditional on starting levels of interest.

To analyse this argument, we split the treatment group into those who were highly interested (n=88) and lowly interested (n=34) in politics on January 2008<sup>18</sup>. We find

that neither changes in these two groups are statistically significant. Those who were not politically interested or slightly interested in January have more interest in September, as the mean interest goes up from 1.765 in wave 1 to 2.25 in wave 2. Those who were very interested or extremely interested have a declined interest in September; the mean interest goes down from 4.375 in wave 1 to 4.229 in wave 2. But neither of these groups have a statistically significant change in interest. Thus, participants' political interest did not change after nine-month Internet use regardless of their prior levels of political interest.

Comparing the changes for internal efficacy in January and September, the mean of those highly interested goes from 2.886 to 2.771, and those lowly interested goes from 2.382 to 1.833. As for external efficacy, the mean of the highly interested goes from 2.295 to 2.529, while those lowly interested goes from 1.824 to 1.875. None of those groups show a statistically significant change<sup>19</sup>. Thus, this differential aggregate effect does not explain our null findings.

### ***Results by Satisfaction with MSN TV2***

Some may suggest that the MSN TV2 device is not as convenient as a PC, and it is possible that recipients do not like to use it and that is why it has null effects<sup>20</sup>. So we control for the satisfaction of the Internet usage experience. There is a survey question asking “overall, how satisfied are you with the MSN TV 2 unit?” We measure changes in political interest, efficacy, and knowledge among those who are “extremely satisfied” or “somewhat satisfied” with the MSN TV2 unit. Again, we find no significant changes in political interest, internal efficacy, external efficacy and political knowledge among those respondents after nine months Internet use, and the null finding holds 21 months later in

the third wave. The mean of Cohort 1 in September 2008 was 3.538 for political interest, while Cohort 2 was 3.731; the mean of Cohort 1 in September 2008 was 2.538 for internal efficacy while Cohort 2 was 2.940<sup>21</sup>; the mean of Cohort 1 in September 2008 was 2.363 for external efficacy while Cohort 2 was 2.418; the mean of Cohort 1 for political knowledge in September 2008 was 4.256 while Cohort 2 was 4.238, and none of these differences were significant<sup>22</sup>.

### ***Results for New Political News Users***

We also want to examine the subset of users who specifically used the Internet to look for online news, as Boulianne (2009) shows in meta-analysis that respondents answering yes to these questions have the strongest impact from the Internet on political behaviour. In this survey, there is a question asking “how many days in a typical week the respondent reads or watches news on Internet” in both the January and September 2008 waves<sup>23</sup>. The treatment group (who have used it zero days in January) read or watched news on Internet about 0.8 days per week in September. We re-examine the impact of the Internet on those who say they used online news on political interest, efficacy, and knowledge<sup>24</sup>. Also, the corresponding ordered probit and negative binomial regression models are in the Appendix<sup>25</sup> for Chapter 2. We find no significant changes in political interest, internal efficacy, external efficacy and political knowledge among new users over time. Internet news consumption has no impact. This shows that it is not merely a question of access, but also usage does not improve competence.

### ***Three-way Interaction Results for New Political News Users***

To check for possible three-way interaction effects between news usage and starting levels of interest and satisfaction with the MSN TV2, we also run models based on starting interest levels and satisfaction as we did above on just those in the treatment group who were Internet news users. We find those news users who were lowly interested in January have more interest in September, the mean interest goes up from 1.583 in wave 1 to 2.125 in wave 2, and those news users who were highly interested have a slightly declined interest in September, the mean interest goes down from 4.404 in wave 1 to 4.343 in wave 2. But neither of these changes in political interest is statistically significant. Thus, news users' political interest did not have much change after nine-months of Internet use regardless of their prior levels of political interest. As to changes in internal efficacy, the mean of highly interested news users declines from 3.021 to 2.771, and the lowly interested news users declines from 1.583 to 1.25. For external efficacy, the mean of the highly interested news users goes from 2.362 to 2.486, while lowly interested news users goes from 1.583 to 1.625. None of those changes bear statistical significance<sup>26</sup>. Thus, this differential aggregate effect was not explaining our null findings for news users<sup>27</sup>. We also test our dependent variables among news users who were satisfied with MSN TV2 device. News users who liked the MSN TV2 have higher levels of external efficacy. We did not find any other significant effect from Internet usage to political interest, internal efficacy or knowledge<sup>28</sup>.

## Conclusion

Conventional wisdom is that the Internet will increase political interest, knowledge, and efficacy. Our research offers a counter-prediction to the positive research findings based on problems of motivated selection, crowding out, and information overload. We find that the quasi-random provision of the Internet does not increase political interest, political efficacy, or political knowledge for late adopters. The null effect holds over various theoretically important subsets of the population. These findings cast doubt on the reliability of the previous observational studies. It is highly possible that the previous studies have found spurious relationships, due to likely issues that are common to observational research such as omitted variable bias and endogeneity. While the Internet seems likely to provide easy access to additional information for those who want to seek it, simply providing Internet access to those who do not necessarily want to seek new information did not increase political interest, efficacy, or knowledge. As the saying goes, you can lead a horse to water, but you cannot make it drink. The Internet itself is not necessarily going to increase these normatively desirable properties. In sum, our study casts doubt on the influence of new communication technologies on political interest, efficacy, and knowledge. Governmental policies to promote universal access may be beneficial for other reasons but will probably not have a major impact on the public's civic political behaviour. There is no guarantee that the implications from Internet usage of late adopters can be applied to the general population. For example, information environments vary widely between countries. Our experiments are conducted in a democratic country, where the creation and distribution of information are highly advanced. It is easy for our citizens to gain access and obtain information. However, our conclusions

can hardly be generalized to countries with non-democratic political environments or without free presses.

The control waitlist research design that we used in this study is an innovative tool for political scientists, and it should be considered for future research. In other disciplines, researchers have found it to be a useful tool. Whenever there is a delay in treatment between two groups, this technique can be used to get reliable causal inferences. Like other quasi experimental designs—such as regression discontinuity—this tool can uncover causal inference.

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## Endnotes

1. This chapter, co-authored with Dr. Sean Richey, was peer-reviewed and published in the journal *Political Communication*. See Richey, S., & Zhu, J. (2015). Internet access does not improve political interest, efficacy, and knowledge for late adopters. *Political Communication*, 32(3), 396-413. Equal authorship.
2. It may also require some interest to spark someone to research or debate a political topic, and we will also test the effect by political interest level below.
3. Gershuny conducted a nationally representative diary panel during 1999 to 2000 in the UK to explore the impact of web use on patterns of sociability at the individual level.
4. See DeBell, Krosnick, and Lupia (2010) for a detailed explanation of this process and methodology. They state “The 2008-2009 ANES Panel Study is a telephone-recruited Internet panel with two cohorts recruited using nearly identical methods. The first cohort was recruited in late 2007 using random-digit-dialing (RDD) methods common to telephone surveys. Prospective respondents were offered \$10 per month to complete surveys on the Internet each month for 21 months, from January 2008 through September 2009. Those without a computer and Internet service were offered a free web appliance, MSN TV 2, and free Internet service for the duration of the study. The second cohort was recruited the same way in the summer of 2008 and asked to join the panel beginning in September 2008.”
5. There are a few number of respondents who said they have Internet access, but still asked for a free MSN TV2 device anyway. We take out those subjects to get the number of real first-time Internet users.

6. The data, questionnaires, response rates, and detailed information on the survey methodology are available on the NES website:

<http://www.electionstudies.org/studypages/cdf/cdf.htm>.

7. This process has been described as “The Knowledge Networks (KN) panel was unusual in that it attempted to use probability sampling and Web-based inter-viewing for general population studies. The KN sample is a representative sample of the U.S. population; households without Internet access were provided with an inexpensive Web access device, solving the coverage problem. A probability sample of phone numbers (random within pre-identified strata) is selected out of all possible phone numbers in the United States.” (Rivers, Huggins, and Slotwimer 2003).

8. The RDD procedure drawn is described as “The sample for the Panel Study was in two cohorts. The first cohort, recruited in late 2007, consisted of 12,809 landline telephone numbers. The second cohort, recruited in the summer of 2008, consisted of 10,720 landline telephone numbers, for a total of 23,529 telephone numbers in the two cohorts combined. Knowledge Networks called each of these numbers to attempt to recruit an eligible person to participate in the Panel Study. A person was eligible if he or she was 1) a U.S. citizen, 2) born on or before November 4, 1990, and 3) residing in a household served by a sampled landline telephone number at the time of recruitment.”

9. There is some attrition over time. We find non-whites are more likely to leave the panel study than whites in Cohort1. There are no significant demographical factors predicting who is likely to leave in Cohort 2. Since there is a unit homogeneity across demographical variables in two cohorts, these are two comparable groups.

10. We performed a power analysis to determine whether there are enough respondents to test these null findings. Type 2 errors are more likely to be found for hypotheses of null effects, which could be found by simply having too small of sample size, rather than for the hypothesized reasons. To perform statistical power test, we need to set the confidence level, which here is .95%. We need to set an acceptable power level, which is how often this hypothesis test will have enough statistical power with this amount of respondents, which here is the stringent 0.8. And finally, we need standardized coefficient of the hypothesized effect. For this, we use Boulianne's (2009) finding that a one standard deviation change in Internet usage leads to a 0.13 increase in political engagement. To have enough statistical power with these assumptions, we need an estimated sample size of 299 to test political interest, an estimated sample size of 360 to test internal efficacy, an estimated sample size of 257 to test external efficacy, and an estimated sample size of 500 to test political knowledge. We have 228 (131 in the treatment and 97 in the control). This data size could present a potential limitation to our empirical analysis, and our sub-group sample size might also be too small. So there may be some potential for a null effect due to statistical power. The software to use to conduct this calculation is Stata 13, using the `sampsi` command.

11. We calculate all the effects by subtracting the means of treatment and control groups. We find that effects are negligible in all cases. Negligible means that even if there is an effect, it is so small that can hardly be distinguished from zero. In the direct effects, the treatment group is 0.18 lower in political interest, 0.209 lower in internal efficacy, 0.048 lower in external efficacy, and 0.038 higher in political knowledge than control group after nine months Internet use. Those with low political interest in January are 0.485

higher in political interest, 0.499 lower in internal efficacy, and 0.051 higher in external efficacy after nine months Internet use. Those with high political interest in January are 0.146 lower in political interest, 0.115 lower in internal efficacy, and 0.234 higher in external efficacy after nine months Internet use. Satisfied MSN TV2 users are 0.193 lower in political interest, 0.402 lower in internal efficacy, 0.055 lower in external efficacy, and 0.018 higher in political knowledge than control group after nine months Internet use. New political news users are 0.094 lower in political interest, 0.131 lower in internal efficacy, 0.191 higher in external efficacy, and 0.047 lower in political knowledge than control group after nine months Internet use. New political news users who were lowly interested in January are 0.542 higher in political interest, 0.288 lower in internal efficacy, and 0.087 higher in external efficacy after nine months Internet use. New political news users who were highly interested in January are 0.061 lower in political interest, 0.25 lower in internal efficacy, and 0.124 higher in external efficacy after nine months Internet use. The effects are negligible even if we do not have enough statistical power to reject it (see Rainey 2014). Therefore, Internet access has either no or essentially meaningless effects on political Interest, efficacy, and knowledge for late adopters.

12. See Table 1 in the Appendix for Chapter 2 for a summary statistics by MSN TV2 users and PC users.

13. These data come from supplemental questions that the NES let other companies on the 2008-2009 panel. These were done in March, April, May, July, August, December 2008 and February, March, April, June, September, and October 2009. The supplemental

(off-wave non-ANES) data files are available on the NES website:

<http://www.electionstudies.org/studypages/download/datacenterall.htm>

14. Q21 on the questionnaire reads “During the current year, that is, from the beginning of January, 2008, until now, please indicate the number of times that you have done each of the following activities. If you have not done the activity at all, please enter a zero in the response box. If you have done it a large number of times, please make your best estimate of the number and enter it into the response box. 1). Used the Internet to look for medical or health information. 2). Used the Internet to look for information about the wars in Iraq or Afghanistan. 3). Used the Internet to look for information about global warming or climate change. 4). Used the Internet to look for information about a candidate for President. 5). Used the Internet to look for information for use in filing your taxes. 6). Used the Internet to make hotel or travel reservations. 7). Used the Internet to get a weather forecast. 8). Used the Internet to look for directions or for a map. 9). Used the Internet to buy a book. 10). Used the Internet to buy an item of clothing.”

15. See Table 2 and Table 3 in the Appendix for Chapter 2 for these results.

16. We examine the simultaneous effect of Internet access on all four predictors. We were able to do that with a Simultaneously Unrelated Regression Model, and the null effect holds for all dependent variables simultaneously. See the Appendix for Chapter 2 Table 4.

17. These knowledge questions were not asked in the recontact wave in June 2010, so we cannot test that wave.

18. See Figure 2-4 in the Appendix for Chapter 2.

19. Since we do not have political knowledge measured at wave 1 in January, we cannot compare changes in political knowledge among those highly interested and lowly interested groups over time.
20. The NES survey study states respondents are free to use the MSN TV2 as much or as little as they want. There are no survey questions on the amount of usage. There are, however, 40 respondents (19 in Cohort 1; 21 in Cohort 2) without Internet access cannot have MSN TV2 device installed. We measured the difficulty in connecting the MSN TV2 device among respondents in both waves. See Figure 5 in the Appendix for Chapter 2 for details.
21. We find a significant relationship between Internet usage and internal efficacy using oprobit models, but the relationship is negative. So, the Internet does not increase internal efficacy, as current research would suggest.
22. See Figure 6-9 in the Appendix for Chapter 2 for graphical results, Table 3 and Table 5 for regression models.
23. We find there is a unit homogeneity across these observed variables when looking at only news users (see Table 6 in the Appendix for Chapter 2).
24. See Figure 10-13 in the Appendix for Chapter 2 for graphical results.
25. See Table 7-9 in the Appendix for Chapter 2.
26. Since we do not have political knowledge measured at wave 1 in January, we cannot compare changes in political knowledge among those highly interested and lowly interested groups over time.
27. See Figure 14-16 in the Appendix for Chapter 2 for graphical results.
28. See Figure 17-20 in the Appendix for Chapter 2 for graphical results.

## Appendix for Chapter 2: Supplemental Tables and Figures

**Table 1.** Summary Statistics by MSN TV2 Users and PC Users

| Variable             | MSN TV2 Users  | PC Users       |
|----------------------|----------------|----------------|
| Gender               | 0.445(0.497)   | 0.420(0.494)   |
| Age                  | 55.711(17.067) | 49.850(15.358) |
| White                | 0.648(0.478)   | 0.801(0.400)   |
| Education            | 2.576(1.087)   | 3.443(1.055)   |
| Income               | 8.012(4.006)   | 12.705(3.865)  |
| TV News              | 5.399(2.017)   | 4.808(2.310)   |
| Radio News           | 2.753(2.641)   | 3.397(2.588)   |
| Internet News        | 1.647(2.248)   | 3.345(2.714)   |
| Print News           | 3.624(2.720)   | 3.404(2.852)   |
| Political Discussion | 3.057(2.320)   | 3.015(2.145)   |
| Political Interest   | 3.451(1.097)   | 3.632(1.026)   |
| Internal Efficacy    | 2.640(1.175)   | 2.684(1.054)   |
| External Efficacy    | 2.251(0.956)   | 2.399(0.923)   |

Note: Cells represent means and standard deviations of the variable on MSN TV2 users and PC users. Standard deviation in parentheses.

**Table 2.** Ordered Probit Models

| <b>Variable</b> | <b>Political Interest</b> | <b>Internal Efficacy</b> | <b>External Efficacy</b> |
|-----------------|---------------------------|--------------------------|--------------------------|
| Cohort 1        | -0.145(0.142)             | -0.180(0.140)            | -0.049(0.142)            |
| $\tau_1$        | -1.964(0.189)             | -1.110(0.131)            | -0.848(0.125)            |
| $\tau_2$        | -1.126(0.132)             | -0.137(0.116)            | 0.060(0.116)             |
| $\tau_3$        | -0.259(0.116)             | 0.616(0.120)             | 1.248(0.139)             |
| $\tau_4$        | 0.664(0.122)              | 1.286(0.142)             | 1.910(0.191)             |
| LR $\chi^2$     | 1.05                      | 1.64                     | 0.12                     |
| N               | 228                       | 228                      | 228                      |

Note: Cells represent coefficients and standard errors of ordered probit models as a comparison of treatment (Cohort 1) and control group (Cohort 2) in September 2008 on political interest, internal efficacy, and external efficacy. Standard error in parentheses.

**Table 3.** Negative Binomial Regression on Political Knowledge

| <b>Variable</b> | <b>Overall</b>  | <b>Satisfied Users</b> |
|-----------------|-----------------|------------------------|
| Cohort 1        | 0.009(0.066)    | .004(.080)             |
| Constant        | 1.453***(0.051) | 1.444***(0.061)        |
| $\ln \alpha$    | -22.427         | -22.997                |
| $\alpha$        | 1.82e-10        | 2.80e-10               |
| LR $\chi^2$     | 0.02            | 0.00                   |
| N               | 219             | 149                    |

Note: Cells represent coefficients and standard errors of negative binomial regression on political knowledge for overall sample and those who are satisfied with MSN TV2 usage. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 4.** Simultaneously Unrelated Regression Models

| <b>Variable</b> | <b>Political<br/>Interest</b> | <b>Internal<br/>Efficacy</b> | <b>External<br/>Efficacy</b> | <b>Knowledge</b> |
|-----------------|-------------------------------|------------------------------|------------------------------|------------------|
| Cohort 1        | -0.200(0.146)                 | -0.287(0.158)                | -0.097(0.134)                | 0.038(0.187)     |
| Constant        | 3.747*** (0.112)              | 2.857*** (0.121)             | 2.418*** (0.102)             | 4.275*** (0.143) |
| N               | 219                           | 219                          | 219                          | 219              |

Note: Cells represent coefficients and standard errors of simultaneously unrelated regression models for treatment and control group on political interest, internal efficacy, external efficacy, and political knowledge. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 5.** Ordered Probit Models on MSN TV2 Satisfied Users

| <b>Variable</b> | <b>Political Interest</b> | <b>Internal Efficacy</b> | <b>External Efficacy</b> |
|-----------------|---------------------------|--------------------------|--------------------------|
| Cohort 1        | -0.161(0.171)             | -0.340*(0.170)           | -0.057(0.171)            |
| $\tau_1$        | -1.878(0.215)             | -1.136(0.158)            | -0.779(0.149)            |
| $\tau_2$        | -0.997(0.154)             | -0.262(0.141)            | 0.047(0.140)             |
| $\tau_3$        | -0.332(0.140)             | 0.421(0.142)             | 1.174(0.163)             |
| $\tau_4$        | 0.594(0.145)              | 1.174(0.166)             | 1.824(0.219)             |
| LR $\chi^2$     | 0.90                      | 4.02                     | 0.11                     |
| N               | 158                       | 158                      | 158                      |

Note: Cells represent coefficients and standard errors of ordered probit models for those who are satisfied with MSN TV2 usage in treatment and control group on political interest, internal efficacy, and external efficacy. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 6.** Independent Sample t-tests Among New Political News Users

| <b>Variable</b>                      | <b>Cohort 1</b> | <b>Cohort 2</b> |
|--------------------------------------|-----------------|-----------------|
| Age                                  | 55.511(15.008)  | 53.833(17.873)  |
| Gender                               | 0.443(0.500)    | 0.417(0.500)    |
| White                                | 0.784(0.414)    | 0.667(0.478)    |
| Education                            | 2.443(0.969)    | 2.667(1.195)    |
| Income                               | 8.239(4.099)    | 8.028(4.025)    |
| Wanted MSN TV2                       | 0.131(0.339)    | 0.206(0.410)    |
| Wanted Internet Access               | -0.080(1.472)   | 0.028(1.797)    |
| Computer Use Frequency               | 1.812(0.732)    | 2.056(0.791)    |
| Familiarity with Computer            | 1.739(0.719)    | 1.917(0.649)    |
| Difficulty in Connecting MSN TV2     | 4.047(1.116)    | 3.971(1.200)    |
| Called MSN TV2 Technical Support     | 0.284(0.454)    | 0.306(0.467)    |
| Have Internet Access at Home or Work | 1.795(0.664)    | 1.861(0.351)    |

Note: Cells represent means and standard deviations of the variable for Cohort 1 in January 2008 and Cohort 2 in September 2008. Standard deviation in parentheses.

**Table 7.** Ordered Probit Models on New Political News Users

| <b>Variable</b> | <b>Political Interest</b> | <b>Internal Efficacy</b> | <b>External Efficacy</b> |
|-----------------|---------------------------|--------------------------|--------------------------|
| Cohort 1        | -0.075(0.220)             | -0.128(0.219)            | 0.219(0.226)             |
| $\tau_1$        | -1.939(0.296)             | -1.006(0.206)            | -0.513(0.197)            |
| $\tau_2$        | -1.010(0.205)             | 0.005(0.188)             | 0.457(0.194)             |
| $\tau_3$        | -.234(0.186)              | 0.842(0.201)             | 1.909(0.280)             |
| $\tau_4$        | 0.603(0.194)              | 1.266(0.224)             | 2.219(0.337)             |
| LR $\chi^2$     | 0.12                      | 0.34                     | 0.94                     |
| N               | 101                       | 101                      | 101                      |

Note: Cells represent coefficients and standard errors of ordered probit models for treatment and control group on political interest, internal efficacy, and external efficacy. Standard error in parentheses.

**Table 8.** Ordered Probit Models on MSN TV2 Satisfied New Political News Users

| <b>Variable</b> | <b>Political Interest</b> | <b>Internal Efficacy</b> | <b>External Efficacy</b> |
|-----------------|---------------------------|--------------------------|--------------------------|
| Cohort 1        | -0.059(0.271)             | -0.113(0.269)            | 0.581*(0.284)            |
| $\tau_1$        | -1.761(0.330)             | -0.919(0.251)            | -0.105(0.244)            |
| $\tau_2$        | -0.831(0.247)             | 0.031(0.236)             | 0.811(0.253)             |
| $\tau_3$        | -0.329(0.234)             | 0.873(0.251)             | 2.023(0.332)             |
| $\tau_4$        | 0.445(0.238)              | 1.294(0.277)             | 2.364(0.389)             |
| LR $\chi^2$     | 0.05                      | 0.18                     | 4.24                     |
| N               | 70                        | 70                       | 70                       |

Note: Cells represent coefficients and standard errors of ordered probit models for those who are satisfied with MSN TV2 usage in treatment and control group on political interest, internal efficacy, and external efficacy. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 9.** Negative Binomial Regression on Political Knowledge of New Political News Users

| <b>Variable</b>              | <b>Overall</b>  | <b>Satisfied Users</b> |
|------------------------------|-----------------|------------------------|
| Cohort 1                     | -0.011(0.103)   | -0.030(0.124)          |
| Constant                     | 1.483***(0.084) | 1.509***(0.103)        |
| <i>In<math>\alpha</math></i> | -44.667         | -23.928                |
| $\alpha$                     | 3.99e-20        | 4.06e-11               |
| LR $\chi^2$                  | 0.01            | 0.06                   |
| N                            | 96              | 67                     |

Note: Cells represent coefficients and standard errors of negative binomial regression on political knowledge for overall sample and those who are satisfied with MSN TV2 usage. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Figure 1.** Topics in Web Search by PC Users

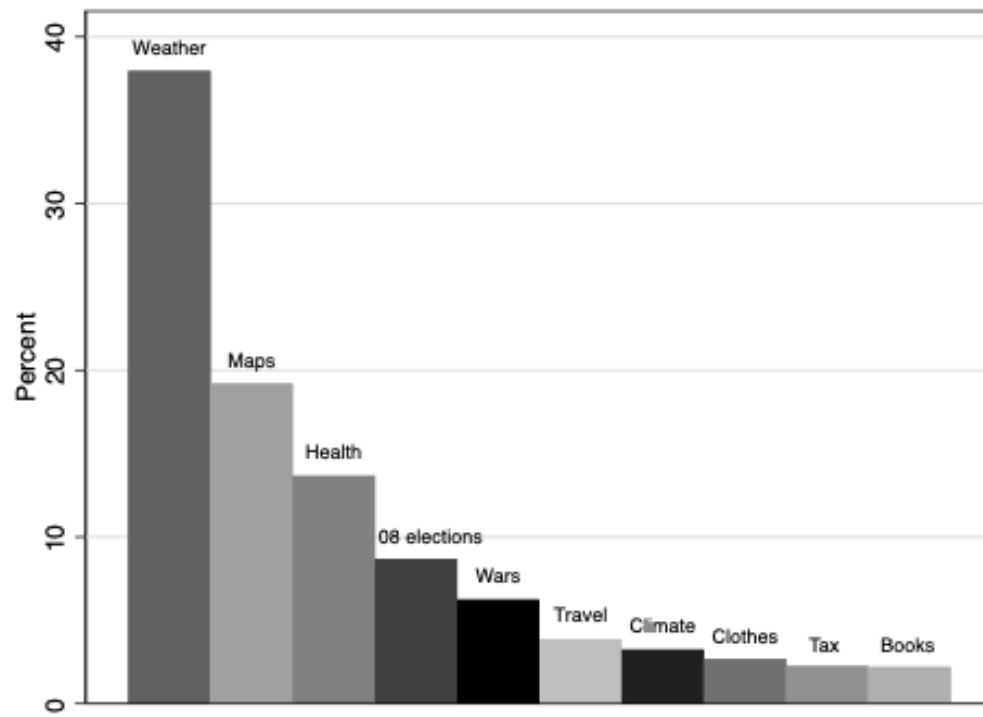


**Figure 2.** The Influence of the Internet on Political Interest by Starting Political Interest

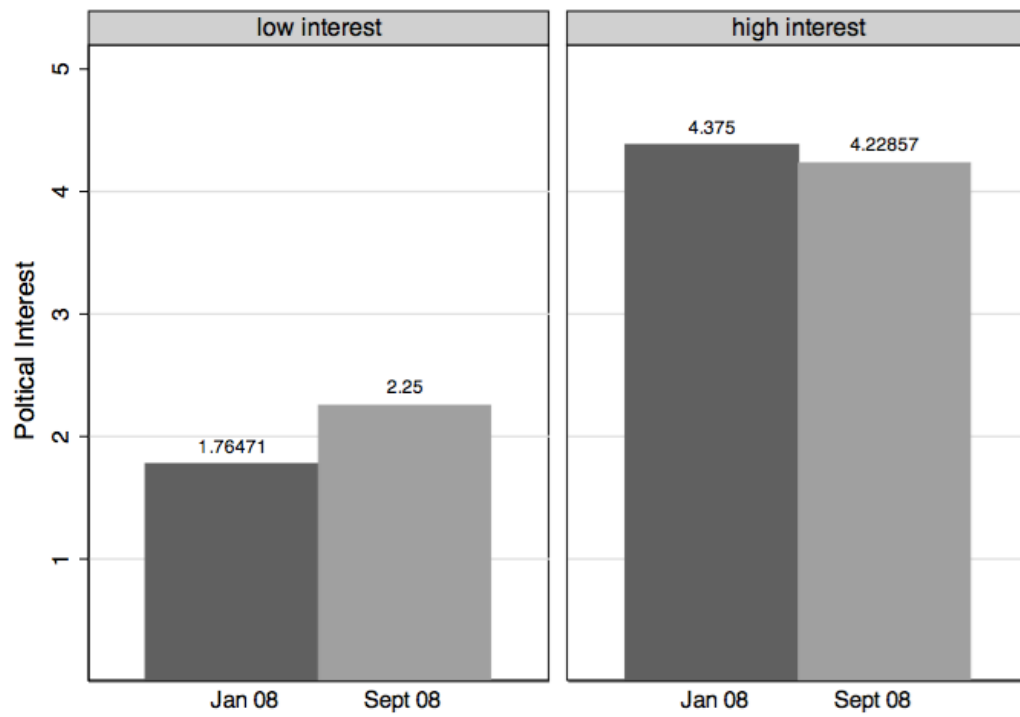


**Figure 3.** The Influence of the Internet on Internal Efficacy by Starting Political Interest

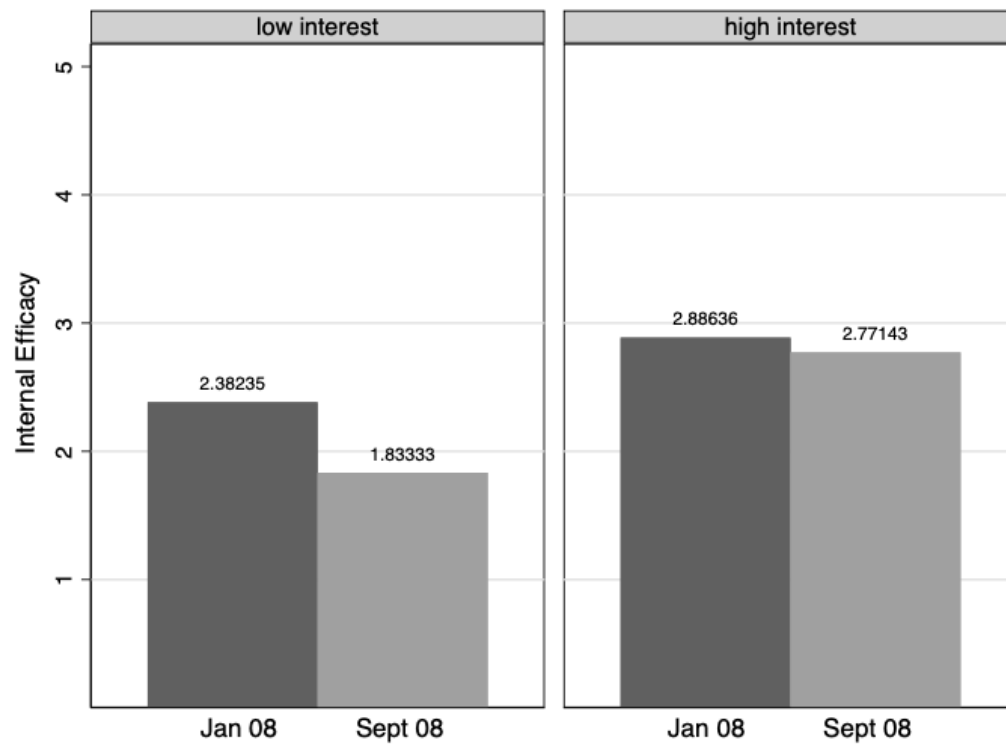


**Figure 4.** The Influence of the Internet on External Efficacy by Starting Political Interest

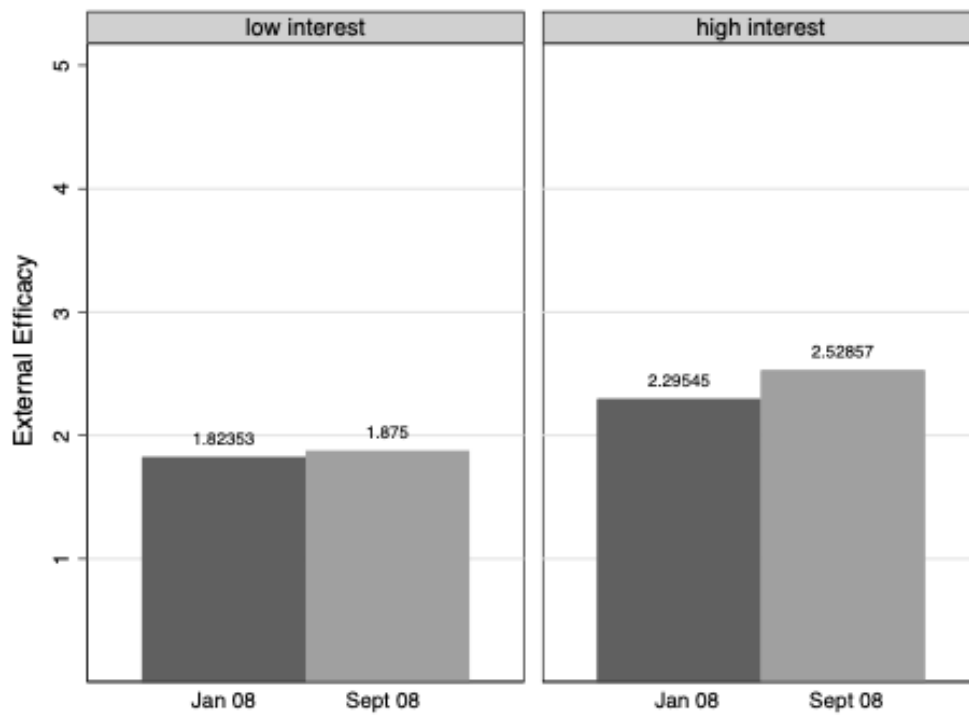
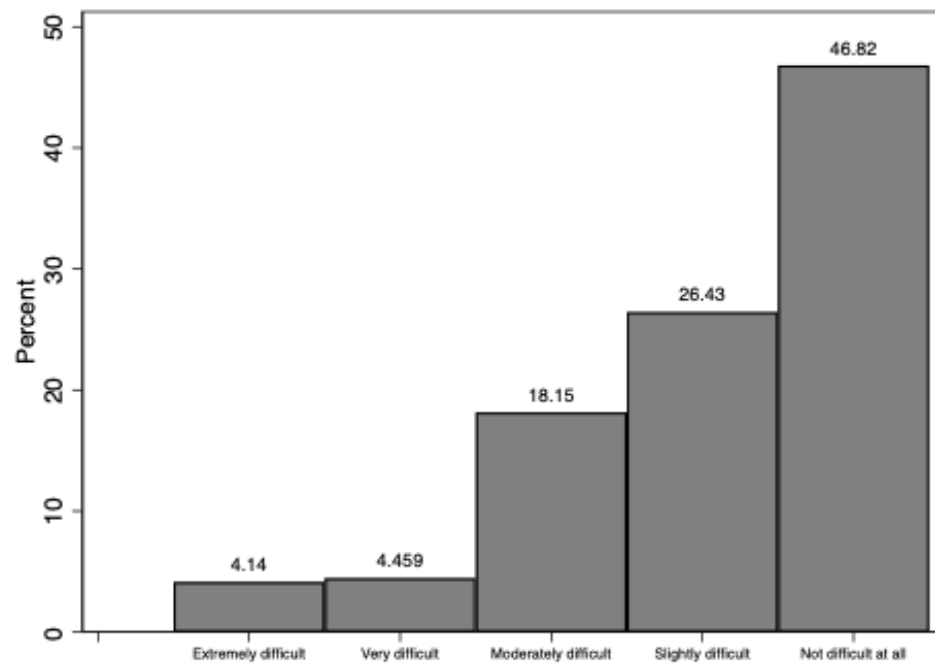


**Figure 5.** The Difficulty in Connecting the MSN TV2 Unit



Note: This graph shows the distribution of the respondents who had trouble setting up Internet access in both the two waves. See text for details.

**Figure 6.** The Internet Does Not Increase Political Interest Among MSN TV2 Satisfied Users

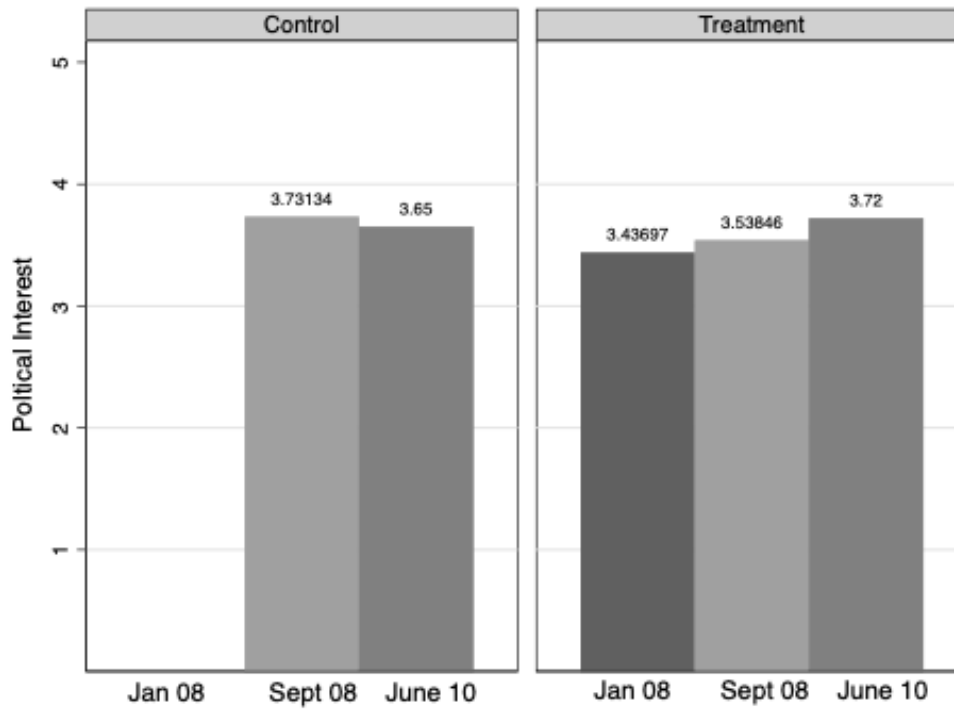


**Figure 7.** The Internet Does Not Increase Internal Efficacy Among MSN TV2 Satisfied Users

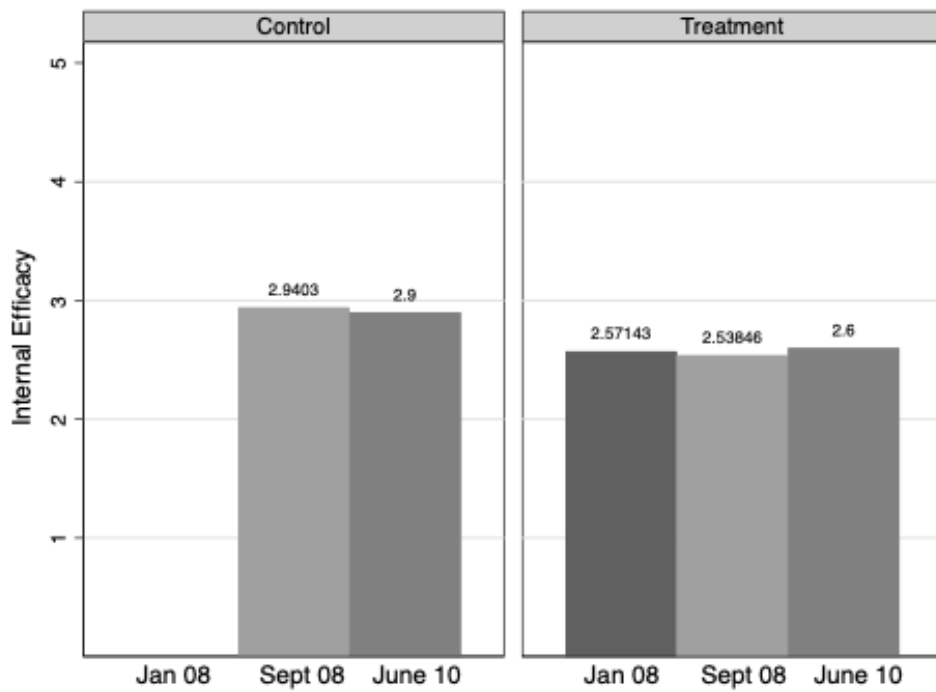


**Figure 8.** The Internet Does Not Increase External Efficacy Among MSN TV2 Satisfied Users

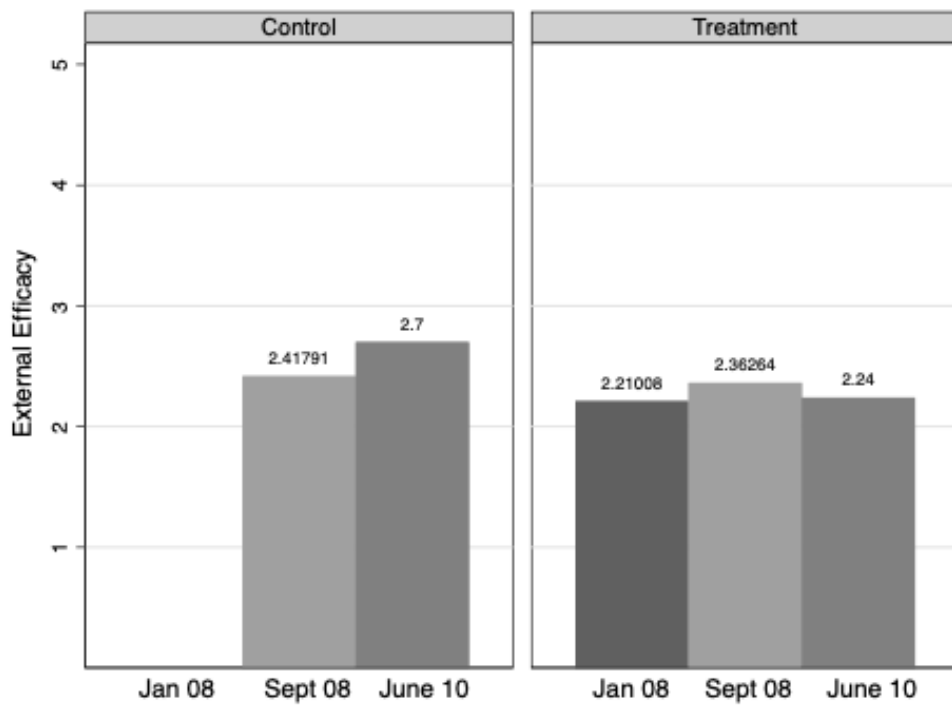


**Figure 9.** The Internet Does Not Increase Political Knowledge Among MSN TV2 Satisfied Users

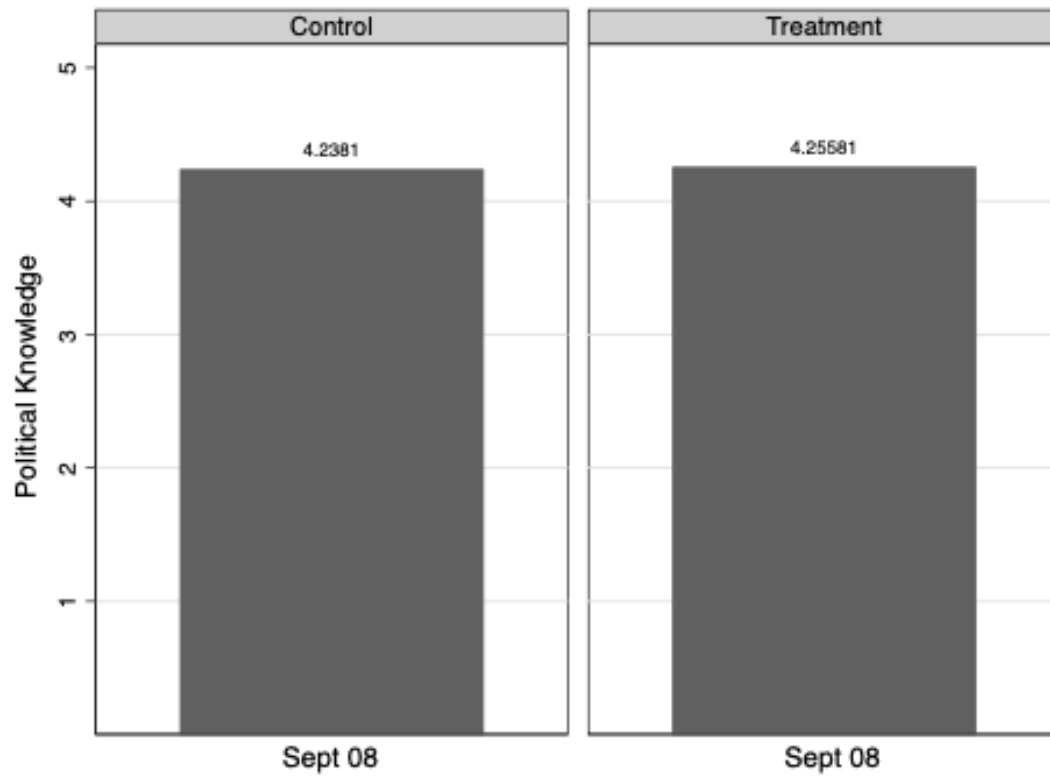


**Figure 10.** Two and a Half Years of Internet Usage Does Not Increase Political Interest

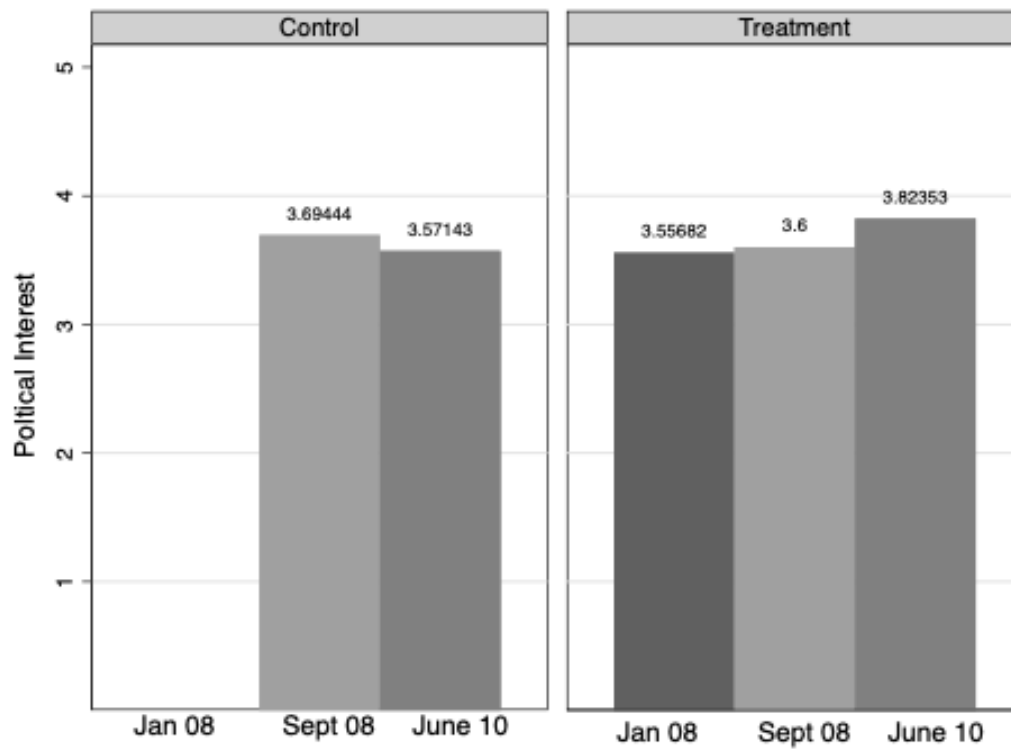


**Figure 11.** Two and a Half Years of Internet Usage Does Not Increase Internal Efficacy

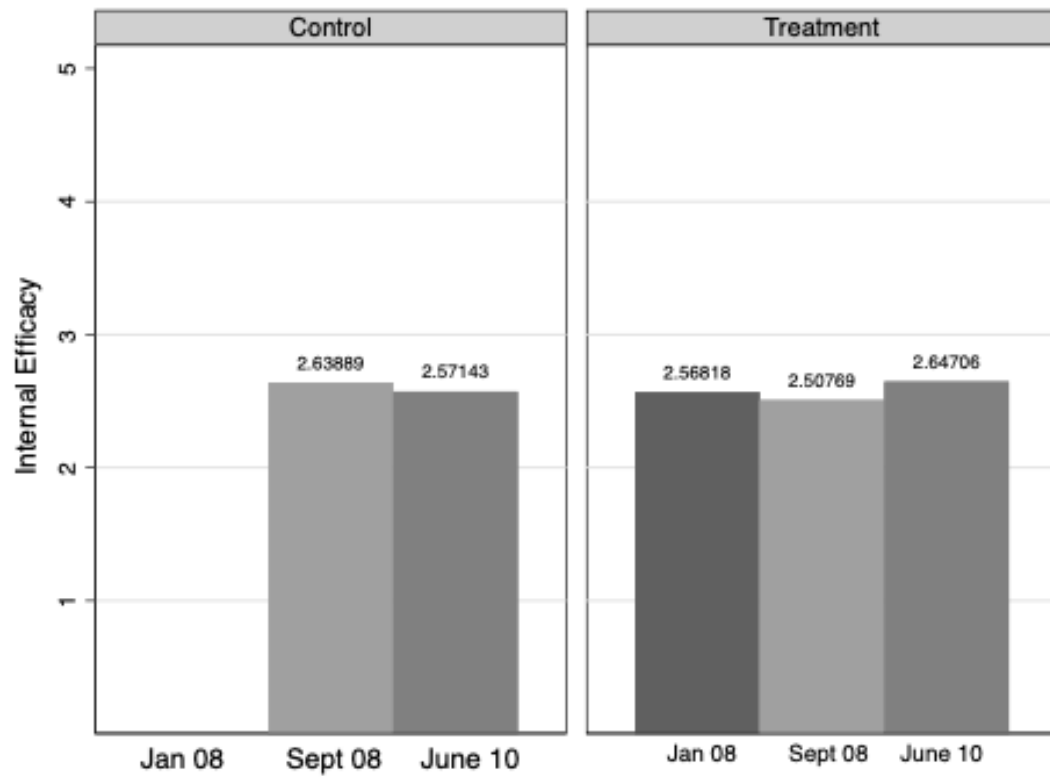


**Figure 12.** Two and a Half Years of Internet Usage Does Not Increase External Efficacy

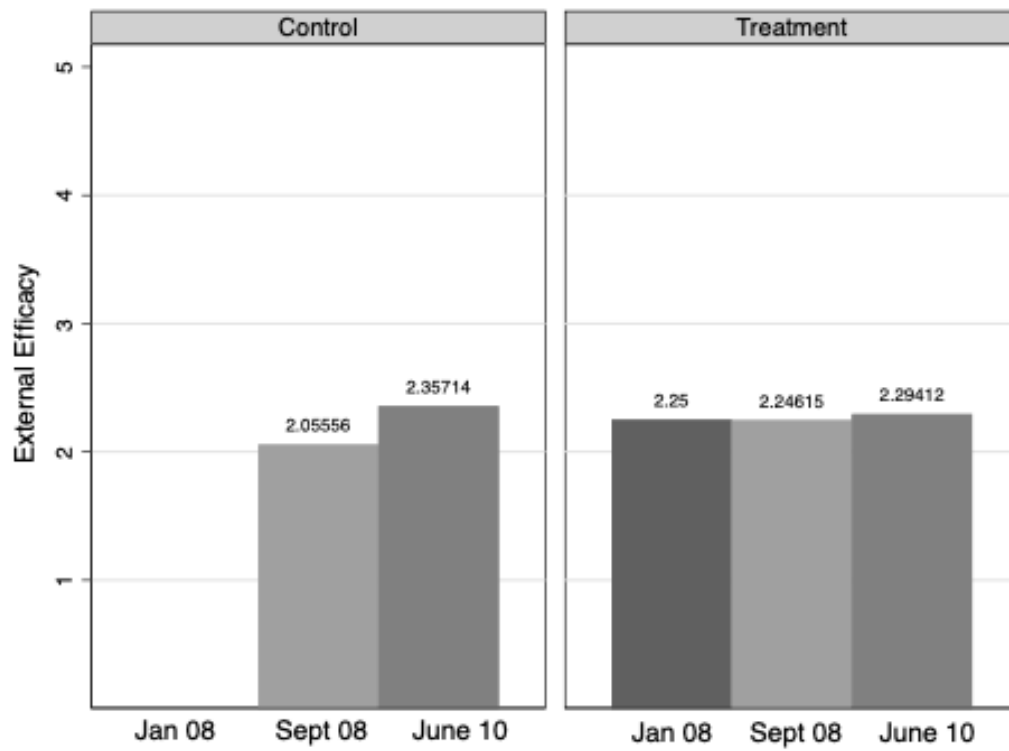


**Figure 13.** Nine Months Internet Usage Does Not Increase Political Knowledge

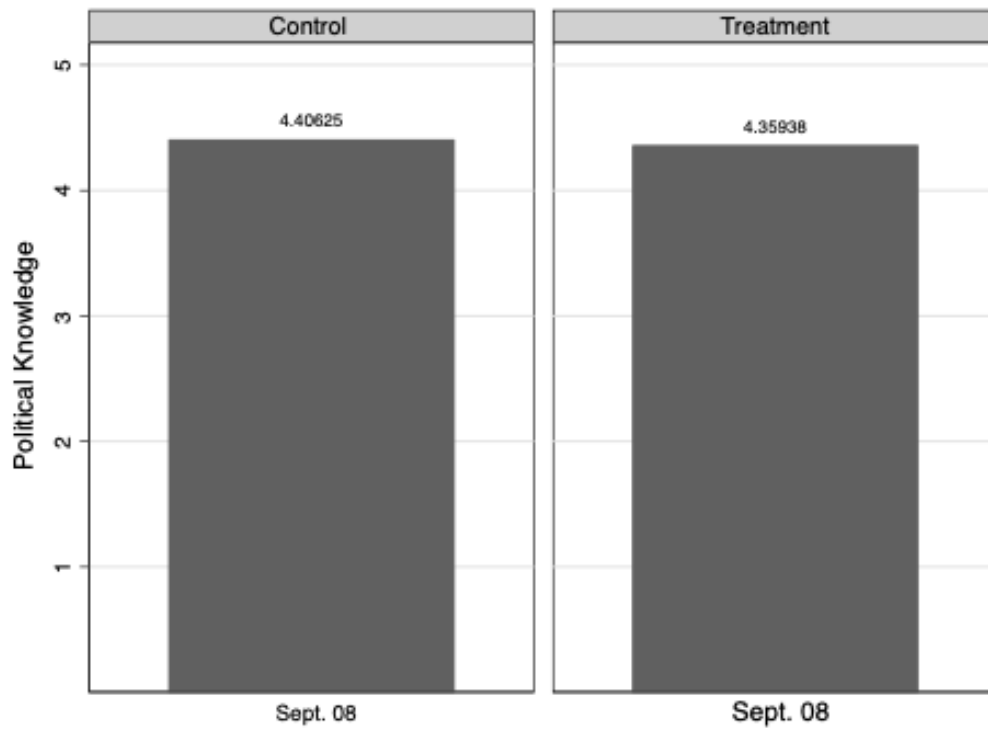


**Figure 14.** The Effect on New Users by Starting Political Interest

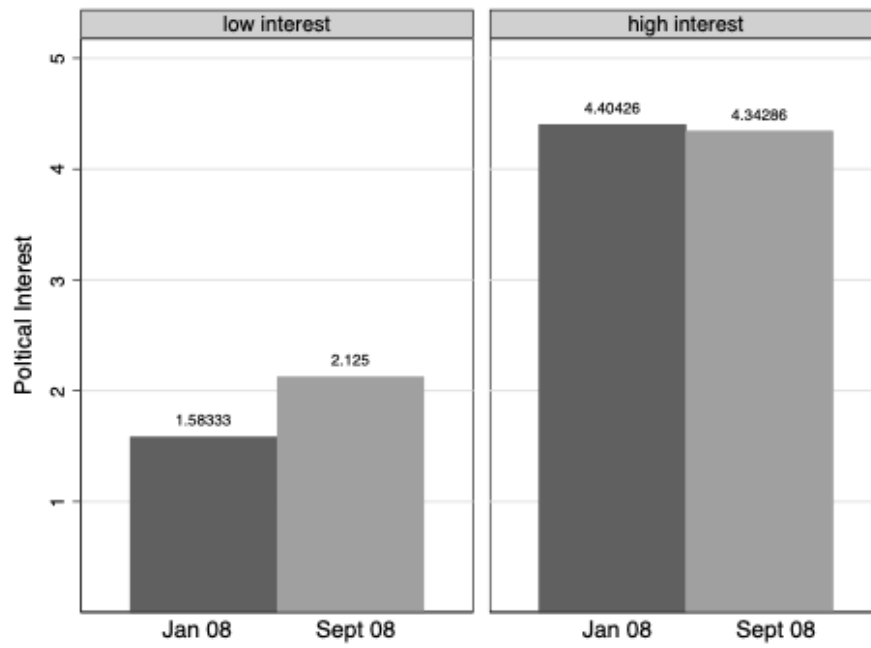


**Figure 15.** The Effect on New Users by Starting Political Interest

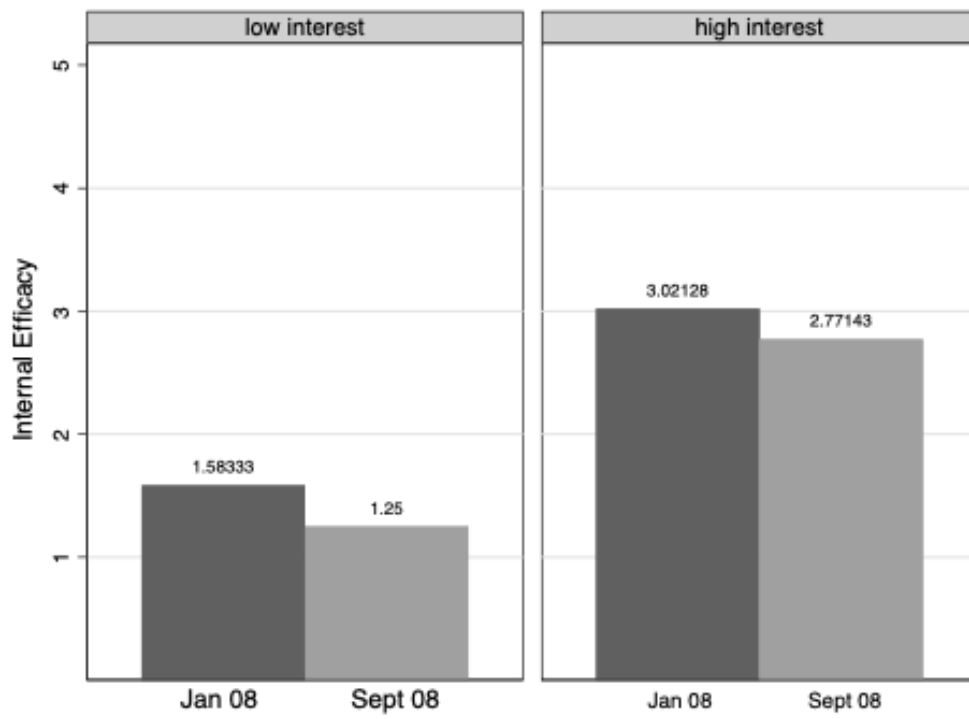


**Figure 16.** The Effect on New Users by Starting Political Interest

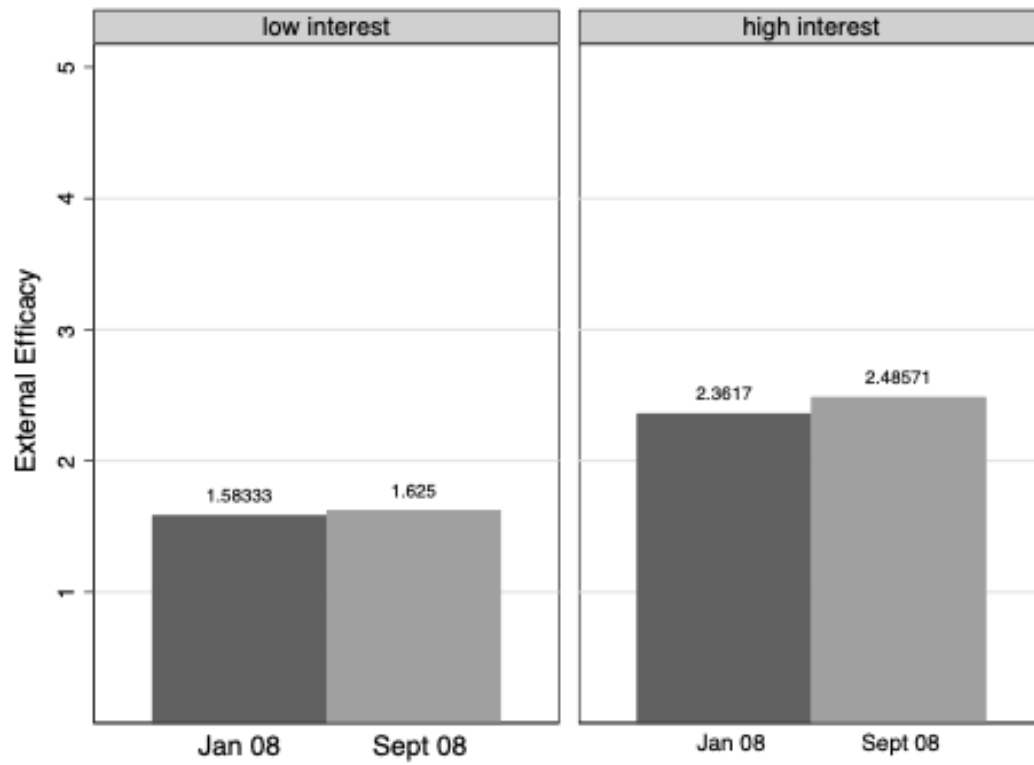


**Figure 17.** The Influence of Internet Usage on Political Interest Among MSN TV2 Satisfied Users

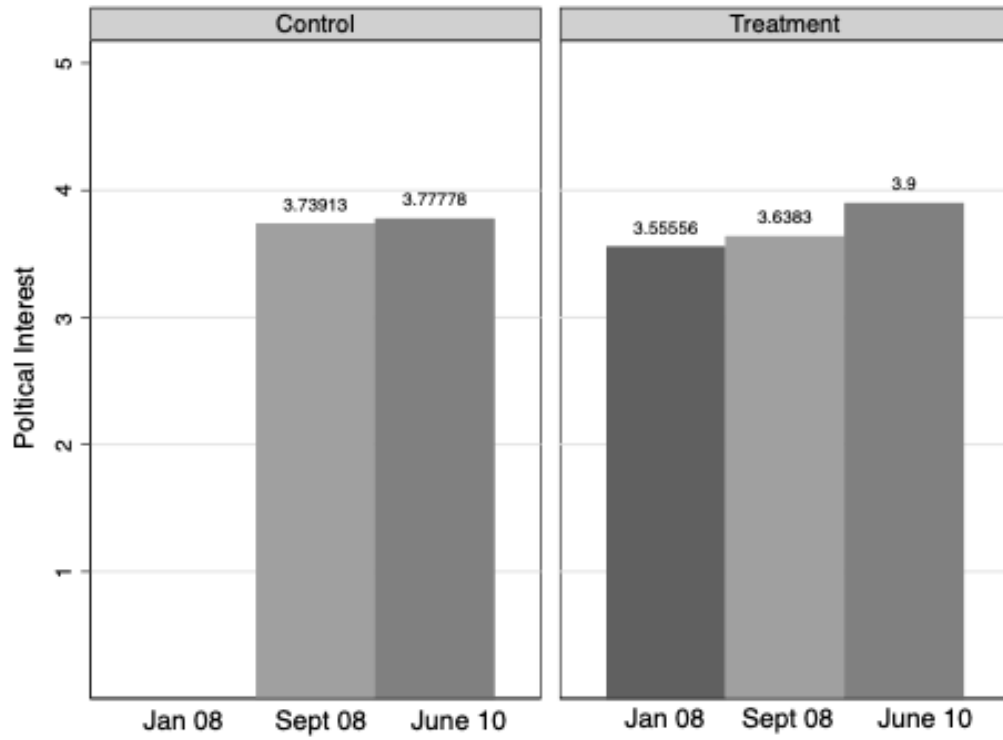


**Figure 18.** The Influence of Internal Usage on Internal Efficacy Among MSN TV2 Satisfied Users

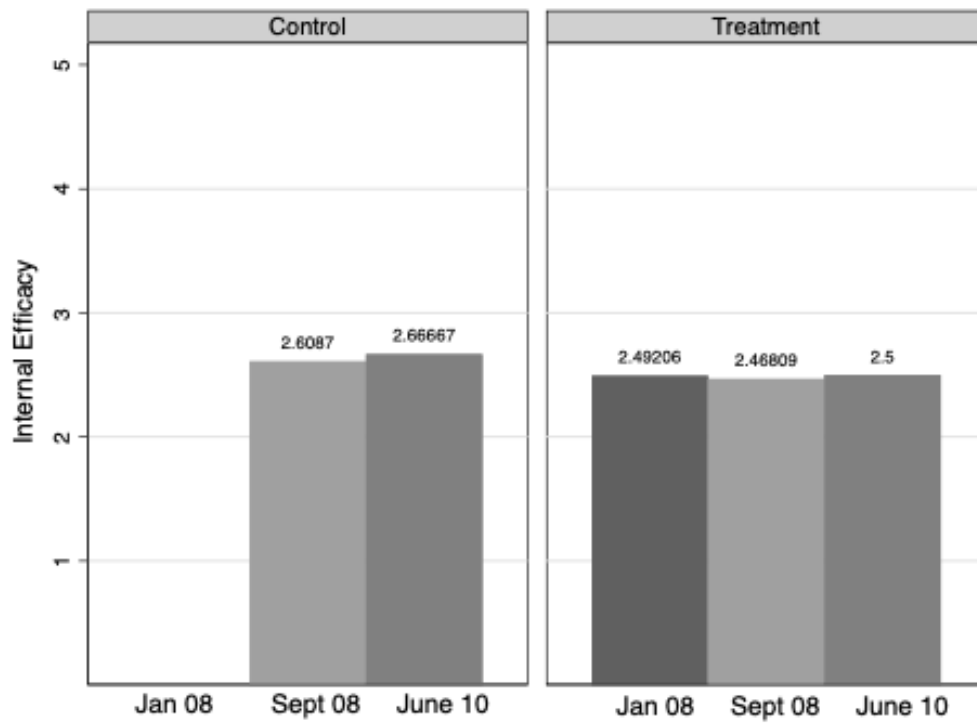


**Figure 19.** The Influence of Internet Usage on External Efficacy Among MSN TV2 Satisfied Users

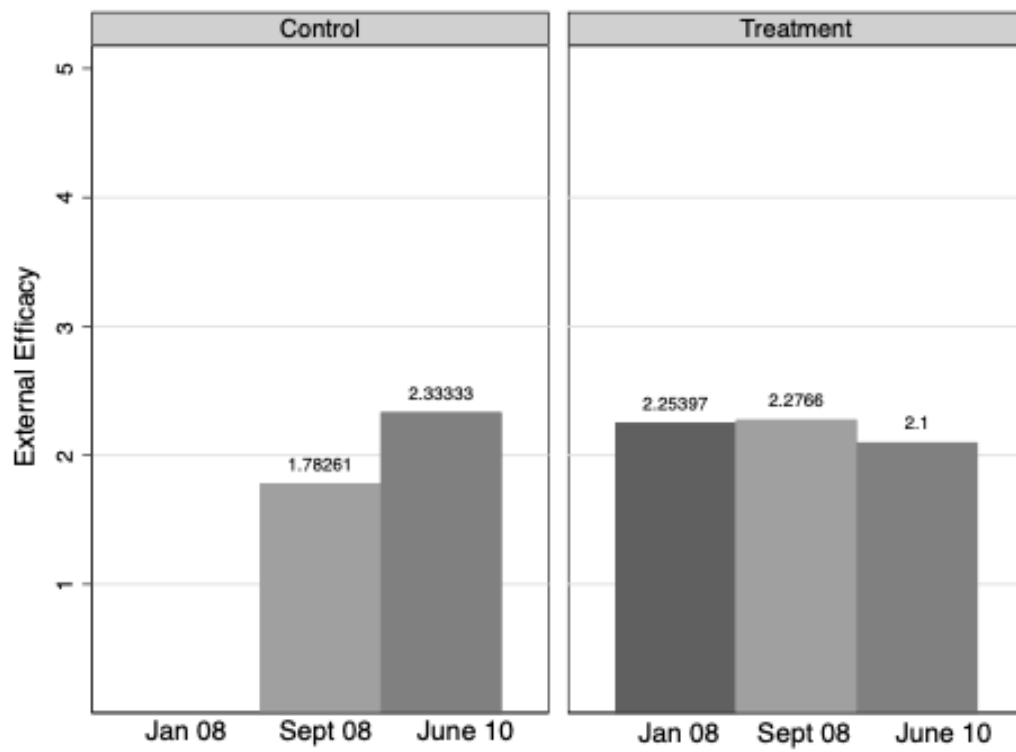
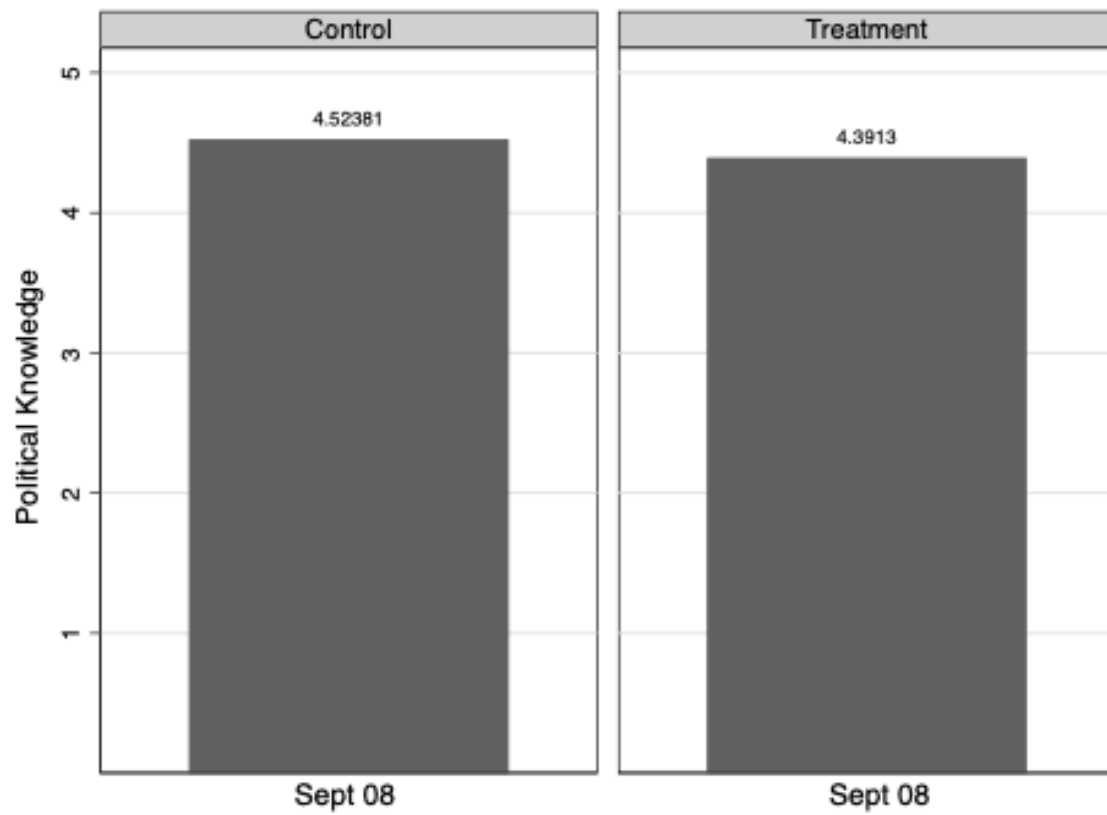


**Figure 20.** The Influence of Internet Usage on Political Knowledge Among MSN TV2 Satisfied Users



## Chapter 3: Social Media for News: The Impact on Social Capital and Political Participation

### **Abstract**

The consequences of social media use for democratic citizenship are strongly contested in the academic literature. There is no agreement on whether social media use is beneficial or detrimental to the accumulation of social capital and citizens' tendency to participate in politics. Much of this debate has been waged on the basis of relatively limited and narrow empirical evidence. This paper uses a large, population-wide and rich database to evaluate the typology of political participation, and compare citizens who use social media to acquire political information with others and examine whether news consumption on social media affects political participation and social capital. The results indicate a positive effect.

**Keywords:** social media; political participation; social capital; news consumption

The role of digital media has evolved immensely over the past twenty years – from the introduction of the Internet in the 1990s, to the emergence of social media in the 2000s, to the increasing use of social media for obtaining political news. The Internet has transformed traditional ways of civic communication and political participation, at least for certain demographics. The 2008 U.S. presidential election marked the first time that over half of American adults went online to actively search for political news, to obtain campaign information, or to discuss politics with others (Smith, 2009). The percentage of American adults using social media to follow current events, at least occasionally, has reached 68% in 2018 (Matsa & Shearer, 2018). The widespread use of social networking sites (SNS) for obtaining political information raises the questions of its consequences on citizens' interactions with each other and engagement with the society. This study focuses in this respect on political participation and social capital, and investigates two crucial questions conceptually and empirically: First, whether political participation online integrates into traditional offline participation or constitutes an entirely new mode of participation; Second, whether the use of the Internet, and social media in particular, tends to encourage political participation and increase social capital, or whether it distracts people from political activities and real-life interactions. While most research suggests positive effects from social media use, many existing studies are confined by small student samples, generalizability problems, limitations in survey measurements, which cast doubts on the validity of their findings.

This research intends to fill this gap in the literature and contribute to an assessment of the consequences of social media use for democratic citizenship by approaching this subject as an open question rather than making a simple assumption on positive or

negative effects. The empirical analysis is based on a large, population-wide and information rich database – the 2015 British Election Study (BES) Internet Panel. In contrast to the mainstream approach of distinguishing between online and offline participation forms (e.g., Theocharis & Lowe, 2016), my findings show that there is no empirical basis for such a distinction and that a single index for measuring online and offline participatory activities is empirically valid. The results suggest that the active use of the web and social media for the acquisition of political information and news is, on average, beneficial for the two aspects of democratic citizenship discussed in this research – social capital and political participation.

## **Social Capital and Political Participation**

Democratic citizenship entails numerous aspects, foremost amongst these are civic and political participation and the development of social capital – phenomena that themselves tend to be mutually reinforcing (Barber, 1984; Putnam, 2001). Social capital is considered an important foundation for political participation, while political participation fosters the accumulation of social capital.

The definition of *social capital* refers to ‘connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them’ (Putnam, 2001, p. 19). The literature has further identified two types of social capital: bonding and bridging (Putnam, 2001). Bonding exists in the connections within homogenous groups such as family and friends, who share information and resources. Bridging is built on interactions between diverse groups where people are loosely tied in life and not

emotionally connected. Bridging is, however, particularly important for building wider social and political connections as it transcends small groups.

Conceptually, *political participation* refers to “activity that has the intent or effect of influencing government action, either directly by affecting the making or implementation of public policy or indirectly by influencing the selection of people who make those policies” (Verba et al., 1995, p. 9). Traditional ways of political participation include voting, boycotting, demonstrating, attending rallies or meetings, donating money to political causes, and so on. In their seminal work, La Due Lake and Huckfeldt (1998) find that networks of social interaction and political communication generate politically relevant social capital, and that more social capital increases citizens’ likelihood of engaging in politics (see similar evidence in Gil de Zúñiga et al., 2012). Following up on their work – that took place before the emergence of social media – this paper seeks to assess the extent to which the use of social media affects social capital and political participation. In the following analysis, I first review relevant scholarly literature, then address my research questions with the 2015 BES data. The findings suggest that the use of social media for political purposes has a positive effect on both political participation and social capital.

## **Scholarly Debate and Limitations of Existing Studies**

The extant literature contains a recurrent debate on whether Internet use has a positive or negative effect on civic engagement or social capital. Early studies primarily find a positive effect of Internet access on civic engagement and voter turnout (Bimber, 2003; Bimber et al., 2015; Boulianne, 2009; Mossberger et al., 2007; Tolbert & McNeal, 2003).

The processes that are claimed to generate these positive effects include that the Internet promotes online interpersonal interaction and organizational activities while enhancing offline contact for users to stay connected in effective networks (see Ellison et al., 2007, 2011; Gil de Zúñiga et al., 2012; Wellman et al., 2001).

Over the last decade, as digital communications evolved, a large part of the debate switches its focus from Internet use to social media use and its effect on political participation and social capital. Studies find that people in Germany, Italy, and Britain with little interest in politics are reported to participate more often when accidentally exposed to political information on social media (Valeriani & Vaccari, 2016). Most research reports that the use of SNS benefits social capital, civic engagement such as voluntary social work, and political participation both online and offline (Bakker & De Vreese, 2011; Bode, 2012; Boulianne, 2020; Dimitrova et al., 2014; Fletcher & Nielsen, 2018; Gil de Zúñiga et al., 2012; Kim et al., 2013; Sajuria et al., 2015; Xenos et al., 2014).

The literature also reveals the negative impact of social media. A field experiment finds that Facebook campaign has no effect in facilitating discussions or mobilising participation (Foos et al., 2015). Young people are found to post mostly about sports and entertainment on Facebook (Baresch et al., 2011). Some assert that if the online platform is not used for political purposes, it drains available time for traditional offline political engagement (Kim et al., 2013). Facebook use has a negative impact on political participation among college students and young adults (Theocharis & Lowe, 2016; Vitak et al., 2011). Meanwhile, participation in online political groups does not necessarily

guarantee learning and understanding, as the exchanges on Facebook forums are not always informative in terms of quality and reliability (Conroy et al., 2012).

Some assert that Internet use decreases social capital by taking time away from offline activities and real-life interactions (Nie, 2001; Putnam, 2001). The argument seems to be supported by the finding that the more ideologically homogenous social media networks are, the more they create so-called ‘echo chambers’ and vice versa and that tends to undermine bridging social capital (Bond & Messing, 2015; Bakshy et al., 2015). Individuals, especially those with strong existing opinions, are more receptive to information that is consistent with their prior beliefs (Mutz, 2006; Lodge & Taber, 2013). When cross-cutting exposure brings ambiguity and confusion to one’s network, individuals refrain from political participation such as voting to avoid social pressure (Huckfeldt et al., 2004; Mutz, 2002).

In summary, there is no agreement in the extant literature on the wider effects of using social media, and whether these are beneficial or detrimental from the perspective of civic and political engagement of the citizenry (for a meta-analysis, see Boulianne, 2015). To some extent this may reflect differences in the context in which various studies were conducted, differences in the population under observation, and differences in indicators used for political participation and social capital. Admittedly, many studies are less than totally compelling when it comes to generalizable insights. For example, the majority of studies in the field are conducted in the American context, findings from which may not apply to countries with parliamentary rule or multi-party systems (Gil de Zúñiga et al., 2012; Yoo & Gil de Zúñiga, 2014). Many studies are based on rather small student samples, casting doubts on the extent that their conclusions can be extrapolated to

the national population (see Bode, 2012; Carlisle & Patton, 2013; Conroy et al., 2012; Vitak et al., 2011). Another serious limitation of the existing literature is that most research relies on survey data with very limited measurements of social media use, political participation or social capital (see Bode, 2012; Boukes, 2019). For instance, the consumption of online political information in the highly cited book, *Digital Citizenship* (Mossberger et al., 2007), was measured by a single survey question whether or not respondents read election news online. Bimber et al. (2015) asked only four survey questions on political participation and one vaguely quantified frequency question on obtaining political information online<sup>1</sup>. The narrow scope of variables in many published analyses raises concerns over the validity of conclusions which are, invariably, formulated in very broad and encompassing terms.

This chapter aims to contribute to the existing studies in twofold. First, despite the rapid growth of online participatory activities, there is a lack of systematic research assessing how they fit into the broader structure of participatory acts. This research looks into the nuances between various forms of online and offline political participation conceptually and empirically. The scaling analysis identifies a single underlying dimensions of political participation, showing that the common approach of distinguishing between online and offline participation has no empirical basis. Second, there are reoccurring challenges on measuring the relationship between social media use and political participation and social capital accumulation. This research contributes to the literature by addressing this problem with a recent national elections data with a large and varied number of indicators of social media use, political participation, and social capital. Compared with the data used by many of the earlier studies which relies on single

indicators, my data is much more comprehensive and have an advantage in improving the internal validity and generalizability of the findings.

## **Measuring Participation Types**

In terms of measuring political participation, whether online and offline participation should be regarded as empirically and conceptually distinct phenomena is a question that has not been thoroughly investigated. Most studies treat online and offline participation separately (see Dalton, 2017, pp. 132-133 for a critical analysis), or use ad hoc additive indexes to measure participation without having analysed whether the respective items reflect the same latent phenomenon (i.e., whether they are homogenous), or rely on Cronbach's  $\alpha$  as a surrogate for such a latent variable analysis (see Bode, 2012; Carlisle & Patton, 2013; Conroy et al., 2012; Gil de Zúñiga et al., 2012; Kim et al., 2013; Vitak et al., 2011; Yoo & Gil de Zúñiga, 2014). The caveat is that the  $\alpha$  coefficient does not evaluate the homogeneity of variables or their internal consistency (see Schmitt, 1996; Sijtsma, 2009) and is, moreover, highly influenced by sample size and the number of items in an index, neither of which is relevant for assessing the construct validity of a set of indicators. Another methodological problem is that researchers frequently use factor analysis to assess whether multiple indicators in their data reflect one or more latent variables (see, e.g., Bakker & De Vreese, 2011; Gibson & Cantijoch, 2013). As survey data are ubiquitously categorical in character, the assumption of factor analysis that the items are metric is violated, resulting in a high risk of over-dimensionalisation (Van der Eijk & Rose, 2015). The limitations in previous studies call for empirical improvements.

**Research Question 1:** Are online and offline participation two different types of political participation?

## **Evaluating the Effects of Social Media**

Social media sites such as Facebook, Twitter, Instagram, and Snapchat have amassed billions of users around the world. The intense popularity of social media could enhance social and political interactions among individuals. More than just connecting family and friends, social media has become an important source of political information. By helping members develop a commitment to the online community, social media fosters norms of reciprocity and provides incentives for political and civic engagement. While some people may use the Internet broadly (e.g., news websites, video stream sites, etc) to follow political news, some may use social media to obtain political information or engage in non-political activities. The extent to which social media affects political participation and social capital may as well vary depending on whether people use it for political information. If they do, and given that many conventional offline forms of political participation can now easily be carried out online – e.g., making a campaign donation, signing a petition, or contacting political representatives – the question to be addressed is whether those who get politically informed online will also be politically involved.

**Research Question 2:** To what extent does using social media for acquiring political news affect social capital and political participation?

It is unclear whether obtaining political news from the Internet in general or from social media has different impacts on participatory behaviour. Is an interactive platform,

as provided by social media, more effective and powerful in influencing political participation and social capital? Social media features such as ‘liking,’ ‘sharing,’ ‘mentioning,’ and ‘hashtag commenting,’ offer more personal interactions than traditional media, and have the potential to stimulate political discussions across heterogeneous groups, enhance bonds of connectedness, and foster the growth of social capital. Individuals have the option to choose from whom to receive updates, which news outlet to subscribe to, and what opinions to accept or disregard. Quite possibly, the information, persuasion, or mobilization received by individuals through SNS are therefore more persuasive than what comes from the traditional media online (e.g., newspaper websites, broadcast channels, etc). The networks, norms, and social trust formed on social media will likely facilitate action and cooperation for collective benefit.

***Research Question 3:*** Is following news on social media more influential than on the Internet in general, with regard to fostering social capital and stimulating political participation?

## **Data**

I use the 2015 BES Internet Panel<sup>2</sup> to examine the effect of social media use on political participation and social capital. The BES is a large, population-wide and rich database, with approximately 30,000 respondents across England, Scotland, and Wales in each wave.

## ***Dependent Variables***

This study looks at two dependent variables: political participation and social capital. The measurement of political participation is operationalised based on participation types that

were identified by the literature. In particular, Teorell, Torcal, and Montero (2007, p. 343) proposed five modes of participation: voting, party activity, consumer participation, contacting, and protest activity. Recent scholarly work suggested digitally networked forms of participation as a new mode in the taxonomy of participation (Gibson & Cantijoch, 2013; Theocharis & van Deth, 2018). The 2015 BES data in my research contains questions that cover all six types of participation in online and offline forms. Table 3.1 presents the details of the 21 items on participation measurement, together with their ‘difficulty’ levels (the percentage of people self-reported that they have used that form of participation), and whether or not the MSA analysis allowed them to be combined into an overall aggregate measure.

**Table 3.1.** Index items for political participation

| Survey Question                                                                          | Variable Name           | Selected Items | Participated (%) |
|------------------------------------------------------------------------------------------|-------------------------|----------------|------------------|
| Did you manage to vote in the General Election?                                          | <i>voteGE</i>           | √              | 93.79            |
| <b><i>During the last 4 weeks, have you...</i></b>                                       |                         |                |                  |
| visited the website of a candidate, other than on Twitter and Facebook;                  | <i>visitPartySiteW5</i> | √              | 8.97             |
| personally posted or shared any political content on Facebook;                           | <i>shareOnFBW5</i>      | √              | 11.01            |
| personally posted or shared any political content on Twitter;                            | <i>shareOnTwitterW5</i> | √              | 6.02             |
| personally posted or shared any political content through email;                         | <i>shareOnEmailW5</i>   | X              | 2.73             |
| personally posted or shared any political content through instant messaging;             | <i>shareOnIMW5</i>      | √              | 1.39             |
| personally posted or shared any political content on another website or online platform? | <i>shareOnWebW5</i>     | X              | 1.53             |
| <b><i>During the last 7 days, have you...</i></b>                                        |                         |                |                  |
| done any work on behalf of a political party or action group;                            | <i>ptp1w5</i>           | √              | 3.91             |
| given any money to a political party, organization or cause;                             | <i>ptp2w5</i>           | √              | 3.84             |
| displayed an election poster;                                                            | <i>ptp3w5</i>           | √              | 4.38             |
| listened to or watched a party election broadcast;                                       | <i>ptp4w5</i>           | √              | 33.44            |
| read a campaign leaflet/letter, text message or email from a political party;            | <i>ptp5w5</i>           | X              | 41.18            |
| tried to persuade somebody which party they should vote for.                             | <i>Ptp6w5</i>           | √              | 11.51            |
| <b><i>During the last 12 months, have you...</i></b>                                     |                         |                |                  |
| contacted a politician, government or local government official;                         | <i>ptp5w6</i>           | √              | 22.77            |
| signed a petition on the Internet;                                                       | <i>ptp6w6</i>           | X              | 42.20            |
| signed a petition not on the Internet;                                                   | <i>ptp7w6</i>           | X              | 10.28            |
| done any work on behalf of a political party or action group;                            | <i>ptp8w6</i>           | √              | 7.23             |
| given any money to a political party, organization or cause;                             | <i>ptp9w6</i>           | √              | 12.08            |
| taken part in a public demonstration;                                                    | <i>ptp10w6</i>          | √              | 4.35             |
| bought – or refused to buy – any products for political or ethical reasons;              | <i>ptp11w6</i>          | X              | 19.58            |
| gone on strike or taken industrial action?                                               | <i>Ptp12w6</i>          | X              | 1.98             |

It is important to note that although the BES data is known as a panel, many of its variables are not measured repeatedly in every wave, but rather, in selected waves or in a single wave. This is also the case for the variables listed in Table 3.1. Some of the items constituting the independent variable political participation are measured in wave 5 and

others in wave 6. Therefore, adequate coverage for the measurement of political participation would require an aggregation of items from wave 5 and wave 6. Importantly, this combination of information across waves should not be a problem because these two waves were fielded subsequently in time, with wave 5 from March 31<sup>st</sup> to May 6<sup>th</sup>, 2015 and wave 6 from May 8<sup>th</sup> to May 26<sup>th</sup>, 2015. It is implausible that during days of interval, the relevance of these items as indicators of the latent variable political participation has changed, or that the location of the items in either of these waves has affected the results of the scale analysis (see Appendix 1 for Chapter 3). Moreover, irrespective of whether these items were observed in wave 5 or wave 6, they comply with the logic of the block-recursive approach by having been measured not before any of the independent or control variables.

My second dependent variable is social capital. The measurement of social capital is operationalised based on the questions focusing on bonding and bridging types of social capital such as professional relations, social networks and resources. The questionnaire provides a large number of relevant items. There are 18 items from wave 7 of the survey<sup>3</sup> pertaining to social capital measurement, asking whether respondents' network contains people in certain occupations, people of professional skills, and people who can offer help when needed (see details in Table 3.2). The answers to each question are coded (1) "yes" and (0) "no."

**Table 3.2.** Index items for social capital

| Survey Question                                                                    | Variable Name        | Items Selected | Yes (%) |
|------------------------------------------------------------------------------------|----------------------|----------------|---------|
| <b><i>Do you personally know someone who...</i></b>                                |                      |                |         |
| is a reliable tradesman;                                                           | <i>access1wave7a</i> | X              | 64      |
| can speak another language fluently;                                               | <i>access1wave7b</i> | √              | 50      |
| knows how to fix problems with computers;                                          | <i>access1wave7c</i> | X              | 70      |
| knows a lot about government regulations;                                          | <i>access1wave7d</i> | √              | 22      |
| has good contacts with the local newspaper, radio or TV;                           | <i>access1wave7e</i> | √              | 17      |
| knows a lot about health and fitness;                                              | <i>access1wave7f</i> | √              | 44      |
| works for your local council;                                                      | <i>access2wave7a</i> | X              | 26      |
| is a local councillor;                                                             | <i>access2wave7b</i> | X              | 26      |
| is in a position to hire other people;                                             | <i>access2wave7c</i> | √              | 31      |
| has a profession such as a lawyer, teacher or accountant;                          | <i>access2wave7d</i> | √              | 63      |
| gives you sound advice on your work;                                               | <i>access3wave7a</i> | √              | 40      |
| helps you with small jobs around the house;                                        | <i>access3wave7b</i> | √              | 68      |
| does your shopping if you are ill or looks after your home or pets if you go away; | <i>access3wave7c</i> | √              | 69      |
| lends you money;                                                                   | <i>access3wave7d</i> | √              | 46      |
| discusses politics with you;                                                       | <i>access3wave7e</i> | √              | 55      |
| gives you sound advice on legal or money matters;                                  | <i>access3wave7f</i> | √              | 36      |
| gives you a good reference for a job;                                              | <i>access3wave7g</i> | √              | 60      |
| helps you to find somewhere to live if you had to move home?                       | <i>Access3wave7h</i> | √              | 36      |

To determine which items from Table 3.2 can be aggregated into a single composite index of social capital, I use MSA<sup>4</sup> to perform a scaling test. The results show that the MSA combines all items into one scale, without distinguishing between bonding and bridging social capital. In total, 14 items were selected as fitting ones. The resulting variable *social capital* ranges from 0 to 14 (Mean=6.39, SD=3.80)<sup>5</sup>.

### ***Independent Variables***

The independent variables are all measured at wave 5 of the BES data. The first independent variable *internetinfo* is the amount of time one spends per day following news about politics on the Internet. The survey question asks, “During the last seven days, how much time have you spent per day following news about politics or current

affairs on the Internet?” The answers are coded as (1) “none, no time at all,” (2) “less than ½ hour,” (3) “½ hour to 1 hour,” (4) “1 to 2 hours,” and (5) “more than 2 hours.”

I constructed the second independent variable *socialmediause* by aggregating two variables measuring the use of social media: one survey question asks, “Do you use Facebook?” and the other asks, “Do you use Twitter?” The answers are coded as (1) “yes” and (0) “no.” The combination of both items into a composite measure (*socialmediause*) is justified in view of the two items forming a strong Mokken scale ( $H=0.58$ ). The score on this measure ranges from 0 to 2, with 0 denoting respondents use neither Facebook nor Twitter, 1 that respondents use either Facebook or Twitter, and 2 that respondents use both.

The third independent variable *socialmediainfo* is based on the question “In the last four weeks, have you read news or found information about the upcoming general election or politics more generally that was posted on Facebook/Twitter by any of the following people?” The answers include candidates or parties, someone you know personally, or other people on Twitter/Facebook, each coded as (1) “yes” and (0) “no.” The questions on Facebook and Twitter are aggregated into a single variable *socialmediainfo*. Ranging from 0 to 6, it measures the extent to which respondents acquire political information from social media. The Mokken scaling shows that these two items form a single scale and reflect the same latent dimension ( $H_i=0.44$ ). Note that *socialmediause* only indicates whether one uses Facebook or Twitter, regardless for what purpose one does so, while *socialmediainfo* shows whether they are used for obtaining political information.

The variables *socialmediause* and *socialmediainfo* are generated based on the use of Facebook and Twitter. They do not cover all social media platforms that were available in the U.K. at the time of 2015 because the BES did not probe the use of other platforms. Nevertheless, Facebook and Twitter were the among the most popular social media sites in 2015 (Duggan, 2015) and had a large user base in the UK. Analysing available data associated with these two platforms is meaningful for illustrating the relationships between social media use and political participation.

In spite of the Mokken scaling results mentioned earlier, one might wonder whether the combination of Facebook and Twitter in composite measures would conceal any remarkable differences between the effects of these two platforms. To demonstrate the validity of using additive social media measures rather than individual variables, I estimate individual effects of Facebook and Twitter in separate models (see Table 2 and Table 3 in Appendix 1). The results show that both Facebook and Twitter use have a similar size of positive effect on political participation. Therefore, it is safe to conclude that there are neither conceptual nor empirical ground to distinguish and examine the effects of these two variables separately on political participation.

It is important to acknowledge that there are inevitable correlations between three independent variables and that it would be difficult to fully distinguish their effects. Table 3.3 shows the correlation coefficient between using social media and following news on the Internet is relatively weak at 0.236. The correlation coefficient between social media use and news following on social media is 0.487. The correlation coefficient between following news online and following news on social media is 0.447. These correlations show that there is a degree of overlap between these three types of online users, such as

those who use social media may also actively use social media for news. However, these correlations do not affect the validity of results from the block recursive modelling in Table 3.4, as it relies on comparing the differences in  $R^2$  of the dependent variable generated by different sets of independent variables.

**Table 3.3.** The correlation between the independent variables

|                                      | Social Media Use (IV1) | Following News Online (IV2) | Following News on Social Media (IV3) |
|--------------------------------------|------------------------|-----------------------------|--------------------------------------|
| Social Media Use (IV1)               | 1.000                  |                             |                                      |
| Following News Online (IV2)          | .236*                  | 1.000                       |                                      |
| Following News on Social Media (IV3) | .487*                  | .447*                       | 1.000                                |

### ***Control Variables***

Control variables are included in the analysis to avoid attributing effects to the independent variables which merely reflect relevant antecedent differences in other factors that also have an impact on participation and social capital. The controls consist of demographic factors: *age*, *gender*, *education*, and *income*<sup>6</sup>. *Political interest* (Bimber et al., 2015)<sup>7</sup>, *strength of party identification* (Dilliplane, 2011)<sup>8</sup>, and *retrospective evaluations*<sup>9</sup> of the general economic situation in the country (Rosenstone, 1982) are controlled to avoid self-selection and confounding effects on our estimates of how Internet and social media use influence political participation and social capital. Social integration elements such as *marital status*<sup>10</sup> and *church attendance*<sup>11</sup> are also antecedent

factors from which people may derive social capital. Both variables are used as controls in the analysis of social capital. The control variables are measured at wave 5 or wave 6 of the BES data.

## **Methodological Design**

The fundamental methodological challenge lies in identifying the sequence of causal direction: does social media usage contribute to political participation and social capital, or does social media usage merely reflect pre-existing difference in participation and social capital? This research attempts to get around the potential endogeneity problem by using a block recursive modelling procedure. Specifically, causal antecedence determines the allocation of predictor variables to the respective blocks of independent variables. I first explain variance in the dependent variables (political participation and social capital) with independent variables other than social media usage that we are interested in and that are plausibly antecedent to the latter in causal terms. Only thereafter is social media usage added as an independent variable. The addition in explanatory power of the model can then not be attributed to sundry factors that could be seen as causal antecedents of political participation and of social media usage.

The plausibility of this approach rests on two assumptions. First, the distinction of explanatory factors in terms of causal antecedence is substantively convincing. Second, that the blocks of independent variables used before the inclusion of social media use variables exhaust the pool of relevant antecedent factors sufficiently to dispel serious endogeneity concerns. I believe that the first assumption is rather unproblematic (which is discussed later in detail). The second assumption pertains to the absence of potentially

omitted variables of importance. The models reported in this research incorporate a comprehensive list of explanatory factors suggested by the literature. This, however, does not necessarily eliminate the possibility of omitted explanatory factors of relevance, because that can never be dispelled with certainty. Given that the controls in the model effectively reduce endogeneity risks, I would expect any subsequent critique in this aspect to be more concrete than a general suspicion of endogeneity and to be specific about which variables should also have been included in the model. Finally, it is important to acknowledge that block recursive modelling does not *solve* the causality or endogeneity problems, yet this inability is shared with many other analytical procedures such as structural equation modelling and the use of instrumental variables. The merit of block recursive modelling lies in that it can migrate these problems to a degree that substantive results about the effect of the independent variables of primary interest can be seen as beyond reasonable doubt. By doing so, the modelling procedure sheds light on our understanding of whether and to what extent an independent variable affects the outcome variable.

## **Results**

The analysis starts with addressing the first research question whether various kinds of participation need to be regarded as conceptually different (in which case they all require separate operationalizations), whether they are all manifestations of a single concept (in which case a single composite index will suffice), or whether only some (but not all) of these suggested distinctions warrant separate measures.

To overcome the traditional methodological shortcomings in assessing what kind of distinctions are warranted within the set of items about participation, I use an ordinal nonparametric item-response modelling – the Mokken scaling analysis. In view of the dichotomous character of all items<sup>12</sup>, MSA is the most appropriate method to assess which items can be regarded as reflecting a unidimensional latent variable – for example, political participation in this instance; the items that do so are referred to as a scale. Their scores can be validly combined to obtain a measure of the latent variable that is more reliable and provides more discrimination than any of its constituent items (Mokken, 1971; Van Schuur, 2003).

The MSA results (see Appendix 1 for Chapter 3 for details) show that most of the specific forms of participation covered by the questionnaire reflect a single latent continuum. Specifically, 14 of 21 items in Table 3.2 reflect the same latent phenomenon (which is labelled as ‘political participation’) and are aggregated into a composite index. The scores on this scale range from 0 to 14 (Mean=2.25, SD=2.00). This large range justifies this scale to be treated as metric and to be used as dependent variable in linear regressions. The seven items that are not included in the scale do not represent a different individual latent trait (i.e., they do not represent a different dimension of participation, but deviate from the other items because they do not reflect exclusively participation, but also other, unrelated phenomena – see more details in Appendix 1 for Chapter 3).

The MSA results indicate that there is no empirical basis for the frequently used conceptual (and thus also operational) distinctions between online and offline participation<sup>13</sup>. Evidently, since Internet use has become widespread, online and traditional offline participation have been inextricably intertwined. Theoretically and

conceptually, it is neither necessary nor useful to differentiate between online and offline participation.

Next, I use block-recursive modelling to address my second and third research questions. There are four sets of regressions in the block-recursive modelling: a base model that only contains controls and three other models each with different independent variables to examine the extent that online news consumption influences political participation or social capital. All four models control for relevant factors that are antecedent to social media use. The coefficient of the independent variable in each regression is the direct effect on the outcome, from which we can see the magnitude of the effect. The changes in variance explained (the  $\Delta R^2$ ) from each model reflect the explanatory power of that model compared to the base model, an increase that can be entirely attributed to the respective independent variable. These effects are not mediated impacts from antecedent factors, as is clear from the addition to the explanatory power of the base model.

Table 3.4 shows the results of four different regression models in each of which political participation is the dependent variable: a baseline model containing only control variables and three models in which different variables of Internet use and social media use are used in turn as independent variables. Model 1 shows that *social media use* has a positive effect on political participation (direct effect=0.292,  $p<0.001$ ). This effect is not contaminated by other factors; rather, it is an additional explanatory power, which is a mere 1.85% (see  $\Delta R^2$ ). Model 2 replaces the independent variable by *following political news on the Internet*. This variable provides a significant additional explanation of political participation over the Base Model (direct effect=0.336,  $p<0.001$ ), which is

stronger than *social media use* in Model 1 ( $\Delta R^2 = 6.27\%$ ). Model 3 includes independent variable *whether one uses social media (Facebook or Twitter) as a source of political information*. The results show a positive effect (direct effect = 0.727,  $p < 0.001$ ) with a remarkable addition to the explanatory power of the model ( $\Delta R^2 = 23.55\%$ ). In other words, after controlling for the most plausible antecedent factors, I find that both social media use and Internet use for political information have a modest positive effect on political participation. The overall model shows no evidence of multicollinearity of a degree that is concerning.

Importantly, the block-recursive models show that social media use for political information accounts for more variance in the dependent variable political participation than getting political information on the Internet or simply using social media, holding other factors constant. The overall model estimates all three independent variables simultaneously and shows that both following news on the Internet and on social media have a significantly positive effect on political participation, whereas simply using social media does not have a significant effect. The results show an addition to the explanatory power of the base model ( $\Delta R^2 = 25.36\%$ ).

**Table 3.4.** Linear regression and block-recursive models on political participation

|                                                 | Base Model          | Model 1             | Model 2             | Model 3             | Overall Model       |
|-------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b><i>IVs</i></b>                               |                     |                     |                     |                     |                     |
| Following News on Social Media                  | —                   |                     | —                   | .727***<br>(.042)   | .701***<br>(.046)   |
| Following News Online Social Media Use          | —                   | .292***<br>(.069)   | .336***<br>(.043)   | —                   | .187***<br>(.039)   |
|                                                 | —                   |                     | —                   | —                   | -.113<br>(.064)     |
| <b><i>Controls</i></b>                          |                     |                     |                     |                     |                     |
| Age                                             | .004<br>(.004)      | .009*<br>(.004)     | .010**<br>(.004)    | .013***<br>(.003)   | .014***<br>(.003)   |
| Gender                                          | -.129<br>(.093)     | -.098<br>(.093)     | -.149<br>(.090)     | -.059<br>(.080)     | -.087<br>(.079)     |
| Education                                       | .074*<br>(.032)     | .067*<br>(.032)     | .059<br>(.031)      | .024<br>(.028)      | .019<br>(.028)      |
| Income                                          | .020<br>(.016)      | .018<br>(.015)      | .013<br>(.015)      | .004<br>(.013)      | .002<br>(.013)      |
| Political Interest                              | .569***<br>(.065)   | .559***<br>(.064)   | .420***<br>(.066)   | .400***<br>(.057)   | .326***<br>(.058)   |
| Strength of Party Identification                | .266***<br>(.054)   | .261***<br>(.053)   | .213***<br>(.052)   | .169***<br>(.046)   | .146**<br>(.046)    |
| Economic retrospective evaluation               | .172***<br>(.047)   | .165***<br>(.046)   | .138**<br>(.045)    | .124**<br>(.040)    | .106**<br>(.040)    |
| Constant                                        | -1.553***<br>(.375) | -1.977***<br>(.384) | -1.771***<br>(.362) | -1.262***<br>(.320) | -1.221***<br>(.333) |
| R <sup>2</sup> (%)                              | 17.35%              | 19.20%              | 23.62%              | 40.90%              | 42.71%              |
| ΔR <sup>2</sup><br>(compared to the base model) |                     | 1.85%               | 6.27%               | 23.55%              | 25.36%              |
| N                                               | 786                 | 786                 | 782                 | 776                 | 773                 |

Note: Cells represent coefficients and standard errors of linear regression models for information source toward political participation. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

It would be useful to know if any socioeconomic groups benefit more from the use of new information technology. To explore heterogeneity of the effects across groups,

Table 3.5 presents the interaction effects of various socioeconomic factors and social

media use. The results show that the boost to political participation from social media use is significantly stronger for those who are more interested in politics and those with stronger partisan identification than their counterparts. There are no significant interaction effects associated with age, gender, education, income, or economic retrospective evaluation.

**Table 3.5.** Heterogeneity effects of social media use

| Variables                         | Interaction effect with <i>socialmediause</i> |
|-----------------------------------|-----------------------------------------------|
| age                               | .004                                          |
| gender                            | .140                                          |
| education                         | .068                                          |
| income                            | .004                                          |
| political interest                | .283**                                        |
| strength of party identification  | .172*                                         |
| economic retrospective evaluation | -.045                                         |

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Likewise, Table 3.6 presents the interaction effects of socioeconomic factors and getting politically informed on social media. The results show that the boost to political participation from getting informed on social media is significantly stronger for older people and those who are more interested in politics, compared with their counterparts. Overall, the fact that only a few of the interaction effects are statistically significant and other interactions do not have significant effects suggests that there is little heterogeneity in terms of socioeconomic background when analysing the effects of using social media.

**Table 3.6.** Heterogeneity effects of social media information

| Variables                         | Interaction effect with <i>socialmediainfo</i> |
|-----------------------------------|------------------------------------------------|
| age                               | .006*                                          |
| gender                            | .092                                           |
| education                         | .029                                           |
| income                            | -.010                                          |
| political interest                | .374***                                        |
| strength of party identification  | .087                                           |
| economic retrospective evaluation | -.019                                          |

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Lastly, I look at how Internet and social media use influence social capital. In a similar block-recursive structure, Table 3.7 presents five regression models: a base model and three other models with different independent variables and an overall model with all effects estimated simultaneously. The antecedent factors that might influence social capital are in the controls. The base model shows that demographics and social factors account for 12.05% of the variance in the dependent variable social capital. Model 1 looks at the effect of using social media, which has a positive effect on social capital (direct effect=0.171,  $p=.363$ ) but this variable increases the explained variance in social capital hardly at all ( $\Delta R^2=0.24\%$ ). It indicates that this independent variable functions mainly as a mediator for other variables, which are included in the base model, and that it does not by itself adds explanatory power. Getting political information on the Internet (Model 2) is also positively associated with social capital (direct effect=.232,  $p=.057$ ). Here again, it adds a little to the total explained variance ( $\Delta R^2=0.72\%$ ). In Model 3, we

see that the independent variable, acquiring political information from social media, also adds explanatory power to the base model, although only by a small margin ( $\Delta R^2=0.68\%$ ); the direct effect is stronger compared with other independent variables (direct effect=.294,  $p=.062$ ). The results show using social media or Internet for obtaining political news adds more explanatory power than simply being a social media user, albeit by a small margin. Individuals who spend more time following news or political affairs online have, on average, more social capital than those who do not. The overall model estimates all three independent variables simultaneously and finds that following news online or on social media has a positive effect on social capital. The results show an addition to the explanatory power of the base model ( $\Delta R^2= 1.05\%$ ).

**Table 3.7** Linear regression and block-recursive models on social capital

|                                                 | Base Model        | Model 1           | Model 2           | Model 3           | Overall Model     |
|-------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b><i>IVs</i></b>                               |                   |                   |                   |                   |                   |
| Following News on Social Media                  | —                 | —                 | —                 | .294<br>(.157)    | .237<br>(.176)    |
| Following News Online Social Media User         | —                 | .171<br>(.188)    | .232<br>(.122)    | —                 | .170<br>(.128)    |
|                                                 | —                 | —                 | —                 | —                 | .020<br>(.206)    |
| <b><i>Controls</i></b>                          |                   |                   |                   |                   |                   |
| Age                                             | -.017<br>(.011)   | -.015<br>(.012)   | -.014<br>(.011)   | -.016<br>(.011)   | -.013<br>(.012)   |
| Gender                                          | -.590*<br>(.273)  | -.561*<br>(.274)  | -.660*<br>(.276)  | -.576*<br>(.273)  | -.639*<br>(.278)  |
| Education                                       | .356***<br>(.093) | .356***<br>(.093) | .357***<br>(.093) | .356***<br>(.093) | .361***<br>(.094) |
| Income                                          | .146**<br>(.044)  | .138**<br>(.044)  | .133**<br>(.045)  | .134**<br>(.044)  | .129**<br>(.045)  |
| Marital Status                                  | .451<br>(.637)    | .490<br>(.638)    | .460<br>(.636)    | .680<br>(.644)    | .668<br>(.646)    |
| Church Attendance                               | .228**<br>(.073)  | .229**<br>(.073)  | .234**<br>(.073)  | .226**<br>(.073)  | .231**<br>(.073)  |
| Political Interest                              | .693***<br>(.191) | .730***<br>(.194) | .647**<br>(.197)  | .636**<br>(.195)  | .585**<br>(.201)  |
| Party Identification                            | -.053<br>(.169)   | -.042<br>(.169)   | -.073<br>(.169)   | -.012<br>(.169)   | -.026<br>(.171)   |
| Economic retrospective evaluation               | .054<br>(.145)    | .038<br>(.145)    | -.0002<br>(.146)  | .003<br>(.146)    | -.025<br>(.147)   |
| Constant                                        | 2.096<br>(1.128)  | 1.762<br>(1.180)  | 1.916<br>(1.131)  | 2.056<br>(1.136)  | 1.896<br>(1.206)  |
| R <sup>2</sup> (%)                              | 12.05%            | 12.29%            | 12.77%            | 12.73%            | 13.10%            |
| ΔR <sup>2</sup><br>(compared to the base model) |                   | 0.24%             | 0.72%             | 0.68%             | 1.05%             |
| N                                               | 647               | 645               | 642               | 642               | 637               |

Note: Cells represent coefficients and standard errors of linear regression models for information source toward social capital. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

## Conclusions

As demonstrated in the review of the extant literature, the debate about the effects of social media on political participation and social capital has not yet resulted in a consensus. Moreover, much of this literature is poorly generalisable owing to small and unrepresentative samples, and weakness in measurement and operationalization. The study presented here has a much firmer basis in a large, nationally representative sample and a questionnaire that contains large numbers of relevant items for all variables that are of central interest. The results show that Internet and social media use tend to have a positive effect on political participation, particularly when they are used to acquire political information. These findings contradict the notion that using social media decreases general political participation (Theocharis & Lowe, 2016; Vitak et al., 2011), and they support Gil de Zúñiga and his colleagues' (2012) conclusion that use of SNS for political information has a positive effect on political participation (see Dimitrova et al., 2014; Gil de Zúñiga et al., 2014; Xenos et al., 2014).

With respect to social capital, the findings are weaker in terms of effect sizes and the extent to which the independent variable add explanatory power to that of antecedent factors. Importantly, however, these findings contradict Putnam's (2001, p. 479) premise that online interactions are unlikely to foster social capital. My findings demonstrate that news consumption on social media is a positive predictor of social capital accumulation. By making communication more efficient online, the Internet – and social media in particular – creates new opportunities for citizens to get informed and stay connected. A persistent question in the study of political participation is whether social media can help reduce the participatory gap between the active and the disengaged. This study shows

social media itself is not the source of political apathy – the problem is whether people *want* to make use of this platform to get politically informed or involved. In participatory democracy, perhaps more emphasis should be put on citizens' responsibility to actively engage in the political process such as information seeking. As an information medium, social media does seem to be more effective than general Internet sources in encouraging political participation and building social capital.

One emerging question that is not addressed by this study is how social media has transformed the way people obtain their information and the way they make sense of the political world. Future research should look at individual opinion formation on social media and whether the public is better informed when spending more time following political news on social media in comparison with traditional news outlets such as radio, television and newspaper.

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## Endnotes

1. The single measure was based on a 4-point scale from ‘not at all’ to ‘a great deal.’
2. The details of the survey data are available at the BES website:  
<https://www.britishelectionstudy.com/data-object/british-election-study-combined-wave-1-20-internet-panel/> Using an Internet panel to assess effects of using social media for obtaining political news comes with the potential caveat that the sample might be biased towards those with pre-existing familiarity with online forms of communication. If so, it would increase the likelihood of non-significant effects and Type-II errors. As it turns out, I do find significant effects, and I conclude that this potential caveat does not impede the productive use of these data to address my research questions.
3. BES wave 7 data was collected between 14<sup>th</sup> April 2016 and 4<sup>th</sup> May 2016.
4. The Mokken scaling is appropriate because it can apply to ordered categorical survey data and the items here are a small number of categorical indicators. Individuals sort themselves on a unidimensional continuum based on their personal access to various social resources. All the items are coded in the same direction from negative to positive. The indicators are cumulative and measure the same latent trait.
5. See scaling details in Appendix 2 for Chapter 3.
6. *Age* is coded continuously based on one’s actual age, ranging from 18 and up. *Gender* is coded (1) “male” and (0) “female.” *Education* is coded as (0) “No qualification,” (1) “GCSE D-G,” (2) “GCSE A\*-C,” (3) “A-level,” (4) “undergraduate,” and (5) “postgraduate.” *Income* is a categorical variable derived from a respondent’s total household income in the past 12 months.

7. One's interest in the general election are coded as (1) "not at all interested," (2) "not very interested," (3) "somewhat interested," and (4) "very interested."

8. *Party identification* is coded as (0) "no affiliation," (1) "not very strong," (2) "fairly strong," and (3) "very strong."

9. *Economic retrospective evaluation* of this country over the last 12 months is coded from (1) "got a lot better" to (5) "got a lot worse."

10. *Marital status* is coded as (1) "in a relationship or married" and (0) "single."

11. *Church attendance* is coded continuously from (1) "never" to (6) "once a week or more."

12. I use respondents (N=27,926) who participated in wave 5 and wave 6 for political participation measurement. Their answers to each question are coded (1) "yes" and (0) "no."

13. Whether this conceptual distinction has any empirical basis has rarely been tested and is generally based on researchers' fiat. A rare exception is the study by Oser, Hooghe, and Marien (2013), which employs a systematic approach to probe whether online and offline forms of participation are of a different kind. Using latent class analysis (LCA), the authors conclude that online participation is a distinctive form of political participation (see an analysis of conceptualising digitally networked participation in Theocharis, 2015). The problem with Oser et al.'s analysis is that LCA is a probabilistic form of clustering technique that distinguishes between types of *participators*, not types of *participation*. These are two different issues (see analysis in Verba & Nie, 1972, p. 73); one cannot make inferences about the latter based on analyses of the former.

## Appendix 1 for Chapter 3: Measuring Political Participation

The BES questionnaires contain 21 questions about respondents' online and offline political participation. To determine whether these items reflect a single or multiple latent dimensions, I use the nonparametric item response model of Mokken scaling analysis<sup>1</sup> (MSA). First, I scale all 21 items together (see Step 1 in Table A). It shows all Loevinger's coefficient of homogeneity ( $H_i$ ) have positive values, indicating the items are positively correlated with each other. All these coefficients are statistically significant<sup>2</sup> at  $p < .001$ . Most items have a  $H_i$  larger than 0.30, which is the threshold that is commonly used for inclusion of items in a scale. There are two exceptions: *ptp12w6* ( $H_i = 0.10$ ) and *shareOnWebW5* ( $H_i = 0.27$ )<sup>3</sup>. After dropping *ptp12w6* in Step 2, the overall  $H_i$  is slightly improved to 0.40. As *voteGE* has a very high  $H_i$  of 0.63, one may suspect that the overall scalability ( $H_i = 0.39$ ) is being largely driven by this particular item (*voteGE*) while other items are at best weakly linked. We test this assumption in Step 3. There are only minimal changes in individual  $H_i$  and overall scalability ( $H_i = 0.38$ ) after dropping *voteGE*. Therefore, the suspicion is unfounded that overall scalability is being driven predominantly by *voteGE*. Thus, the substantive conclusion remains that there is no basis for conceptual distinctions between online and offline forms of participation. In view of multiple regression analyses that we intend to perform with the participation scale as dependent variable, we want to include in the participation scale only items that are, in

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<sup>1</sup> The Stata module used for analysis is *loevh* (see more details in Hardouin et al., 2011).

<sup>2</sup> The items scaled together in Step 1 include both online and offline participation. The one-scale result indicates there is no compelling reason to make conceptual or operational distinctions between online and offline participation and there is no basis for conceptual distinctions between the five kinds of participation that were suggested by Teorell et al. (2007).

<sup>3</sup> If the item coefficient of scalability  $H_i < 0.30$ , it means the items in question is too weakly related to the other items to be accepted as part of a cumulative scale. We consequently remove these two items from the measure of political participation.

addition to all measuring the same latent variable, also doubly monotonous, as this enhances the statistical validity of comparing different groups (see Mokken 1971; van Schuur, 2011). Items that violate the criterion of double monotonicity analyses are identified by the *crit* criterion, the value of which should not exceed 80. After dropping items with *crit* values larger than 80<sup>4</sup> and items with very low  $H_i$ , Step 4 shows 14 items that jointly define a homogenous (i.e., unidimensional) cumulative scale that also conforms to the stringent criterion of double monotonicity (see details in Table A). An overall  $H_i$  of 0.40 indicates a medium-strong scalability. I thus generated a new composite score on this scale by aggregating those 14 variables. This new variable (*polparticipation*) is used in the regression analyses reported in Table 3.

The exclusion of items between Step 2 and Step 4 is either caused by a relatively low coefficient of item scalability ( $H_i$ ) or by violations of the criterion of double monotonicity. The reason for the exclusion of some of these items is that they may have prerequisite conditions. Signing a petition, for example, requires a petition call in the first place. Not having signed a petition is thus not necessarily a reflection of non-participation, as it may also reflect not having been asked to do so. Likewise, going on strike won't happen to the unemployed or self-employed. Boycotting products requires a triggering incident first. In such circumstances, respondents couldn't have participated if

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<sup>4</sup> The *crit* value of *ptp5w5* is 134 and the *crit* value of *ptp6w6* is 133. These two items ask whether the respondent: 1) has read a campaign leaflet/letter, text message or email from a political party; 2) has signed a petition on the Internet. Note that both items are excluded not because they measure another latent phenomenon (which would have been reflected in a low  $H_i$ ). Rather, the exclusion of the items with high *crit* values are to make the resulting scale conform to the criterion of 'double monotonicity,' which is required when comparing groups with different scores on the latent variable. Such comparisons are implicitly made in multiple regressions, therefore the deletion of the high-*crit* items yields a scale that can be used more validly as a dependent variable in subsequent regression analyses.

the prerequisite condition wasn't met, resulting for that item in a low scalability coefficient, a high *crit* value, or both.

Lastly, in order to check whether online and offline participation form two distinct scales, I scaled 7 items of online participation in Step 5 and 14 items of offline participation in Step 6. The findings show the scalability of online and offline participation separately ( $H_i=0.42$ ;  $0.40$ ) is hardly any different from the outcome when the two sets of items are combined ( $H_i=0.40$ ). This result, once again, implies that there is only one dimension in participation measurement.

**Table 1.** The procedure of Mokken scaling on political participation

| Items                        | Step 1:<br>H <sub>i</sub> with<br>all items<br>scaled<br>together | Step 2:<br>H <sub>i</sub> after<br>dropping<br><i>ptp12w6</i> | Step 3:<br>H <sub>i</sub> after<br>dropping<br><i>voteGE</i> | Step 4: H <sub>i</sub> of<br>the fitting<br>items to<br>measure<br>participation | Step 5:<br>Scaling<br>online<br>participation | Step 6:<br>Scaling<br>offline<br>participation |
|------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------|
| <i>voteGE</i>                | 0.63                                                              | 0.63                                                          |                                                              | 0.68                                                                             |                                               | 0.65                                           |
| <i>visitPartySiteW5</i>      | 0.35                                                              | 0.36                                                          | 0.35                                                         | 0.35                                                                             | 0.37                                          |                                                |
| <i>shareOnFBW5</i>           | 0.36                                                              | 0.36                                                          | 0.35                                                         | 0.35                                                                             | 0.43                                          |                                                |
| <i>shareOnTwitterW5</i>      | 0.33                                                              | 0.34                                                          | 0.33                                                         | 0.32                                                                             | 0.39                                          |                                                |
| <i>shareOnEmailW5</i>        | 0.32                                                              | 0.34                                                          | 0.32                                                         |                                                                                  | 0.33                                          |                                                |
| <i>shareOnIMW5</i>           | 0.31                                                              | 0.33                                                          | 0.31                                                         | 0.34                                                                             | 0.34                                          |                                                |
| <i>shareOnWebW5</i>          | 0.27                                                              | 0.28                                                          | 0.27                                                         |                                                                                  | 0.29                                          |                                                |
| <i>ptp1w5</i>                | 0.45                                                              | 0.46                                                          | 0.45                                                         | 0.49                                                                             |                                               | 0.49                                           |
| <i>ptp2w5</i>                | 0.37                                                              | 0.38                                                          | 0.37                                                         | 0.39                                                                             |                                               | 0.40                                           |
| <i>ptp3w5</i>                | 0.37                                                              | 0.38                                                          | 0.37                                                         | 0.38                                                                             |                                               | 0.39                                           |
| <i>ptp4w5</i>                | 0.34                                                              | 0.35                                                          | 0.34                                                         | 0.37                                                                             |                                               | 0.36                                           |
| <i>ptp5w5</i>                | 0.46                                                              | 0.46                                                          | 0.45                                                         |                                                                                  |                                               | 0.50                                           |
| <i>ptp6w5</i>                | 0.37                                                              | 0.38                                                          | 0.37                                                         | 0.38                                                                             |                                               | 0.37                                           |
| <i>ptp5w6</i>                | 0.43                                                              | 0.43                                                          | 0.43                                                         | 0.43                                                                             |                                               | 0.41                                           |
| <i>ptp6w6</i>                | 0.50                                                              | 0.50                                                          | 0.49                                                         |                                                                                  | 0.63                                          |                                                |
| <i>ptp7w6</i>                | 0.30                                                              | 0.30                                                          | 0.30                                                         |                                                                                  |                                               | 0.31                                           |
| <i>ptp8w6</i>                | 0.44                                                              | 0.45                                                          | 0.44                                                         | 0.46                                                                             |                                               | 0.49                                           |
| <i>ptp9w6</i>                | 0.45                                                              | 0.45                                                          | 0.45                                                         | 0.46                                                                             |                                               | 0.46                                           |
| <i>ptp10w6</i>               | 0.37                                                              | 0.37                                                          | 0.37                                                         | 0.33                                                                             |                                               | 0.39                                           |
| <i>ptp11w6</i>               | 0.37                                                              | 0.37                                                          | 0.37                                                         |                                                                                  |                                               | 0.34                                           |
| <i>ptp12w6</i>               | 0.10                                                              |                                                               | 0.10                                                         |                                                                                  |                                               | 0.11                                           |
| <b>Overall H<sub>i</sub></b> | 0.39                                                              | 0.40                                                          | 0.38                                                         | 0.40                                                                             | 0.42                                          | 0.40                                           |

**Table 2.** Linear regression and block-recursive models on political participation

(Facebook)

|                                                 | Base Model          | Model 1             | Model 2             | Model 3             | Overall Model       |
|-------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <i>IVs</i>                                      |                     |                     |                     |                     |                     |
| Following News on Facebook                      | —                   |                     | —                   | .987***<br>(.065)   | .932***<br>(.068)   |
| Following News Online                           | —                   |                     | .336***<br>(.043)   | —                   | .237***<br>(.039)   |
| Facebook Use                                    | —                   | .306**<br>(.098)    | —                   | —                   | -.080<br>(.089)     |
| <i>Controls</i>                                 |                     |                     |                     |                     |                     |
| Age                                             | .004<br>(.004)      | .006<br>(.004)      | .010**<br>(.004)    | .009*<br>(.003)     | .013***<br>(.003)   |
| Gender                                          | -.129<br>(.093)     | -.088<br>(.094)     | -.149<br>(.090)     | -.041<br>(.083)     | -.069<br>(.082)     |
| Education                                       | .074*<br>(.032)     | .076*<br>(.032)     | .059<br>(.031)      | .054<br>(.029)      | .046<br>(.028)      |
| Income                                          | .020<br>(.016)      | .018<br>(.015)      | .013<br>(.015)      | .005<br>(.014)      | .001<br>(.013)      |
| Political Interest                              | .569***<br>(.065)   | .570***<br>(.065)   | .420***<br>(.066)   | .435***<br>(.058)   | .338***<br>(.059)   |
| Strength of Party Identification                | .266***<br>(.054)   | .260***<br>(.053)   | .213***<br>(.052)   | .186***<br>(.048)   | .155**<br>(.047)    |
| Economic retrospective evaluation               | .172***<br>(.047)   | .165***<br>(.046)   | .138**<br>(.045)    | .110**<br>(.042)    | .090*<br>(.041)     |
| Constant                                        | -1.553***<br>(.375) | -1.847***<br>(.384) | -1.771***<br>(.362) | -1.189***<br>(.331) | -1.301***<br>(.338) |
| R <sup>2</sup> (%)                              | 17.35%              | 18.37%              | 23.62%              | 36.30%              | 39.62%              |
| ΔR <sup>2</sup><br>(compared to the base model) |                     | 1.02%               | 6.27%               | 18.95%              | 22.27%              |
| N                                               | 786                 | 786                 | 782                 | 781                 | 778                 |

Note: Cells represent coefficients and standard errors of linear regression models for information source toward political participation. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 3.** Linear regression and block-recursive models on political participation

(Twitter)

|                                                 | Base Model          | Model 1             | Model 2             | Model 3             | Overall Model       |
|-------------------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b><i>IVs</i></b>                               |                     |                     |                     |                     |                     |
| Following News on Twitter                       | —                   |                     | —                   | .810***<br>(.076)   | .787***<br>(.088)   |
| Following News Online                           | —                   |                     | .336***<br>(.043)   | —                   | .254***<br>(.042)   |
| Twitter Use                                     | —                   | .376**<br>(.115)    | —                   | —                   | -.248*<br>(.123)    |
| <b><i>Controls</i></b>                          |                     |                     |                     |                     |                     |
| Age                                             | .004<br>(.004)      | .007<br>(.004)      | .010**<br>(.004)    | .010**<br>(.004)    | .012**<br>(.004)    |
| Gender                                          | -.129<br>(.093)     | -.140<br>(.093)     | -.149<br>(.090)     | -.121<br>(.088)     | -.134<br>(.086)     |
| Education                                       | .074*<br>(.032)     | .062<br>(.032)      | .059<br>(.031)      | .034<br>(.031)      | .030<br>(.030)      |
| Income                                          | .020<br>(.016)      | .020<br>(.015)      | .013<br>(.015)      | .015<br>(.015)      | .010<br>(.014)      |
| Political Interest                              | .569***<br>(.065)   | .554***<br>(.065)   | .420***<br>(.066)   | .491***<br>(.062)   | .389***<br>(.063)   |
| Strength of Party Identification                | .266***<br>(.054)   | .268***<br>(.053)   | .213***<br>(.052)   | .221***<br>(.051)   | .185***<br>(.050)   |
| Economic retrospective evaluation               | .172***<br>(.0477)  | .172***<br>(.046)   | .138**<br>(.045)    | .172***<br>(.044)   | .141**<br>(.043)    |
| Constant                                        | -1.553***<br>(.375) | -1.737***<br>(.377) | -1.771***<br>(.362) | -1.520***<br>(.352) | -1.544***<br>(.351) |
| R <sup>2</sup> (%)                              | 17.35%              | 18.48%              | 23.62%              | 28.00%              | 31.42%              |
| ΔR <sup>2</sup><br>(compared to the base model) |                     | 1.13%               | 6.27%               | 10.65%              | 14.07%              |
| N                                               | 786                 | 786                 | 782                 | 780                 | 777                 |

Note: Cells represent coefficients and standard errors of linear regression models for information source toward political participation. Standard error in parentheses.

\*p<.05 \*\*p<.01 \*\*\*p<.001

## Appendix 2 for Chapter 3: Measuring Social Capital

The BES questionnaires contain 18 questions on social capital. First, I use MSA to scale all 18 items together. The results show that all items have a positive  $H_i$  value, meaning that items are positively correlated (see Step 1 in Table B). All  $H_i$  values are statistically significant at  $p < .001$ . Note that *access1wave7a* has a  $H_i$  of 0.26 and *access2wave7b* has a  $H_i$  of 0.25 – both are below the commonly used 0.30 threshold and thus dropped from scaling in Step 2. After that, the  $H_i$  of *access2wave7a* diminishes to 0.29, so we delete it in Step 3. At this stage, all the items (in Step 3) have a  $H_i$  larger than 0.30. In Step 4, we find *access1wave7c* is the only item with a *crit* value (83) larger than 80. After removing it from the scale, the overall  $H_i$  reaches 0.41 and the scale is double monotonous. The four items that are excluded from the overall social capital scale are survey questions on whether the respondents know anyone who 1) is a reliable tradesman; 2) can fix problems with computers; 3) works for the local council; 4) is a local councillor. These items are excluded likely because knowing a tradesman, local councillor, or someone who can fix computers is not as important or frequently needed as other networks. Finally, I generate *socialcapital* by aggregating 14 items listed in Step 4. In further analysis, the variable *socialcapital* will be used to measure dependent variable social capital.

**Table 4.** The procedure of Mokken scaling on social capital

| Items                           | Step 1: $H_i$<br>with all 18<br>items scaled<br>together | Step 2: $H_i$<br>after<br>dropping 2<br>items with<br>$H_i < 0.30$ | Step 3: $H_i$<br>after<br>dropping 3 <sup>rd</sup><br>item with<br>$H_i < 0.30$ | Step 4: $H_i$ of the<br>fitting items to<br>measure social<br>capital |
|---------------------------------|----------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <i>access1wave7a</i>            | 0.26                                                     | –                                                                  | –                                                                               | –                                                                     |
| <i>access1wave7b</i>            | 0.31                                                     | 0.33                                                               | 0.33                                                                            | 0.33                                                                  |
| <i>access1wave7c</i>            | 0.35                                                     | 0.34                                                               | 0.34                                                                            | –                                                                     |
| <i>access1wave7d</i>            | 0.39                                                     | 0.41                                                               | 0.42                                                                            | 0.42                                                                  |
| <i>access1wave7e</i>            | 0.42                                                     | 0.43                                                               | 0.44                                                                            | 0.43                                                                  |
| <i>access1wave7f</i>            | 0.34                                                     | 0.35                                                               | 0.36                                                                            | 0.35                                                                  |
| <i>access2wave7a</i>            | 0.31                                                     | 0.29                                                               | –                                                                               | –                                                                     |
| <i>access2wave7b</i>            | 0.25                                                     | –                                                                  | –                                                                               | –                                                                     |
| <i>access2wave7c</i>            | 0.38                                                     | 0.39                                                               | 0.40                                                                            | 0.40                                                                  |
| <i>access2wave7d</i>            | 0.39                                                     | 0.40                                                               | 0.40                                                                            | 0.41                                                                  |
| <i>access3wave7a</i>            | 0.38                                                     | 0.41                                                               | 0.42                                                                            | 0.43                                                                  |
| <i>access3wave7b</i>            | 0.37                                                     | 0.38                                                               | 0.38                                                                            | 0.39                                                                  |
| <i>access3wave7c</i>            | 0.38                                                     | 0.40                                                               | 0.40                                                                            | 0.42                                                                  |
| <i>access3wave7d</i>            | 0.34                                                     | 0.37                                                               | 0.38                                                                            | 0.39                                                                  |
| <i>access3wave7e</i>            | 0.39                                                     | 0.41                                                               | 0.41                                                                            | 0.42                                                                  |
| <i>access3wave7f</i>            | 0.40                                                     | 0.42                                                               | 0.43                                                                            | 0.43                                                                  |
| <i>access3wave7g</i>            | 0.39                                                     | 0.42                                                               | 0.42                                                                            | 0.44                                                                  |
| <i>access3wave7h</i>            | 0.40                                                     | 0.43                                                               | 0.45                                                                            | 0.45                                                                  |
| <b>Overall <math>H_i</math></b> | 0.36                                                     | 0.39                                                               | 0.40                                                                            | 0.41                                                                  |

## Chapter 4: Fake News and Cognitive Patterns of Clicking Behaviour

### **Abstract**

Little is known about the role of cognitive behaviour in the spread of misinformation. What types of news stories attract most clicks? Are there any clicking patterns displayed by individual users on fake news? Does lack of political knowledge predispose one to click on false news headlines and be more inclined to believe them? Using an original survey (N=1,003) on Amazon's Mechanical Turk, this paper systematically examines the individual-level and item-level characteristics associated with clicking and discerning fake news headlines of different types. The results contribute to the literature by classifying three types of fake news and identifying users' news clicking patterns.

**Keywords:** fake news; clicking patterns; cognitive behaviour; political knowledge

The overarching question of this thesis looks at what effects the Internet and social media have on democratic attitudes and behaviour and the variance of effects on different socioeconomic groups. The previous chapter looks at the positive side, namely, the potential benefits the Internet and social media bring to political participation and social capital and which social group benefit more from the usage. This chapter investigates from a different angle to assess that, aside from the benefits and conveniences, what challenges the digital media presents to the information system. In this instance, I look at a prominent issue at recent times – fake news. Specifically, who is more receptive to problematic contents, and what are the cognitive factors underlying one's information processing behaviour?

Despite that rumours, conspiracy theories, and false content are nothing new to human society, the problem of fake news has gained prominent societal and scholarly attention following the 2016 U.S. presidential election. The heavily circulated problematic contents have drawn a large audience and generated much readership in many countries (Brustein, 2016; Timberg, 2016). In a time of 'alternative facts' when unverified, deceptive, and problematic contents swayed public opinion and allegedly influenced democratic process, fake news has been used as a weapon to attack the journalistic gatekeeper of democracy and delegitimise political opponents (Farkas & Schou, 2018).

It is evident that fake news has played an increasingly alarming role in our information environment in terms of its volume and potential consequences. Recent years have witnessed a growing number of studies assessing the nature, origins, and dissemination of the misinformation (Flynn et al., 2017), state-sponsored disinformation

campaigns (Keller et al., 2019), cognitive mechanisms in receiving information (Berinsky, 2017; Flaxman et al., 2016; Oliver & Wood, 2014), the role of communication platforms in spreading misinformation (Garrett, 2011; Rojecki & Meraz, 2016; Shao et al., 2017), fact-checking and social correction of misinformation (Benegal & Scruggs, 2018; Nyhan & Reifler, 2015; Vraga & Bode, 2018).

While most existing research attempts to find methods to battle online misinformation (e.g., Shao et al., 2017), there is currently a lack of research on the role of human judgement and cognitive behaviour in understanding the spread of fake news. This research intends to fill this gap by assessing user cognitive behaviour in news clicking. In the following sections, I first propose a typology of fake news in order to explore the underlying systematic patterns of item responses. The empirical analysis is based on an original survey (N=1,003) on Amazon's Mechanical Turk (Mturk). I use multivariate data analysis to test hypotheses with individual-level and item-level variables. The research contributes to the literature by identifying a three-fold typology of fake news: satirical, conspiratorial, and fear-mongering fake news. The findings show that when individuals click on one piece of fake item, they are more likely to click on another piece of fake item. People tend to click on the same or similar types of fake items. More knowledgeable people tend to click on fake news more, but they are significantly more capable of recognizing the falsehood than the less knowledgeable. The findings have important implications for online news consumption and information gatekeeping.

## Definition and Typology of Fake News

Fake news is not a new phenomenon, yet it has found a new territory on social media and attracted much readership on digital platforms. The recent debates around fake news has led to a discussion on whether we have entered a ‘post-truth’ era (Lewandowsky et al., 2017). Academics, journalists, commentators, and policymakers use various terms such as *misinformation*, *disinformation*, and *fake news* to describe misleading and deceptive contents. These lookalike terms have been used interchangeably at times without a commonly accepted conceptual denotation in place. The term *fake news*, for example, has been weaponized by the 45<sup>th</sup> U.S. President Donald Trump to discredit the journalistic coverage that he does not like. A clear conceptualization can help us understand the nature and intention of the problematic content. Scholars have distinguished between *misinformation* and *disinformation*, albeit both terms refer to dissemination of false information. Specifically, misinformation refers to unintentional sharing of inaccurate content, while disinformation entails deliberate deception and intentional dissemination of false content (Jack, 2017; Wardle, 2017). The key difference lies in the intentions behind a certain piece of media content.

For the definition of *fake news*, I adopt it from Allcott and Gentzkow (2017, p. 213) that these are ‘news articles that are intentionally and verifiably false and could mislead readers.’ The scope of this definition doesn’t extend to news satires or parodies such as *The Daily Show*, a television news commentary programme, and *The Onion*, a satirical digital media. At the time of writing this chapter, the literature lacks an established conceptualization on the classification of fake news types other than a few attempts. For example, Wardle (2017) proposed seven distinct types of problematic

content based on their intent to deceive: satire or parody, false connection, misleading content, false context, imposter content, manipulated content, and fabricated content. The relevant research from Rashikin et al (2017) classified news stories into satire, hoax, and propaganda and compared these based on the author's intention to deceive and the falsehood of the information content. It is, however, a classification of the types of news outlets identified by U.S. News & World Report (Dicker, 2016). As the nature of news outlets is not equivalent to the nature of each news story, their classification lacks sufficient theoretical justification. Tandoc et al.'s (2018) systematic review of fake news studies over the period of 2003 to 2017 finds that existing studies mostly categorized fake news into satire, parody, fabrication, manipulation, advertising, and propaganda, which can be seen as an operationalization along the levels of facticity and the deceptive intention behind the message. However, whether news satire and parody should be counted as fake news under this measurement is up to debate and there is no consensus on a standardised typology of fake news.

A theoretical classification is essential in helping us better understand the underlying nature of fake news, test theories on the individual reception to the different elements of fake news, and provide insights into the Government effort on promoting greater digital literacy among social media users as a way to battle fake news (House of Commons, 2019). As many studies seek to investigate how fake news disseminates online and how to effectively combat misinformation, establishing a typology provides a useful direction in understanding fake news. Based on a review of existing literature, as well as of a large variety of 'fake' articles, I propose a three-fold typology based on the nature of the fake news stories. The first type is satirical fake news. Satirical fake news is

easy to discern and often used to ridicule a politician. Respondents may click on it for a good laugh despite knowing that the content is fabricated. For example, “Trump to Nominate Chris Christie to Supreme Food Court” (Paulson, 2016). The second type is fear-mongering fake news. This type usually targets religious groups, political parties, or politicians. For example, “Man Shouts ‘Allahu Akbar!’ Before Photobomb” (Paulson, 2016). The third type is conspiratorial fake news. This type of fake news is usually fictional stories derived from conspiracy theories, sometimes featuring back-room politics. The falsehood is hard to recognize as the content is difficult to verify directly. For example, the infamous pizzagate conspiracy story alleging Hillary Clinton ran a child sex abuse ring at a pizzeria was read and shared more than half a million times on social media (Lopez, 2016). The story tripped many readers into believing the veracity of its fabricated content and eventually led a man to travel to Washington DC and engage in a shooting at the restaurant. Fictionality is a common underlying feature of all kinds of fake news, with contents not based on political facts or real events and completely fabricated. Therefore, when a certain piece of fake news does not categorically fit well into satirical, conspiratorial, or fear-mongering, it is treated as fictional as a category by default. In the data analysis section, I will empirically assess the validity of the fake news typology.

## **Theory and Hypotheses**

Exposure to fake news has accelerated in the online sphere. As the number of citizens using social media for news has steadily grown over the years (Matsa & Shearer, 2018), a majority of online news consumers has expressed scepticism over the accuracy of news information online. In their survey research, Chadwick and Vaccari (2019) find that more

than half of social media users in the United Kingdom have concerns over the veracity of the news they read on social media. A similar pattern of news consumption on social media and dissemination of false information has also been found in the United States (Allcott & Gentzkow, 2017; Silverman & Singer-Vine, 2016). A major reason for the spread of fake news is that compared with traditional media, the information sources on social media lack a third-party gatekeeper, editorial judgement, and established credibility. Certain content may appear in one's news feed simply by algorithmic recommendations that are embedded in the function of online platforms (Fabrizio & Sobbrio, 2018).

Despite the falsehood of news, almost half of social media users are continuing to share or spread them online. Large scale systematic analyses show that falsehood disseminates farther and broader than true news due to actions of human users (Vosoughi et al., 2018; Oyeyemi et al., 2014). Psychology studies find it is human tendency to share thrilling and scandalous stories, especially those arousing emotions such as happiness, surprise and disgust (Peters et al., 2009; Rimé et al., 1991). Oliver and Wood (2014) find that Americans endorse conspiracy theories because of their willingness to believe in unknown forces and Manichean narratives. Some individuals are more susceptible than others to conspiracy theories although some of these are easily debunked (Brotherton et al., 2013; Bruder et al., 2013; Wood et al., 2012). More alarmingly, the reception to false beliefs is found to be bipartisan (Graham, 2020).

The current literature primarily focuses on studying misinformation, correction, and fact-checking on social media platforms (e.g., Guess et al., 2020; Lewandowsky et al., 2012). Little is known on the role of cognitive behaviour in understanding the spread

of misinformation. This paper seeks to understand the cognitive patterns of news clicking and identify factors underlying the individual susceptibility to fake news. Specifically, I aim to address the following questions: what types of news stories attract most clicks? Are there any clicking patterns displayed by individual users on fake news? Does lack of political knowledge predispose one to click on false news headlines and be more inclined to believe them?

I theorize that high susceptibility to fake news is driven by three factors. First, according to the “echo chambers” theory (Flaxman et al., 2016; Lewandowsky et al., 2012; Sunstein, 2009), when processing online information, individuals usually choose those that are ideologically closer to their existing beliefs and political opinions. The term “echo chamber” refers to an enclosed communicational space where people only share things that they already agree with (Dubois & Blank, 2018). In a high-choice media environment, it is easy for people to self-select an information diet that only consists of reaffirming beliefs.

Second, social psychology findings show that individuals, especially those with strong political attitudes, are likely to engage in motivated reasoning, “a tendency to evaluate incoming information to support preconception and to devalue contrary evidence” (Lodge & Taber, 2001, p. 184). In other words, people tend to selectively read contents that are resonating with their existing beliefs.

Third, the mainstream online platforms on the market such as Google, Facebook, Twitter, and YouTube are all funded by advertising and thereby incentivised to retain their users’ attention with algorithmic recommendations of similar content (Bucher, 2018). The design of their business model that prioritizing engagement over content

quality inherently increases the proliferation of misleading and harmful content (House of Lords, 2020). When one is attracted to a certain type of fake news, this tendency is likely to be amplified by the algorithmic mechanism. For instance, when a user clicks on a piece of conspiratorial content, the algorithmic mechanism is likely to bring more to their news feed. As such, algorithmic recommendations on search engines and social networks potentially facilitate and promote an information circle mostly with ideologically homogenous political news. Furthermore, motivating reasoning and echo chambers make people read more content of the same kind.

**Hypothesis 1:** Those who are interested in a certain type of fake news are more likely to click more on the same type of fake news.

For individuals with low levels of political knowledge, I expect that they are more likely than others to click on fake news stories when seeing them online because they do not possess the necessary knowledge to discern the falsehood, which makes them susceptible to fake news. Studies have found that when a popular post is liked and shared many times, it is more likely to be seen by more people and further liked and shared (Thorson, 2008). The convenience and self-fulfilling cycle of online communication are accused to facilitate spontaneous, uncritical, and heuristic thinking that enhance cognitive bias (Bartlett 2018; Tandoc et al., 2018).

**Hypothesis 2a:** Individuals with less political knowledge are more likely to click on fake news.

**Hypothesis 2b:** Individuals with less political knowledge are more likely to believe in fake news.

## **Mturk Survey**

At the time of conducting this research, there wasn't any public accessible survey data with necessary variables to empirically test my proposed hypotheses. The most practical way of collecting data is to use online surveys with a designed set of questions pertaining to my hypotheses. During the period of 28-29 July, 2017, I conducted an online survey with a total of 1,003 participants on Amazon's Mechanical Turk (Mturk) website.

Mturk has been a popular online survey platform for social scientists to collect original data. Although it is a crowdsourcing web service, Mturk worker respondents are proven to be a better representative of the U.S. population in comparison with the samples that traditional respondents-recruiting methods would enlist (Paolacci et al., 2010; Berinsky et al., 2012). This advantage is particularly important in ensuring the validity and generalizability of my research findings, as this chapter makes use of the U.S. context as its focus.

To ensure a good quality of survey responses, I chose US-located respondents with 98% or above approval rates of previously completed tasks on Mturk<sup>1</sup>. The survey consisted of questions about one's primary news source, average amount of time spent on following news each day, favourability of Donald Trump, political efficacy, political knowledge, clicks and ratings of news headlines, and demographics including age, gender, education, and party identification. The respondents were given 15 minutes to complete the questionnaire online<sup>2</sup>.

## **Variables**

*Political knowledge* is measured by five questions on American politics and current affairs<sup>3</sup>. The answers are coded as (1) correct and (0) incorrect. I aggregated these five

variables into a measurement of political knowledge, with a scale from 0 to 5 indicating low to high levels of knowledge. *News time* is based on the survey question asking the time one spends per day following news about politics or current affairs. The answers are coded as (1) “none, no time at all,” (2) “less than ½ hour,” (3) “½ to 1 hour,” (4) “1 to 2 hours,” and (5) “more than 2 hours.” *Age* is a continuous variable calculated from one’s birth year. *Gender* is coded (1) “male” and (0) “female.” *Education* denotes one’s highest educational attainment, ranging from (1) “no high school diploma,” (2) “high school diploma or equivalent,” (3) “some college, no bachelor’s degree,” (4) “bachelor’s degree,” and (5) “graduate degree.” *Party identification* includes binary variables indicating self-identification as “Democrat,” “Republican,” or else. *Like Trump* derives from the question asking how much one likes Donald Trump as a presidential candidate, on a 10-point scale from 1 “extremely dislike” to 10 “extremely like.”

### **Fake News Items**

The respondents were given a list of ten news headlines (see in Table 4.1) – four factually true items on current affairs at that time and six false items made up by myself. With three categories – satirical, conspiratorial, and fear-mongering, this is first-principles-based hypothesised typology of different kinds of fake news. Respondents were asked to indicate whether they would click on to read any of these headlines when they come across it. And then, they were instructed to rate the credibility of each of these ten items on a scale from 1) “low” to 5) “high.”

These ten items were constructed to cover a wide range of prominent social, economic, and political issues at that time to mimic the real-world hot topics that readers

would naturally come across. The list includes subjects around health care, immigration, employment, foreign relations, and Donald Trump. The fake items are designed in a way with similarly bold, attention-seeking, click-bait headlines of the kind that were featured in viral fake news stories online during the 2016 U.S. presidential campaigns. As readers would obviously have different priorities and interests when choosing what news stories to read, the design of these ten items intends to provide a list of topics as diverse as possible, within the budgetary limitations of the data collection.

It is important to acknowledge that the construction of these items is by no means perfectly comprehensive or balanced. For example, this list only provides ten headlines to the respondents. In a real-world news environment, people could have encountered many more news topics that are presented in different media formats such as texts, images, and videos. There are more satirical and conspiratorial items than fear-mongering items in the list, primarily because at the time of this research, satirical and conspiratorial fake news appeared to be prominent and discussed more often in the real-world environment. Admittedly, the scope that a single survey can reach is limited. Yet, that doesn't diminish the validity of this research and its findings and implications should provide important basis for future studies.

**Table 4.1.** News headlines provided in the survey question

| News Headlines                                                                                                                                                    | Nature   | Category       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|
| 1) Trump's toupee gets blown away on boarding Air Force One<br>( <i>Toupee</i> )                                                                                  | Fake     | Satirical      |
| 2) U.S. unemployment rate drops to a 16-year low under Trump<br>administration ( <i>Unemployment</i> )                                                            | Non-fake |                |
| 3) President Trump awards Kellyanne Conway the Presidential<br>Medal of Freedom for surviving the Bowling Green Massacre<br>( <i>Conway Medal</i> )               | Fake     | Satirical      |
| 4) The federal government grants 15,000 H2B visas for temporary<br>foreign workers this year ( <i>Work Visa</i> )                                                 | Non-fake |                |
| 5) Revengeful Democratic National Committee seeks funds from<br>Goldman Sachs to dig dirt on Trump international business dealings<br>( <i>Goldman Sachs</i> )    | Fake     | Conspiratorial |
| 6) The FBI negotiates with Twitter Inc. to monitor the president's<br>tweets before public release ( <i>FBI Twitter</i> )                                         | Fake     | Conspiratorial |
| 7) European council names Donald Trump a major threat to the<br>European Union ( <i>EU</i> )                                                                      | Non-fake |                |
| 8) Mexican drug dealers, criminals, and rapists crossing the US<br>border at an all-time high before the construction of the Wall<br>( <i>Mexican Criminals</i> ) | Fake     | Fear-mongering |
| 9) Polls show only 25% of Americans support the Republican health<br>care bill ( <i>Health Bill</i> )                                                             | Non-fake |                |
| 10) Hacked CIA files show the Keystone pipeline is a secret<br>government effort to resist alien attacks ( <i>Keystone Secrecy</i> )                              | Fake     | Conspiratorial |

In order to formally test the validity and reliability of my categorization of fake news, I use a nonparametric item response model of Mokken scaling analysis to assess the latent structure of these fake items. Given the dichotomous character of all items, Mokken scaling analysis is most appropriate to assess which items can be regarded as reflecting a unidimensional latent variable; the items that do so are referred to as a scale. For clicks on fake items, Mokken scaling generates Scale 1 (N5, N6, and N10) and Scale 2 (N1 and N3). Scale 1 fits with my categorization of conspiratorial fake news, Scale 2

matches with satirical fake news, and the single item (N8) that does not fit in either scale is fear-mongering fake news, of which only one example was included in the survey. Meanwhile, the Mokken scaling of clicks on non-fake items (N2, N4, N7, N9) does not construct any scales, suggesting that respondents might be interested in a variety of news topics, but their clicking doesn't form any identifiable patterns. These results demonstrate that, first of all, there is no discernible structure in respondents' inclination to click and read actual news headlines on substantively different topics. This is understandable, as respondents' interest in each of these topics vary to a great extent. Secondly, the scaling results validate my formulation of fake news headlines that are different in their nature of fakeness. Respondents' tendencies to click on items that were meant to be satirical are indeed structured as such; so are the tendencies for items that were presumed to be conspiratorial. Moreover, the scaling procedure clearly distinguishes between satirical, conspiratorial and fear-mongering fake headlines, and between each of these and the non-fake items. Therefore, my operationalisation on fake news types can be considered reliable and provides further ground to investigate respondents' tendencies to expose themselves to different kinds of fake news.

## **Preliminary Data Analysis**

The statistic summaries of the composition of the Mturk respondents in this research is presented in Table 4.2. The total number of participants in the survey is 1,003. The average age of the sample is 36.29. There are slightly more female than male participants. The median educational attainment is bachelor's degree. The time spent on following political news per day is centred around 30 minutes to 1 hour, with a small percentage of

respondents spending more than 2 hours or no time at all. For party identification, 45% of the sample is self-identified as a Democrat, 35% Independent, and 20% Republican. Near half of the respondents think themselves ‘extremely dislike’ Trump. On the scale of political knowledge measurement, a majority of the respondents demonstrated a very good knowledge of politics, with a median score of 4 out of a total score of 5. A majority of the respondents trust that the U.S. Government can do the right thing for the American people at least once in a while. The average score of political trust is 2.26 out of 5. The average internal and external efficiency scores are relatively low at 2.40 and 2.03 out of 5 respectively. There is a very small amount of missing data (n=2) resulted from the question about time spent on following political news. Other than that, the questionnaire completion rate is very high and there are no respondents removed from the analysis. In summary, the respondents of this sample are relatively young, liberal, well educated, and have a good knowledge of politics. These characteristics will inevitably affect the extent that they read or believe the content of fake news. As general population of online users may not possess the same level of educational background or political knowledge as the sample respondents, we should be cautious when generalizing univariate results from this study (i.e., the percentages or proportions of respondents who would read or be inclined to believe each of the items). Such differences between the composition of the response group and the general population are much less relevant in the analyses of bivariate and multivariate relationships, which will be presented in the main findings.

**Table 4.2.** Descriptive summary of the Mturk data

| Variable            | Mean  | Standard Deviation | N     |
|---------------------|-------|--------------------|-------|
| Age                 | 36.29 | 11.91              | 1,003 |
| Gender              | 0.47  | 0.50               | 1,003 |
| Education           | 2.66  | 0.86               | 1,003 |
| News time           | 3.25  | 1.05               | 1,001 |
| Democrat            | 0.43  | 0.50               | 1,003 |
| Republican          | 0.20  | 0.37               | 1,003 |
| Like Trump          | 3.38  | 3.02               | 1,003 |
| Political Knowledge | 4.08  | 1.11               | 1,003 |
| Political Trust     | 2.26  | 0.82               | 1,003 |
| Internal efficacy   | 2.40  | 1.05               | 1,003 |
| External efficacy   | 2.03  | 0.90               | 1,003 |

In the survey, respondents were asked to rate the credibility of every news headline on a 5-point scale. Table 4.3 summarizes the percentages of respondents that would click and follow up on each of the item and the credibility score of each news item. Fake items in total received a relatively high click rate at 30.24%. Among all fake items, *FBI Twitter*, a conspiratorial fake item, attracted the highest click rate of 49.25% from 1,003 respondents. In contrast, *Conway medal*, a satirical fake item, attracted the lowest clicks of 19.34% among all fake items. In general, my fake items generated lower click rates and lower credibility ratings than non-fake items. In other words, fake items were perceived as less believable than non-fake items. The non-fake items, on the other hand, have a relatively higher number of clicks. The average click on non-fake items is 44.99% compared with 30.24% of fake items<sup>4</sup>.

**Table 4.3.** Descriptive statistics of the items

|                                           | Clicks (%) | Credibility Ratings (1-5) |
|-------------------------------------------|------------|---------------------------|
| <i>Toupee</i> (satirical)                 | 35.29      | 2.31                      |
| <i>Unemployment</i> (non-fake)            | 45.76      | 2.76                      |
| <i>Conway Medal</i> (satirical)           | 19.34      | 1.97                      |
| <i>Work Visa</i> (non-fake)               | 35.79      | 3.17                      |
| <i>Goldman Sachs</i> (conspiratorial)     | 21.93      | 2.33                      |
| <i>FBI Twitter</i> (conspiratorial)       | 49.25      | 2.29                      |
| <i>EU</i> (non-fake)                      | 48.65      | 2.98                      |
| <i>Mexican Criminals</i> (fear-mongering) | 31.11      | 2.32                      |
| <i>Health Bill</i> (non-fake)             | 49.75      | 3.53                      |
| <i>Keystone Secrecy</i> (conspiratorial)  | 24.53      | 1.59                      |
| <b>Fake items</b> (avg)                   | 30.24      | 2.13                      |
| <b>Non-fake items</b> (avg)               | 44.99      | 3.11                      |
| <b>Total</b>                              | 36.14      | 2.52                      |

After this overall descriptive analysis, I now take a look at the fake items to assess the presence of latent clicking patterns. Table 4.4 shows the overall distribution of fake news clicks is right-skewed, as the data clusters toward the lower end of the frequency scale. The majority of respondents clicked on no more than three fake news items, with very few people clicking on all six. It is unknown whether there is any underlying commonality in fake news items that attracts similar patterns of clicks. Should there be no co-variation in individual responses to the items, the actual clicking frequencies for combinations of items would be the same as the expected frequency under the condition of marginal independence. Under this null hypothesis, I would expect a total of 107.84<sup>5</sup> people who do not click on any fake items. In reality, however, there are 210 people who did not click – the number is almost twice as large. Similarly, I expect 0.56<sup>6</sup> (i.e. <1) people who would click on all six fake news items. Far exceeding my expectation, there are 24 people who clicked on all fake items. On the other hand, the actual amount of people who clicked on one, two, or three fake news items is smaller than hypothesized.

These observations find no support for the null hypothesis but provide reasons to further explore the underlying systematic patterns of item responses.

**Table 4.4.** Frequency of fake news clicks<sup>7</sup>

| Total number of FN clicks | Frequency (N=1,003) | H <sub>0</sub> |
|---------------------------|---------------------|----------------|
| 0                         | <b>210</b>          | 107.84         |
| 1                         | 287                 | <b>303.36</b>  |
| 2                         | 211                 | <b>335.83</b>  |
| 3                         | 158                 | <b>189.03</b>  |
| 4                         | <b>72</b>           | 57.41          |
| 5                         | <b>41</b>           | 8.96           |
| 6                         | <b>24</b>           | 0.56           |

To understand how these items are correlated with each other, I show in Table 4.5 the bivariate tetrachoric matrix of all ten items. There are 15 pairs of fake news – fake news (FN-FN) items (underlined), with an average correlation of 0.31. Among the top ten highest correlations (in bold) in the table, seven of them are FN-FN items, indicating that people who click on one fake item are very likely to click on another fake item.

Meanwhile, the average correlation of 6 non-fake – non-fake (NFN-NFN) items is 0.24 and the average correlation of NFN-FN items is 0.15 – both are relatively low. In other words, the probability of those who click on an FN item to continue clicking another FN item is higher than the probability of those who click on an NFN item that continue to click on another NFN.

**Table 4.5.** Tetrachoric correlations between clicks on news headlines N1-N10

|     | N1                 | N2          | N3                 | N4   | N5                 | N6                 | N7          | N8                 | N9   | N10  |
|-----|--------------------|-------------|--------------------|------|--------------------|--------------------|-------------|--------------------|------|------|
| N1  | 1.00               |             |                    |      |                    |                    |             |                    |      |      |
| N2  | -0.14              | 1.00        |                    |      |                    |                    |             |                    |      |      |
| N3  | <b><u>0.39</u></b> | 0.16        | 1.00               |      |                    |                    |             |                    |      |      |
| N4  | -0.07              | 0.28        | 0.06               | 1.00 |                    |                    |             |                    |      |      |
| N5  | <u>0.16</u>        | 0.31        | <u>0.23</u>        | 0.26 | 1.00               |                    |             |                    |      |      |
| N6  | <u>0.30</u>        | 0.06        | <u>0.32</u>        | 0.15 | <b><u>0.41</u></b> | 1.00               |             |                    |      |      |
| N7  | 0.18               | 0.07        | 0.25               | 0.18 | 0.32               | <b>0.38</b>        | 1.00        |                    |      |      |
| N8  | <u>0.10</u>        | <b>0.43</b> | <u>0.18</u>        | 0.27 | <b><u>0.51</u></b> | <u>0.20</u>        | 0.04        | 1.00               |      |      |
| N9  | 0.06               | 0.16        | 0.11               | 0.34 | 0.16               | 0.18               | <b>0.42</b> | -0.002             | 1.00 |      |
| N10 | <u>0.26</u>        | 0.11        | <b><u>0.43</u></b> | 0.09 | <b><u>0.38</u></b> | <b><u>0.37</u></b> | 0.25        | <b><u>0.40</u></b> | 0.01 | 1.00 |

Next, I look at whether people are attracted to a particular type of fake news.

Table 4.6 shows that same type of fake items (e.g., Satirical – Satirical) have relatively strong tetrachoric correlations compared with those of different types. In other words, if people click on one satirical fake item, they are more likely to click on another satirical fake item than other types of fake news. Also, those who click on conspiratorial fake news are very likely to click on both conspiratorial and fear-mongering fake news. Those who click on fear-mongering fake news also tend to click on conspiratorial fake news.

The findings suggest that some sets of the news items share common latent traits.

**Table 4.6.** Comparing tetrachoric correlations between clicks for fake news types

|                | Satirical<br>(N1, N3) | Conspiratorial<br>(N5, N6, N10) | Fear-mongering<br>(N8) |
|----------------|-----------------------|---------------------------------|------------------------|
| Satirical      | 0.39                  | 0.28                            | 0.14                   |
| Conspiratorial | 0.28                  | 0.39                            | 0.37                   |
| Fear-mongering | 0.14                  | 0.37                            | -                      |

As respondents are asked to rate the credibility of all items, I also examine the correlations in item credibility ratings. Table 4.7 shows that the credibility ratings between fake items (marked in bold) are highly correlated, while the gamma coefficient

for non-fake items are weak. For gamma coefficients over 0.4, twelve out of thirteen coefficients are among FN-FN credibility ratings. The crosstabs of those high correlation items suggest most people correctly rate the FN items inaccurate, and they are very likely to rate another fake item inaccurate. The average fake news rating (1~5) is 2.13. Only a very small number of respondents rate the FN accurate.

**Table 4.7.** Gamma coefficient for credibility ratings

|         | RateN1     | RateN2 | RateN3     | RateN4 | RateN5     | RateN6     | RateN7 | RateN8     | RateN9 | RateN10 |
|---------|------------|--------|------------|--------|------------|------------|--------|------------|--------|---------|
| RateN1  |            |        |            |        |            |            |        |            |        |         |
| RateN2  | .15        |        |            |        |            |            |        |            |        |         |
| RateN3  | <b>.43</b> | .29    |            |        |            |            |        |            |        |         |
| RateN4  | .15        | .34    | .15        |        |            |            |        |            |        |         |
| RateN5  | <b>.33</b> | .33    | <b>.52</b> | .19    |            |            |        |            |        |         |
| RateN6  | <b>.44</b> | .20    | <b>.52</b> | .14    | <b>.54</b> |            |        |            |        |         |
| RateN7  | .37        | .13    | .17        | .24    | .27        | .46        |        |            |        |         |
| RateN8  | <b>.22</b> | .33    | <b>.52</b> | .15    | <b>.52</b> | <b>.39</b> | .18    |            |        |         |
| RateN9  | .14        | .07    | -.11       | .34    | -.02       | .05        | .38    | -.08       |        |         |
| RateN10 | <b>.43</b> | .26    | <b>.64</b> | .01    | <b>.54</b> | <b>.60</b> | .20    | <b>.52</b> | -.19   |         |

The analyses with gammas suggest a formal test with Mokken scaling is necessary. Testing on the credibility ratings of these ten items, the Mokken scaling scales all the fake items in one scale while the non-fake items do not generate any scales. It demonstrates that there are positive correlations in rating the fake items – if respondents rate one fake item (in)accurate, they are likely to also rate another fake item (in)accurate. In comparison, there are no significant correlations among the ratings of non-fake items.

The preliminary data analysis in this section showcases the correlations in respondents' clicking patterns regarding which news items to click on (real or fake), what type of fake items to click on, and their tendency in rating fake news items. It turns out that when people click on a fake news item, they are more likely to click on another fake

item than non-fake item. People tend to keep clicking on the same type of fake items. Most people are capable of discerning the falsehood of fake news items. The outstanding questions are, who are more likely to click on fake items in the first place? What factors lead people to click and believe in various fake news? These questions are to be addressed in the following multivariate analyses.

## **Multivariate Analysis**

In this section, I test the hypotheses using the Mturk online survey data. The original data in wide shape is transformed into long shape for multivariate analysis. By reshaping the data into stacked structure (see Van der Eijk, 2018 for analytical reference), the unit of analysis shifts from individual respondents to their responses. Otherwise, there are not one, but many variables based on questions whether people clicked on a certain piece of news item and how they rated them. The merit of the stacked data structure is to combine multiple measurements into one single variable to represent clicking frequencies. It allows multivariate analyses with individual-level explanatory variables such as demographics and political knowledge and item-level explanatory variables such as the category of fakeness.

In Table 4.8, the dependent variable is whether a respondent would click on a news item when they come across it. In the stacked form of the data, this variable represents all ten headlines (see Table 4.1) simultaneously, and in this sense the analysis is generic: it asks what makes people click on a news headline, and it uses independent variables including characteristics of news headlines and characteristics of people. To start with characteristics of headlines, the first of these is the independent variable *fake*

*news*, which is used in the baseline model reported in Table 4.8. This variable is coded binary with (1) the headline in question is fake, and (0) the headline in question is not fake. In a similar way the independent variables *satirical FN*, *fear-mongering FN*, and *conspiratorial FN* are all coded binary with (1) “yes” and (0) “no;” these variables are used in Models 1, 2 and 3 that are reported in Table 4.8. The variables are all transformed to stacked format for logistic regression analysis. The independent variables include traits of individual respondents (which are identical for all responses given by the same respondent). The base model shows that the respondents’ general tendency to click on a news item is affected by its character (real or fake) in such a way that this tendency is reduced in the case of fake items. Results from the following three models show that this effect is not the same for the three kinds of fake news that I distinguish. Satirical fake news decreases one’s probability of news clicking by a larger extent, compared with fear-mongering and conspiratorial fake news. Turning to characteristics of respondents, we can see that respondents who have more political knowledge, more political trust, higher internal efficacy and who spend more time following news are more likely to click on news headlines (irrespective of whether they are fake) than other people. The results also show that partisanship and support for Trump do not have significant correlations with general news clicking.

**Table 4.8.** Item-level and individual-level predictors of news clicking

|                     | Base Model        | Model 1           | Model 2           | Model 3           |
|---------------------|-------------------|-------------------|-------------------|-------------------|
| Fake news           | -.64***<br>(.04)  |                   |                   |                   |
| Satirical FN        |                   | -.51***<br>(.06)  |                   |                   |
| Fear-mongering FN   |                   |                   | -.25**<br>(.07)   |                   |
| Conspiratorial FN   |                   |                   |                   | -.27***<br>(.05)  |
| Political knowledge | .11***<br>(.03)   | .11***<br>(.03)   | .11***<br>(.03)   | .11***<br>(.03)   |
| Age                 | -.004<br>(.003)   | -.004<br>(.003)   | -.004<br>(.003)   | -.004<br>(.003)   |
| Gender              | .02<br>(.06)      | .02<br>(.06)      | .02<br>(.06)      | .02<br>(.06)      |
| Education           | -.07<br>(.04)     | -.07<br>(.04)     | -.07<br>(.04)     | -.07<br>(.04)     |
| News time           | .13***<br>(.03)   | .13***<br>(.03)   | .13***<br>(.03)   | .13***<br>(.03)   |
| Democrat            | .003<br>(.07)     | .003<br>(.07)     | .003<br>(.07)     | .003<br>(.07)     |
| Republican          | .04<br>(.09)      | .04<br>(.09)      | .04<br>(.09)      | .04<br>(.09)      |
| Like Trump          | -.002<br>(.01)    | -.002<br>(.01)    | -.002<br>(.01)    | -.002<br>(.01)    |
| Political trust     | .16***<br>(.05)   | .16***<br>(.05)   | .16***<br>(.05)   | .16***<br>(.05)   |
| Internal efficacy   | .11**<br>(.03)    | .11**<br>(.03)    | .11**<br>(.03)    | .11**<br>(.03)    |
| External efficacy   | -.18***<br>(.04)  | -.18***<br>(.04)  | -.18***<br>(.04)  | -.18***<br>(.04)  |
| Constant            | -1.02***<br>(.21) | -1.29***<br>(.20) | -1.35***<br>(.20) | -1.30***<br>(.20) |

In Table 4.9, I look at whether fake news items make people with different political knowledge click differentially. The independent variable *political knowledge* is

coded from 0) “low” to 5) “high.” The results show that the interaction between fake news and knowledge is negative and highly significant. Therefore, the negative effect of fake news on intention to click is much more pronounced for those with high knowledge than for those with low knowledge, while the main effect of knowledge shows that more knowledgeable respondents have a stronger inclination to click on news items in general.

**Table 4.9.** The interaction of political knowledge and fakeness on news clicking

|                                 | Base Model        | Interaction Model |
|---------------------------------|-------------------|-------------------|
| Fake news                       | −.64***<br>(.04)  | −.15<br>(.17)     |
| Political knowledge             | .11***<br>(.03)   | .18***<br>(.04)   |
| Fake news x political knowledge |                   | −.12**<br>(.04)   |
| Age                             | −.01<br>(.01)     | −.01<br>(.01)     |
| Gender                          | .02<br>(.06)      | .02<br>(.06)      |
| Education                       | −.07<br>(.04)     | −.07<br>(.04)     |
| News time                       | .13***<br>(.03)   | .13***<br>(.03)   |
| Democrat                        | .01<br>(.07)      | .01<br>(.07)      |
| Republican                      | .04<br>(.09)      | .04<br>(.09)      |
| Like Trump                      | −.01<br>(.01)     | −.01<br>(.01)     |
| Political trust                 | .16***<br>(.05)   | .16***<br>(.05)   |
| Internal efficacy               | .11**<br>(.03)    | .11**<br>(.04)    |
| External efficacy               | −.18***<br>(.04)  | −.18***<br>(.04)  |
| Constant                        | −1.02***<br>(.21) | −1.30***<br>(.22) |

Next, I look at how political knowledge and individual traits affect the evaluation of fake news credibility rating. In Table 4.10, the dependent variable credibility rating is coded from 1) “very inaccurate” to 5) “very accurate”. The results show that more knowledgeable respondents are significantly more likely than others to rate fake news headlines as inaccurate. The effect is consistent across all three fake news subcategories. Respondents who are older, spend more time following political news or current affairs are more likely to rate fake news headlines as inaccurate. Meanwhile, comparing with others, partisanship does not make a significant difference in fake news credibility rating. Support for Trump correlates with a higher probability of believing fake news.

To summarize the main findings in this research, if respondents click on one fake item, they are more likely to click on another fake item rather than non-fake item. Respondents tend to click on same or similar types of fake items. If they can discern falsehood for one item, they can do it for another. More knowledgeable people are found to click on fake news more, especially conspiratorial fake news. Despite that, they are significantly more capable of recognizing the falsehood than the less knowledgeable.

**Table 4.10.** Demographic and attitudinal predictors of fake news credibility rating

|                     | FN rating            | Satirical<br>FN rating | Fearmongering<br>FN rating | Conspiratorial<br>FN rating |
|---------------------|----------------------|------------------------|----------------------------|-----------------------------|
| Political knowledge | −0.141***<br>(0.024) | −0.154***<br>(0.032)   | −0.104**<br>(0.038)        | −0.145***<br>(0.025)        |
| Age                 | −0.012***<br>(0.002) | −0.014***<br>(0.003)   | −0.004<br>(0.003)          | −0.014***<br>(0.002)        |
| Gender              | 0.051<br>(0.050)     | 0.133*<br>(0.064)      | 0.146<br>(0.079)           | −0.034<br>(0.055)           |
| Education           | −0.040<br>(0.030)    | −0.006<br>(0.039)      | −0.102*<br>(0.048)         | −0.042<br>(0.032)           |
| News time           | −0.095***<br>(0.025) | −0.134***<br>(0.032)   | −0.065<br>(0.039)          | −0.079**<br>(0.026)         |
| Democrat            | −0.005<br>(0.057)    | 0.041<br>(0.075)       | −0.160<br>(0.090)          | 0.017<br>(0.062)            |
| Republican          | 0.002<br>(0.081)     | −0.089<br>(0.101)      | −0.006<br>(0.127)          | 0.065<br>(0.090)            |
| Like Trump          | 0.048***<br>(0.012)  | 0.018<br>(0.015)       | 0.114***<br>(0.019)        | 0.045***<br>(0.013)         |
| Political trust     | 0.155***<br>(0.039)  | 0.232***<br>(0.049)    | 0.090<br>(0.063)           | 0.126**<br>(0.043)          |
| Internal efficacy   | −0.014<br>(0.029)    | −0.028<br>(0.037)      | −0.003<br>(0.046)          | −0.009<br>(0.030)           |
| External efficacy   | 0.042<br>(0.039)     | 0.031<br>(0.050)       | 0.065<br>(0.060)           | 0.042<br>(0.043)            |
| Constant            | 2.986***<br>(0.162)  | 3.079***<br>(0.207)    | 2.667***<br>(0.261)        | 3.031***<br>(0.177)         |

## Discussion and Conclusion

This paper systematically examines the individual-level and item-level characteristics associated with clicking and discerning fake news headlines of different types. It is important to note that the respondents' tendency to click on news stories is affected by item character with regards to real or fake, and that their inclination to click on news in general is reduced when presented with fake news. Future research should continue to

explore whether the presence of misinformation and fake news in the information ecosystem affects political participation and to what extent.

Contrary to previous research findings that conservatives and Republicans are more likely to share and believe fake news than liberals and Democrats (e.g., Guess et al., 2019; Silverman & Singer-Vine, 2016), my research shows that fake news clicking and believing is more bipartisan in nature than commonly assumed. More knowledgeable respondents have a stronger inclination to click on general news including both real and fake ones, but they are more capable of recognizing falsehood in news stories than others.

Building on the “echo chambers” theory that individuals selectively read news contents that are ideologically similar and closer to their own political opinions (Flaxman et al., 2016; Garret, 2009; Iyengar & Hahn, 2009), this research finds similar patterns in news clicking behaviour and concludes that individuals are drawn to similar types of fake news items. It is worth noting that once people click on one piece of fake item, they are very likely to click on another fake item. In real life, individuals may come across misinformation and start being exposed to more of it due to the user-driven and system-driven customizability of online news (Dylko, 2016). When a considerable portion of readers click on a piece of fake news, for instance, it will increase the prominence of the item, which will likely be recommended to the news feed of many others by the algorithmic mechanism. As a result, many – especially the less knowledgeable – could be misled or misinformed. In summary, the findings of this research underline the importance and urgency of information fact-checking and gatekeeping in democratic process.

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## Endnotes

1. As this survey mainly focuses on fake news around the time of 2016 US presidential election, I only selected respondents who are located in the US and have high performing records. The survey was only visible to Mturk respondents who met these qualification requirements. They could preview the survey and decide whether to participate.
2. See the questionnaire in Appendix for Chapter 4.
3. See details in Appendix for Chapter 4.
4. Note that this result should not be generalized to conclude that fake items attract fewer clicks than non-fake items. The result here only holds within this specific set of 10 items. Take *FBI Twitter* for example, some fake items in principle can attract high percentages of clicks.
5. Calculated based on Table 4.2 statistics.  $(1-0.3529)*(1-0.1934)*(1-0.2193)*(1-0.4925)*(1-0.3111)*(1-0.2453)=0.1075*1,003=107.84$
6.  $0.3529*0.1934*0.2193*0.4925*0.3111*0.2453=0.00056*1,003=0.56$
7. The greater number of Frequency and  $H_0$  is highlighted in bold.

## Appendix for Chapter 4: Mturk American Politics Survey

Welcome! You have 15 minutes to complete this survey. We greatly appreciate your response and will keep it strictly confidential.

\*Required

On average, how much time do you spend per day following news about politics or current affairs? \*

- ☐ None, no time at all
- ☐ Less than ½ hour
- ☐ ½ hour to 1 hour
- ☐ 1 to 2 hours
- ☐ More than 2 hours
- ☐ Don't know

You usually get your political news from (choose all that apply) \*

- ☐ Radio
- ☐ Print newspapers
- ☐ Newspaper websites
- ☐ Television (local/cable news broadcast)
- ☐ Word of mouth
- ☐ Social media: Facebook
- ☐ Social media: Twitter
- ☐ Social media: Reddit
- ☐ Social media: Instagram
- ☐ Social media: Snapchat
- ☐ Social media: Other
- ☐ None of these

If you come across the following news stories, which one(s) would you likely click on to read? (choose all that apply)

- ☐ 1) Trump's toupee gets blown away on boarding Air Force One
- ☐ 2) U.S. unemployment rate drops to a 16-year low under Trump administration
- ☐ 3) President Trump awards Kellyanne Conway the Presidential Medal of Freedom for surviving the Bowling Green Massacre
- ☐ 4) The federal government grants 15,000 H2B visas for temporary foreign workers this year
- ☐ 5) Revengeful Democratic National Committee seeks funds from Goldman Sachs to dig dirt on Trump international business dealings
- ☐ 6) The FBI negotiates with Twitter Inc. to monitor the president's tweets before public release
- ☐ 7) European council names Donald Trump a major threat to the European Union.
- ☐ 8) Mexican drug dealers, criminals, and rapists crossing the US border at an all-time high before the construction of the Wall

- ☐ 9) Polls show only 25% of Americans support the Republican health care bill
- ☐ 10) Hacked CIA files show the Keystone pipeline is a secret government effort to resist alien attacks

Before seeing further details, how accurate do you think this news is? Please rate all the news above. \*

|     | very<br>inaccurate    | moderately<br>inaccurate | neither<br>accurate nor<br>inaccurate | moderately<br>accurate | very<br>accurate      |
|-----|-----------------------|--------------------------|---------------------------------------|------------------------|-----------------------|
| #1  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #2  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #3  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #4  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #5  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #6  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #7  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #8  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #9  | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |
| #10 | <input type="radio"/> | <input type="radio"/>    | <input type="radio"/>                 | <input type="radio"/>  | <input type="radio"/> |

In which year were you born? \* \_\_\_\_\_

What is your gender? \*

- ☐ Male
- ☐ Female

What is your highest educational attainment? \*

- ☐ No high school diploma
- ☐ High school diploma or equivalent
- ☐ Some college, no bachelor's degree
- ☐ Bachelor's degree
- ☐ Graduate degree
- ☐ N/A

Do you usually think of yourself as a Republican, a Democrat, an independent, or else? \*

- ☐ Democrat
- ☐ Independent
- ☐ Republican
- ☐ Other

How much did you like Donald Trump as a presidential candidate? \*

1 2 3 4 5 6 7 8 9 10

extremely dislike ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ extremely like

How much do government officials care about what people like you think? \*

- A great deal
- A lot
- A moderate amount
- A little
- Not at all

How much can people like you affect what the government does? \*

- A great deal
- A lot
- A moderate amount
- A little
- Not at all

How often do you trust Washington to do the right thing for the American people? \*

- Always
- Most of the time
- About half the time
- Once in a while
- Never

For the following questions, please answer based on your existing knowledge. Please do NOT search online or use any other external help. Bear in mind this is not an exam. Your answers are anonymous and will be only used as a measurement in our research. The validity of this survey will largely rely on your truthful answers. We would greatly appreciate your cooperation.

Which U.S. institution is the legislative branch? \*

- Congress
- President
- Supreme Court
- Don't know

Who is the current Speaker of the United States House of Representatives? \*

- Sean Spicer
- Paul Ryan
- Steve Bannon
- Don't know

How many justices serve on the Supreme Court? \*

- ☐ Five
- ☐ Seven
- ☐ Nine
- ☐ Don't know

If a sitting President is impeached, who would succeed first? \*

- ☐ Vice President
- ☐ Secretary of State
- ☐ Chief of Justice
- ☐ Don't know

The principle of checks and balances is based on the notion that \*

- ☐ Leaders are the trustees of the people
- ☐ A weak government is always preferable to a strong government
- ☐ Power must be used to offset power
- ☐ Don't know

Please let the researcher know any comments or suggestions you might have about this survey. (optional)

## Chapter 5. Conclusions and Future Directions

This thesis addressed two central questions that are essential to the research of digital divide: 1) the significance of whether people have access to new information and communications technology; 2) the practical meaning of how people make use of this access. More specifically, do Internet usage and widely popular social media platforms bring any incentives or disincentives for social connections and participation in politics? What are the consequences for participatory democracy? The overall findings are consistent with the positive trend identified in Boulianne's (2020) meta-analysis of existing research on digital media effects over the last twenty years – digital media has a growing positive effect on civic and political engagement and the size of the effect becomes more substantial over time. The effects of digital media on participation were small in the early years but has grown to be more substantial.

In terms of whether Internet use have different implications for different groups of users, the findings show that social media as an information and communications medium is beneficial for civic and political participation, but only for those who proactively use the platform to get informed. Among those who use the Internet, those who use Internet for political information, and those who use social media for political information, the ones seeking to be informed are found to participate more and have more social capital. Those who proactively keep up with politics are usually the ones who are already interested and knowledgeable. In that sense, social media use reinforces a participatory gap between the active and the apathetic groups.

## **Challenges in the existing studies**

Conceptually, the scope of political participation need to incorporate new forms that are taking place on online platforms and social networking sites. The four broad modes of political participation – voting, campaign activity, citizen-initiated contacts, and cooperative participation – identified by Verba and Nie (1972, p. 47) could now easily take place online, offline, or both. It is empirically important to evaluate whether there is any distinction between traditional offline participation and online participation. Despite the rapid growth of online participatory activities, there is a lack of systematic research assessing how they fit into the broader structure of participatory acts.

Methodologically, there are challenges in identifying the causal direction between Internet use and political participation. Oser and Boulianne (2020), for instance, find that active political participation motivates digital media use, which reinforces inequalities in political participation (see also Heiss & Matthes, 2019), whereas other studies show an opposite causal link that news use leads to increased participation (see e.g., Edgerly et al., 2018; Valeriani & Vaccari, 2016). There are only a few studies that systematically assess the Internet effect over time with available data (Kroh & Neiss, 2009; Heiss & Matthes, 2019). The positive effect from Internet use could be a result from any omitted variable bias or self-selection into Internet use. Many studies are plagued with questionable causal inference and internal validity from using cross-sectional data with limited measures. These methodological shortcomings are prominent problems in existing studies. In short, there is an open debate on the impact of Internet use in the existing literature and these methodological challenges are commonly recognised in studying the impact of the Internet.

## **Findings and contributions of this thesis**

The main results show that social media use for political purposes has a positive effect on political participation, but only when people seek to be informed online could the new information and communications mediums have beneficial outcomes for citizenry. As shown in Chapter 2, these first time Internet users who mostly used the Internet for non-political purposes such as weather, health, and maps didn't develop more political interest, efficacy or knowledge. However, even for those first-time users who used the Internet for online news, there were no significant changes in their political interest, internal efficacy, external efficacy and political knowledge after nine months. The null results on the relationship between Internet use and democratic attitudes are largely consistent with the weak and small positive effects that Boulianne's (2020) meta-analysis identified during the first stage of Internet use. The reason could be that the Internet as an information and communications medium was still nascent during this period. The effect on civic competence is weak and small.

Chapter 3 reveals that those who spend time on social media following political news appear to have more social capital and are more likely to participate in politics than those who do not follow news or use internet for non-political purposes. The effect on political participation from getting informed on social media is significantly stronger for the older, the more politically interested, and those with stronger partisanship, compared with their counterparts. The beneficial outcomes from Internet use depends on the medium and whether people make use of it for political purposes. It is interesting to note that the positive effects are more pronounced on social media platforms than generic Internet websites. The relationship of Internet use and civic and political engagement has

obviously evolved over time. The effects has developed from weak and small at the first stage to be more robust and substantial at the second stage of usage. As reasoned by Boulianne (2020), this might be explained by the widespread use of Internet technology and changes in the forms of Internet use that are accompanied by the popularity of social media platforms and more available resources and tools for political participation.

When we applaud the enthusiasm and opportunities brought by Internet and social media, new challenges such as online misinformation have emerged as threats to an informed citizenry. As Schier (2000) claims, when new communications technologies bring greater efficiency, it may also cause chaos in our democracy. According to Pew research (Gottfried & Shearer, 2016), more than half of U.S. adults obtained their news from social media in 2016. Meanwhile, political use of social media is found to correlate with higher exposure to falsehoods than general social media use in the United States, Great Britain, and France (Koc-Michalska et al., 2020). Chapter 4 of this thesis addressed a timely issue on fake news. It finds that a sizable portion of respondents clicked on the fake news items. The findings shows that more knowledgeable people are more capable of recognising fake news – in a sense that political knowledge constantly plays an important role in information processing, whereas the less knowledgeable are more receptive to believe in the falsehood.

This is also the first study to knowledge that rigorously proposed a typology of fake news and tested its empirical relevance. The analysis identifies a cognitive pattern that respondents tend to click on the same type of fake news. The quality of information processing and online news consumption varies on one's possession of political knowledge. More knowledgeable people can easily discern falsehood and not be misled

by misinformation, whereas the less knowledgeable are less able to do so and could possibly click and be receptive to many of the same type fake news. Going back to the underlying question on the significance of Internet access and Internet use, the results from this study once again demonstrate that even when there is equal access, there is still no equal use. Depending on one's socioeconomic background, political knowledge and skills, individuals will find themselves dealing with opportunities and challenges from Internet and social media use with different capacities. People with less political knowledge, for example, would have greater chance of being misinformed by the information online.

After years of development, the digital divide in western democracies is no longer about the consequences of who are online and offline, but rather, the differential resources and obstacles that users experience in online activities that might exacerbate existing inequality in information sharing and effective participation. Taken together, these findings suggest that the capability of information and communications technology should be evaluated carefully, as it alone cannot achieve the democratic goal of digital equality and an informed citizenry. The political takeaway is that policymakers should concur that digital divide is a problem that goes beyond a matter of access. The fact that the Internet penetration and network infrastructure have reached an ideal status in some affluent western democracies does not mean that digital inequality has naturally disappeared. Going forward, the public agenda of government and private sectors should focus on allocating resources to information gatekeeping, media literacy education, and online platform regulation.

This thesis contributes to scholarly understanding in three major aspects. Conceptually, this is the first study at the time of writing to construct a comprehensive measure of political participation and empirically test the validity of the measurement. The results find no conceptual or empirical ground for a distinction between online and offline participation, where the mainstream studies have been using separate measures for no apparent theoretical basis (e.g., Theocharis & Lowe, 2016).

Theoretically, following up on the knowledge gap and communication effects gap hypotheses, my findings suggest the possibility of a participation gap that exists between those with the lower and higher levels of socioeconomic status. Those with lower education and income turned out to be the ones who last obtained Internet access. The reasons could be that they are slower in adapting to the new technology and slower in acquiring digital skills. Had those with higher socioeconomic status been given the Internet access for the first time, we would probably find more substantial changes in their political knowledge, interest or efficacy as their existing knowledge and skills would help them learn to use the Internet for information faster. This implication echoes other communication research findings that information and communications technology have a differential effect on certain groups of users than others (Stoycheff et al., 2020; Wei & Hindman, 2011).

Methodologically, first of all, this research overcomes the common shortcomings in the measurement of political participation by effectively testing the homogeneity of its constructing variables using Mokken scaling analysis. Second, my research contributes to the literature by establishing a strong internal validity in the relationship between Internet use and civic competence. Using a quasi-experiment research design and block recursive

modelling, the results are not subject to omitted variable concerns. Previous studies based on cross-sectional data were largely limited by the data and measurements and insufficient to establish causal claims. Their findings of small sizes positive effects from Internet use could very well be negligible and suffer from apparent endogeneity problems. Despite that the data of the first study is from 2008-2010 American National Election Studies and the fact that the proportion of active Internet users of the U.S. population has increased significantly a decade later, there are no reasons to doubt the main findings of this study might differ if testing with data from more recent times. We would expect the same results from the late-adopters, even though the actual size of this cohort will be relatively small in 2021. The findings of the research are not confined to the context of the United States, but generalisable for other western representative democracies.

## **The limitations and future directions**

The empirical studies in this thesis are conducted in the contexts of the United States and Great Britain, using data from online surveys and national elections studies. Note that both countries have high Internet penetration rates and are highly advanced in the online information technology. We need to take into account that many of the developing countries around the world have yet to reach this level. There are a number of macroscopic factors such as political systems, civic culture and values, economic development, information technology and demographics that influence civic engagement and political behaviour. While the results of this thesis are comparable to other first-world western democracies, there are limited grounds for the findings to shed lights on

authoritarian and developing countries. The three studies in this thesis do not provide implications on cross-national differences. It is theoretically and practically important for comparative research to investigate more in other countries with different media environment (Stoycheff et al., 2020).

For those who are less interested in news and for young people in particular, incidental exposure to online news has a positive impact on their civic and political engagement (Fletcher & Nielsen, 2018; Kim et al., 2013; Valeriani & Vaccari, 2016). It is the same scenario that when people watch television for various reasons, they often come across news content in play (Neuman et al., 1992). There is no knowledge on how much the extent of incidental news exposure will reduce the participatory gaps. But still, this is an optimistic outcome brought by social media use, albeit not motivated by intention. We would expect the media environment of social media platforms such as discussions, interactions and collective actions help to build and strengthen the connections between individuals and groups, which in return provides a basis for political participation.

While social media and digitalization of information created many opportunities for citizens to be part of political conversations and civic engagement, there are limitations, problems, and challenges arising with digital media to be dealt with in democratic systems. The scholarly questions have gradually shifted from merits to problems and even potential threats that digital media presents to the democratic process. Digital threats such as fake news, surveillance, social control, disinformation, hate speech and political manipulation are risks to democracy (Koc-Michalska et al., 2020; Miller & Vaccari, 2020). The Russian state-sponsored Internet Research Agency (IRA), for

example, specializes in creating and spreading misinformation on the Internet targeting foreign audiences, with the purpose of interfering with western democracies' political outcomes (Lukito, 2019). When misinformation becomes common and influences the integrity of elections, the scholarship needs to better understand the actual political consequences of misinformation, in particular, its consequences on democratic attitudes. Currently, there is very limited empirical evidence in this aspect of research (Weeks & Gil de Zúñiga, 2021). As revealed by the findings in this research, those with low levels of political knowledge are more susceptible to fake news and individuals have a tendency to click on the same types of fake news. Under algorithms and big data driven online mechanisms that prioritize maintaining user attention and keep feeding people what they want to read or believe rather than informing them of objective truth, this could create further echo chambers and more problems in the democratic discourse.

This thesis aims at laying a bit of groundwork for more extensive subsequent research in relevant communication studies. Moving forward, a number of crucial questions are worth thinking about for future research: What are the implications of digital media for democracy? What roles should digital and social media play in a democratic system? What responsibilities should the tech giants (e.g., Google, Facebook, and Twitter) assume in information gatekeeping? What are the consequences of online misleading or illegal content on democratic practices and political attitudes? What measures should we take to combat digital threats such as misinformation and disinformation campaigns? Who are more susceptible to microtargeted manipulation? What is the role of citizen's media literacy? How do we improve digital literacy for the mass public especially those who lack it?

A functioning democracy ideally builds upon an informed, engaged, and politically interested electorate. Digital citizenship, a concept proposed by Mossenberger et al. (2007), should be a common goal for the public to work towards until the vast majority of citizens acquire the ability to effectively use the Internet and online resources to participate in society.

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