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**HOW DOES EXPOSURE TO THE INTERNET AFFECTS POLITICAL
KNOWLEDGE AND ATTITUDES AMONG RURAL CHINESE?:
A FIELD EXPERIMENT**

by

WENWEN SHI

DISSERTATION

Submitted to the Graduate School

of Wayne State University

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2016

MAJOR: POLITICAL SCIENCE

Approved By:

Advisor

Date

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DEDICATION

To my parents, Xiangli Zhang and Huiping Shi, for their unconditional and unwavering love and support.
To my baby daughter, TuTu, to whom I hope to influence with the same love and support I have been shown.

ACKNOWLEDGMENTS

Writing this dissertation was more difficult than I expected, and I am glad that I was able to complete a product that met my goals. Not surprisingly, I lacked knowledge and experience in conducting field experiments when I first started the project. Yet, it is thanks to this inexperience that I finished the work at all. I firmly decided to collect first hand data through a field experiment without over thinking the difficulties. I was fortunate to have the trust and support of my professors, family, and friends, so I did not look overly crazy.

Conducting the experiment in three rural villages in China presented substantial challenges, from acquiring approval from authorities for the research, recruiting subjects, and executing the intervention, to retrieving participants for post-treatment questionnaires. Analyzing data and writing the chapters was equally tough, especially with a newborn at home.

I would not want to go through the whole process again; however, I definitely appreciate the opportunity to gain the knowledge, practice the skills, and push my limits to complete demanding tasks with limited resources. I was sometimes surprised by my commitment to the project. For example, in order to accommodate participants' schedules, I drove from village to village in the dark, on narrow, curved mountain roads to extend the hours of the research sites. In order to decrease attrition, I walked two hours on mountain trails as well as went to the work zones of highway construction sites to find participants to fill out posttest questionnaires. I found that my commitment was bolstered

by my education, which emphasized the value of research and the encouragement I received from people around me.

I have a long list of people to whom I owe gratitude, the first of which is my advisor, Professor Yumin Sheng. When I decided to study the Internet's political impact on citizens in China, I struggled to find systematic data that could be used to test my hypotheses. Professor Sheng suggested that I look at experimental methodology, which can be cost effective in collecting first hand data to test causal relationships. Before my departure to China, Professor Sheng told me "just be safe, even you do not collect the data as planned, that is fine." I took this as the bottom line and was relieved each time this thought crossed my mind when I faced obstacles in the field. I also need to thank Professor Sheng for commenting thoroughly on my dissertation draft and organizing my dissertation defense while I was in California, as well as offering help throughout my years of study at Wayne State University (WSU).

The second person I would like to express gratitude is Professor Strate, who is one of the best teachers I have ever had. He respects his students and really cares about their success. I took two courses with Professor Strate (Policy Analysis and Statistics II), and was a frequent visitor during his office hours, which were usually held before his evening classes. He always answered all of my questions even if there were only five minutes left when I showed up at the door. There was one time that I had too many questions and left no time for him to eat his Subway sandwich before the upcoming class. Professor Strate read through my draft chapters of the dissertation and promptly provided detailed feedback, from methods to grammar. His straightforward comments and

constructive criticisms saved me from many mistakes and improved the dissertation. In addition to the comments, Professor Strate also encouraged me to “keep working and this project will get done.” I am indebted to his continuous encouragement and guidance.

I also want to thank Professor Lean for her warm and kind manner in helping me. The topic of my dissertation was first formed in Professor Lean’s class. Without her encouragement and instruction, I would not have developed this topic for my dissertation project. As the director of the program, Professor Lean signed numerous forms for me and provided information regarding future opportunities.

The first course I took at WSU was Professor Golebiowska’s Research Methods. The first semester was hard for me as an international student. Professor Golebiowska’s clear and organized class helped me overcome language barriers and adjust to the new study environment. I also developed an interest in experimental methodology in her class.

Professor Swider is my outside committee member, and she provided significant guidance for my fieldwork. I would like to thank her for sharing her valuable experience in doing fieldwork studying migrant workers in China; I was certainly inspired by her experience (sharing a room with migrant workers, etc.). Despite the challenges, she assured me that collecting first hand data is rewarding (you know your data best), and fun. She also provided me with concrete advice on topics ranging from how to recruit participants to wearing plain clothes in rural villages. Additionally, when I was in China, she held a video chat with me at midnight (daytime in China) after nursing her baby so that she could provide guidance regarding the interviews. This encouraged me as I wrote the dissertation while taking care of my own baby. Professor Swider has been supportive

of me in my motherhood, reassuring me that the delay in finishing the dissertation was okay, and that taking care of my baby was my first priority. This eased the stress I felt during the first few months following the birth of my daughter.

My deepest gratitude is to Professor Donald Green from Columbia University, who was my instructor at the Inter-University Consortium for Political and Social Research (ICPSR) summer program. This project would not have been possible without his instruction and support. Professor Green showed great interest in my project from the beginning and guided me through the design and implementation of the experiment, analysis of the data, and the writing of the dissertation. He lent me his wealth of expertise in field experiments, challenged me to meet every requirement of an experiment in order to generate causal analysis, and held me to a high research standard. I was impressed by his efficiency and productivity. Although he is an extremely busy professor, my questions were always answered promptly with brief but insightful comments that provided key guidance on analysis and the next step that I should focus upon. I am deeply indebted to him for spending time answering my questions through numerous Skype calls and email exchanges both while I was in China and after my return to the U.S. (he once had to Skype with me on a train in Europe before I printed out the questionnaires). Professor Green read my draft chapters and provided feedback throughout the writing. He also prevented many mistakes that would have been caused by my lack of knowledge and experience. I learned a great deal about experiment and data analysis from his expertise, commitment to research quality, and enthusiasm to promote the use of field experiments in political science.

I would further like to acknowledge other professors who discussed and offered advice on the project. Professor Mingming Shen, the director of the Research Center for Contemporary China at Peking University, met me in Beijing during my field trip. Professor Yan Jie provided me with the questionnaires the Center used for their national surveys and gave me a book of data reports, which I brought with me to the villages. Professor Yang Zhong of the University of Tennessee discussed the survey he used to study rural villagers in the Jiangsu province. Professor Mary Gallagher of the University of Michigan advised me on books regarding doing fieldwork in China. Professor Gordon Chang of Stanford University shared his thoughts regarding the Internet and the conclusion of my study. I also wanted to thank participants at the Behavioral Models of Political Conference, West Coast Experiments Conference and Political Networks Conference for their feedbacks on this project.

Additionally, I appreciate the financial support from the Chiang Ching-kuo Foundation and five other fellowships and grants from WSU's Graduate School and the Humanities Center for the dissertation project. I would also like to thank assistants at the Research Design and Analysis Unit of WSU for answering my questions for data analysis, and Sara Tipton of WSU's English Language Institute and tutors at WSU Writing Center for proofreading the dissertation draft.

Next, I would sincerely thank all the 183 participants of the study who I cannot acknowledge by name due to privacy/ethical concerns. I am indebted to them for their willingness and patience to learn to use the computer and comply with their assigned treatment. Some villagers walked half an hour along a mountain road to the research sites

to access the Internet. Some visited the sites in the early morning before going to work, and moms brought kids and learned to use the mouse while holding babies in their arms. I appreciate them sharing their thoughts, and I learned a lot from talking with them. I want to single out three volunteers who must remain unnamed from each of the three villages that helped me promote the program and recruit participants, as well as the villagers that led me to their fellow participants' homes to fill out the posttest questionnaires. One of the villagers even took his motorcycle to pick up participants and sent them to the research sites for the posttest. I owe them my gratitude and appreciate their friendship.

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Writing the dissertation was challenging for me, but it was made easier because, as someone said, it was people who helped you get through the hardship. I sincerely thank my friends who cared for and supported me through the whole process. I would like to thank my friends in the Bay Area writing group, and the other mothers of the kids group. I would also like to thank my friends in Michigan who helped me adjust to a new country, especially Weizhong Zhang and Wenliang Zhong, who provided critical help at key moments of my life in the U.S.

Writing the dissertation was also an experience of self-discovery. I appreciate the lessons I learned and the people's lives I touched throughout the journey. When the villagers typed their first comment online, when the parents saw their migrant children for the first time in years through the video chat, I was relieved and reassured that even if the experiment failed and I did not collect the data as planned, it was worth the time and effort as I did something meaningful for the villagers.

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CHAPTER 1 “INTRODUCTION”

The Internet is undoubtedly one of the most revolutionary technologies in human history. Bolstered by the popularity of portable computers and cell phones, no other technology has had such a prominent impact on Chinese society in recent decades (Zhou 2006). The Internet’s unique potential is reflected centrally in China’s political realm. For a conservative society, under Communist rule for over six decades, the emergence of the Internet has the potential to yield dramatic changes for individual citizens’ political orientation and participation.

There is a group of scholars who argue that the Internet’s political implications for authoritarian regimes reach far beyond just the addition of an advanced communication device in authoritarian regimes (Kalathil and Boas 2003; Lei 2011; Bailard 2014; Anduiza et al. 2012; Howard and Hussain 2013). It affords its users the ability to access uncensored information, compare and evaluate democratic practices and government performance, and express opposition against government policies and actions. For some, this is the only place they can relatively freely and safely protest. However, another group of scholars, who believe that the Internet’s effect on empowerment is overestimated, found that the Internet creates new obstacles for civic participation between activists and disengaged citizens (Davis 1998; Wilhelm 2000; Zheng 2008). These two groups of scholars, therefore, disagree about the role of the Internet’s impact upon democratization.

The heated debate over the Internet’s political potential in China is complicated since research on the topic lacks causal evidence (Kalathil and Boas 2003; Lei 2011;

Gerber and Green 2012; Zheng 2008; Zhou 2006). There is limited systematic data available on Chinese citizens' political usage of the Internet. Most research relies on interviews and observations of websites to conduct analysis. Thus far, studies only examine consequences of the rise of the Internet and netizens (*wangmin*). Also, these studies cannot account for the underlying processes of whether and how the Internet politicizes the netizens (Lei 2011). The question remains: Does the Internet have "transformative effects" on Chinese citizens or has it simply attracted people who are already politically inclined?

My research is an attempt through a field experiment to fill the gap by testing the impact of the Internet on Chinese rural villagers' political knowledge and attitudes. Experimental methodology randomly assigns subjects to treatment and control groups; therefore, as it controls for threats to internal validity, it is a superior method for inferring causal effects. Conducting an experiment is indeed the best method to detect and analyze the Internet's possible transformative effects.

The Significance

Political scientists have not paid much attention to the importance of the Internet in relation to politics until very recently. According to Farrell (2012, 38), it was a topic dominated by public intellectuals, legal academics, sociologists, and communications scholars. Farrell (2012) also suggests that political scientists can contribute to the present debate on whether the Internet facilitates or hurts democracy by focusing on discrete phenomena and uncovering the specific mechanisms connecting the Internet and democracy. For example, political scientists should propose concrete theories that

uncover particular ways in which the Internet may affect citizen engagement (Farrell 2012). Researching the Internet's impact on Chinese villagers' political knowledge and attitudes is one such effort, which reveals particular ways in which the Internet impacts politics.

Field research can provide causal evidence for the long unsettled debate over the Internet's role in China's democratization. Such experiments are capable of not only identifying the characteristics of Chinese netizens, but also (more importantly) identifying the transformative effect the Internet generates on its users. This is the type of challenge experimental methodology can address. Moreover, with the adoption of a field experiment, this study adds to the diversity of methods used to study China. Along with other recent experiments in developing countries, the study tests the feasibility of this type of political science research in various political environments. Additionally, the study provides firsthand information regarding villagers' amount and pattern of usage of the Internet. As such, the study is among the first to empirically address the Internet's political impact in rural China. Finally, the present study contributes to the literature on the Internet and authoritarian regimes as well as the broader theories on democratization.

A Field Experiment

I conducted my field experiment in three rural villages in Guizhou province for a period of four months in 2013. Participants recruited for the study were randomly assigned to three groups. The first two groups were exposed to different online content, while the third group remained untreated during the experimental period. The treatment group was asked to read news for at least 15 to 30 minutes each time they visited the

research sites. The placebo group used the Internet for entertainment purposes; the control group was not invited to use the Internet during the experiment but was informed about delayed treatment that would take place two-to-three months later when the other groups completed their training. Questionnaires and interviews were used to test our hypotheses, which claim that regular exposure to social and political content online increases users' 1) knowledge of public affairs and 2) support for liberal democratic values.

The field experiment allowed us to observe media interventions in a natural setting (Paluck and Green 2009). Tremendous effort was required at every step of the fieldwork. I had to gain approval from both local authorities and WSU's IRB, search for sites to conduct the experiment, recruit participants, teach them to use the Internet, apply the treatment, and collect the post-treatment questionnaires. In order to recruit more subjects, my assistant and I extensively visited households and public gatherings in all three villages. Further, we held five seminars in a local elementary school and village committee conference rooms to promote the program. We also had extended evening hours to attract more participants to come and learn to use the Internet. In the end, 100 participants visited the Centers to learn and/or use the Internet. Intense follow-up efforts reduced the problem of attrition. Among the 183 subjects who filled out the pretest survey, 172 of them completed the posttest questionnaire at the end of the experiment. It was challenging to conduct the fieldwork in an unfamiliar setting, especially considering China's sensitive political environment. However, the fieldwork generated valuable

firsthand data and tested the feasibility of our methods when exploring other political topics.

The Results

On average, the participants in the news group had significantly higher scores on political knowledge questions after using the Internet. Regression analysis, using two models, supported the hypothesis that exposure to online news increases users' political knowledge, while exposure to online entertainment content has no effect on users' political knowledge. Eleven pre-test and twelve posttest questions involving basic political factors and recent major news events were asked to test participants' political knowledge.

In order to address the non-compliance issue, the experiment estimated the *Complier Average Causal Effect (CACE)* in both the placebo and the conventional designs. The CACE showed the treatment effect among the Compliers – a subset of the subject pool treated only if assigned to the treatment group (Gerber and Green 2012). Both the placebo and the conventional designs reached consistent conclusions: assignment to the treatment group increased political knowledge on the posttest among Compliers.

The findings have important implications, considering that the rural villagers had very limited political knowledge on the pretest. For example, 64% of the participants did not know the name of the current Chinese premier, while 54% did not know the name of the current President of the United States. As most villagers' media exposure was limited to TV dramas, their awareness of current political and social events was even more

restricted. However, the news group improved from 17% correct answers on the news items ($M=1.00$, $SD=1.19$) in the pretest to 45% ($M=3.56$, $SD=2.07$) in the posttest. Indeed, the treatment of the Internet provided them a channel to fortify political knowledge and aided them in becoming informed citizens, which was crucial to their further political advocacy and engagement.

The effects of the Internet on participants' political attitudes were less certain. The results showed that assignment to the treatment group did not increase the participants' support for democratic values on the posttest. It was unlikely that two-to-three months of exposure to the Internet could generate a significant change in political attitudes. However, reading online news and comments was an eye-opening experience for some participants. They even started to leave comments online once they learned how to type. Those participants also became more confident and open in discussing politics during interviews after receiving the treatment and interacting with different online contributors.

Policy Implication and Limitations

Finally, regarding policy implication, Shirky (2011) cautioned policy makers that they might make a major mistake by funding democratic activists in nondemocratic countries if they believe that the Internet facilitates collective actions, as this might lead authoritarian governments to block access to the Internet. Indeed, pushing the Internet's expansion brings the concern of the state intensifying censorship of online content. However, according to King et al. (2013), the Chinese government's online censorship has aimed to curtail collective action while allowing criticism of the state and the

government. Our experiment places participants in real life situations where the Internet they accessed was censored by the Chinese government. Despite this parameter, the participants showed increased political knowledge regarding political factors as well as current events. Although the treatment of reading news did not increase participants' support for democratic values, the long-term effects of exposure to online political content remains unknown. Moreover, reading online news and comments was an entirely new experience for villagers; they encountered online news stories that were more diverse and balanced than they have seen before; they were able to read comments reflecting political opinions and criticisms that differed from the government's propaganda. Furthermore, it is important to know if exposure to news on the Internet will lead to changes in opinions, and if such exposure will lead to increased support for democratic values. Scholars have long argued that democracy requires citizens who are well-informed about public affairs, willing to participate in politics and community life, and capable of making demands on public officials and holding them accountable for their actions.

The most noticeable limitation of the study was the length of the experiment, which was relatively short to expect that the Internet would have a sizeable effect on political attitudes as they tend to be durable and less affected by short-term exposure. In addition, the limitation of using quantitative methods to evaluate changes in attitudes applied to this study if participants were unwilling to express their own views on politics, especially democracy, in the questionnaires.

Outline

This dissertation includes eight chapters. In chapter two, I review the debate on the Internet's impacts on politics, referring to the studies in developed countries. I then focus on the lack of analytical data on the Internet's effects within authoritarian regimes. Although there is a widespread assumption that the Internet has a democratizing effect, few studies have provided solid evidence to identify such an effect. This is true of Internet research in China, a country which now has the largest number of Internet users and a particularly unique, active online community.

In chapter three, I examine the Internet's development in China. There is a digital divide between urban and rural China, and limited Internet access in rural areas has important implications. I also examine the Internet's potential implications for Chinese politics and democratization. Finally, I outline the assumptions underlying the present study.

In chapter four, I describe the research method. The design is a randomized field experiment conducted in three rural villages in China over a period of four months. The purpose of the experiment is to test the effect of exposure to the Internet on participants' political knowledge and political attitudes. I describe the experimental settings and explain how I recruited the subjects, conducted the pretest, set up research sites, and applied the treatment. I examine the demographic and background information of the participants and show the similarity of the groups at the outset due to random assignment. I also discuss compliance issues, i.e. reasons that cause noncompliance to occur as well as measures taken to reduce it. Lastly, I describe some of the challenges or difficulties I encountered in the field.

In chapter five, I review the procedures for collecting the posttest questionnaires and how the two outcome variables, political knowledge and attitudes, were measured. I also provide measurements on independent variables that are included to improve the precision of estimation on the treatment effects.

In chapters six and seven, I report the experimental results. Chapter six presents findings with respect to the first outcome variable (political knowledge), and chapter seven presents findings with respect to the second (political attitudes). I explain the analytic methods I employed to cope with the problem of non-compliance and estimate the *intent-to-treat* effect (ITT) as well as the *Complier Average Causal Effect* (CACE) by using the placebo and conventional approaches. I argue that the pattern of results supports the hypothesis that participants' exposure to online political content (reading news) for a short-term period increased their political knowledge but failed to alter their political attitudes.

In chapter eight, I interpret the findings of the study. I discuss qualitative data collected from personal interviews. These data are helpful in assessing the external validity or generalizability of the study. This helps to inform the major findings of the study. In sum, I argue that this study offers important insights and a template for future research in understanding the Internet's impacts on political knowledge and attitudes. It gives a better understanding of the Internet's potential role in processes of democratization.

CHAPTER 2 “THE INTERNET AND ITS POLITICAL IMPACT ON CITIZENS: THEORIES AND ASSUMPTIONS”

The Debate on the Internet’s Political Implications

The Internet’s Political Impact in Developed Liberal Democracies

Questions regarding the Internet and its political consequences have attracted scholarly attention across the disciplines of political science, communication, and sociology. Interestingly, it was legal scholars, sociologists and communication scholars rather than political scientists who first tried to answer these questions (Farrell 2012). These scholars initially focused on questions about the Internet and the role of the state; could the Internet be governed by traditional law? What challenges did the Internet pose to state sovereignty (Johnson and Post 1996; Goldsmith 1998)? Some scholars argued that the Internet provided opportunities for private actors to confront states (Swire 1998; Fromkin 1997). Few political scientists were interested in the Internet until the mid-2000s, years when U.S. politicians began to move beyond simple campaign websites and started new modes of fundraising and organizing supporters through the Internet (Farrell 2012). These new ways of using the Internet for political purposes attracted the attention of political scientists, leading them to ask questions about the Internet and citizen engagement. Farrell (2012) labels the moment as “the second wave of literature” in the research on the political consequences of the Internet.

This research sought answers to questions about whether the diffusion of the Internet was empowering citizens and facilitating political engagement (Budge 1996; Coleman 1999; Hague and Loader 1999; Tsagarousianou et al. 1998; Kalathil and Boas

2003; Norris 2000). Its focus was the Internet's relationship to civic participation in advanced industrialized democracies. Two opposing arguments appeared: "digital empowerment" and "digital disengagement" (Zheng 2008, 82).

The proponents of Internet empowerment emphasize its mobilizing function and its potential to promote democratic citizenship (Lei 2011, 296). They claim that by improving dissemination of information and communication among citizens, as well as between the government and the general public, the Internet lowers the costs for the public to gain access to political information and facilitates their direct participation (Davis 1998; Rheingold 2000; Grossman 1995; Weber et al. 2003; Xenos and Moy 2007). Conversely, proponents of digital disengagement doubt the Internet's ability to remedy information inequality between the rich and the poor as well as between activists and disengaged citizens (Davis 1998; Wilhelm 2000). Since there is disproportionate access to the Internet, an even wider gap in civic literacy is created between those with and those without access to the Internet. This is the digital divide, a new obstacle for civic participation (Norris 2001; Hargittai and Shafer 2006; Schlozman et al. 2010). While the Internet makes it possible for individuals to more easily communicate with the public, some scholars argue that the Internet does not lead to democratization of public debate. The distribution of readership numbers of online platforms such as blogs is heavily skewed, favoring those who are already civically literate (Shirky 2003; Farrell and Drezner 2008). Moreover, it is argued that participation within the virtual environment of the Internet undermines person-to-person interaction and thereby diminishes social capital (Barber 1998a; Barber 1998b; Putnam 2001).

Lack of Analytical Data on the Internet's Effects in Authoritarian Regimes

In contrast to growing literature empirically studying the Internet's political implication in liberal democratic countries, less work using quantitative data has been done to systematically analyze the Internet's political consequence in authoritarian regimes, despite the prevalent assumption regarding the Internet's democratizing effect (Kalathil and Boas 2003; Lei 2011). In fact, the Internet may play a more critical role in closed regimes since control of information is extremely tight and political participation is highly restricted. Advanced information technology can bring new political possibilities. Advocates even predict that the Internet can lead to the downfall of authoritarian regimes (Kalathil and Boas 2003), 2). However, the mechanism through which this downfall might occur remains unidentified. Indeed, the literature on democratization did not pay enough attention to the advancement of information technology, although the modernization theory of 1950s and 1960s has emphasized the importance of mass media in promoting political development (Kalathil and Boas 2003, 3). Anduiza et al. (2012) argued that it was rarely contested that the Internet had an effect on civic and political involvement. Moreover, although research from the United States and the United Kingdom showed an increasingly positive relationship between Internet usage and political participation, it is uncertain whether such an effect can be found in other non-Anglo-Saxon political systems as comparative work outside the two countries is insufficient (Anduiza et al. 2012).

So far, several large-scale comparative works have involved the quantitative analysis of the Internet in authoritarian regimes; however, few have created convincing

evidence to link Internet diffusion to democratization (Kalathil and Boas 2003, 4; Lei 2011). Cross-national surveys, such as Freedom House, have collected data on the Internet in authoritarian regimes, but their data focuses on the government's online restrictions rather than the Internet's political impact on the civic engagement of individual citizens (Kelly et al. 2012). As a result, studies that revealed facilitated political action following online interaction as "impressionistic and anecdotal," based on isolated examples (Kalathil and Boas 2003, 5). Consequently, these works fall into the category of conventional wisdom rather than generating causal prediction¹.

The Internet's role in the Arab Spring has attracted scholarly attention (Aouragh and Alexander 2011; Khondker 2011; Howard and Hussain 2013; Lotan et al. 2011; Howard et al. 2011; Wolfsfeld et al. 2013). Mixed results of the revolutions generated different opinions toward the digital media's role in democratic politics (Anduiza et al. 2012, 14). More research has been conducted to examine the role of the Internet in connecting individuals to the political system under authoritarian rules. For example, the Project on Information Technology and Political Islam collected data about blogging, technology use and political opinion in countries involved in the revolution and quantifies the use of social media in Arab Spring (Howard 2010; Howard et al. 2011; Howard and Hussain 2013). However, many studies evaluating the Internet's political impact in authoritarian regimes relied on qualitative data sources. For instance, Aouragh and Alexander (2011) contributed to the debate about the Internet's role in mobilizing

¹ For example, scholars argue that the Internet contributed to the Suharto regime's downfall in Indonesia (Hill and Sen 2000), the demise of the Soviet Union (Rohozinski 1999), and more recently, countries in the Arab Spring.

political and social change by examining the Egyptian revolution based on interviews and observations. Welp and Wheatly investigated the use of the Internet in different protest movements in five Latin American countries, using interviews with key actors and specialists and secondary sources (Anduiza et al. 2012). As a result, more quantitative evidence is required to establish a causal link between the Internet usage and its consequences on individuals, such as on their political ideology, in authoritarian regimes with various political environments/contexts.

The Promising Role of the Internet in China

Research on the Internet's political impact in China suffers from the same problems as research on other nondemocratic countries: data shortage and a lack of causal evidence. The claims of these studies, therefore, are of uncertainty, amounting mostly to persuasive narratives. For more than a decade, Chinese netizens (*wangmin*)² have provided vivid examples of how the Internet enables new forms of political participation within an authoritarian political system and gradually impacts the political orientations and involvement of individuals living in that system. Zhou (2006) points out that no other technology aside from the Internet has attracted so much attention and been so politicized by contemporary Chinese citizens. This attention is especially important because China now globally ranks first in the number of Internet users (CNNIC 2008). Debates about the Internet's hypothesized democratizing function are far from settled (Kalathil and Boas 2003; Lei 2011; Perry 2009; Peters 2002; Tai 2006; Tang 2005; Yang 2009a, 2009b; Zheng 2008; Zhou 2006). Although agencies like CNNIC publish

² Netizens: Internet users; it is a portmanteau of the English words Internet and citizen.

statistical reports on the Internet's development in China twice annually, there is little information about people's usage of the Internet for political purposes. Consequently, most Internet studies lack direct evidence of its political impact. It is primarily descriptive in nature. Scholars have relied on data gathered from personal interviews, the observation of websites, and transcripts of online discourse.

The Individual Citizen's Political Orientation

Most studies on the Internet's democratization effects in China are case studies that examine the usage of the Internet by either citizens or nonprofit organizations to organize collective actions such as online protests. These studies carefully investigate cases where netizens' online mobilization both successfully and unsuccessfully pressured the government to change certain policies. Despite multiple promising cases in China, scholars cannot claim a causal link between the Internet and eventual political outcome. The studies provide no direct evidence that the Internet changes individual citizens' political knowledge, attitudes, and behavior, and not something else or that the inverse occurs.

Thus, it is necessary for scholars to conduct research using designs that make it possible to firmly establish a causal link between Internet use and changes in political orientations. If the Internet has any political impact in China, the political orientation of Chinese netizens' should change from its use (Lei 2011, 292). For scholars on China, it was once fashionable to claim the Internet was a force of democratization. Recently, however, it has been more popular to deny the assertion (Yang 2009b). Neither of these arguments is strong. The former claim simplifies the complex process of democratization

and is an argument for technological determinism; plainly, any theory of democratization must also include factors such as the market, globalization, and the development of civil society through growth in the size of the middle class. However, the latter claim of no impact of the Internet on democratization is also problematic as it fails to see the real change in Chinese society brought about by more than five million Chinese Internet users (CNNIC 2012). To determine the Internet's political impact in China, it is necessary to examine what changes, if any, the Internet brings to individual citizens. If there are few if any differences in political orientations between netizens and non-Internet users, it is unlikely that the Internet has had much impact on China's political development. Conversely, if it is possible to find direct evidence of differences in political orientations between netizens and non-Internet users, the Internet may well be contributing to China's democratization (Lei 2011, 292, 310).

Citizens' understanding and support for core democratic values are vital for the development of stable and effective democratic institutions in a functioning democracy (Zhong 2005). In the absence of such understanding and support, simply introducing democratic procedures (like elections) does not lead to stable democracies. The disconnect between limited understanding and support for democratic values and the introduction of democratic procedures can be observed in many "third wave" countries (Huntington 1993) and their struggle to consolidate democracy (Diamond et al. 1997). Individual citizen's capacity to conceptualize democracy is crucial in shaping their support for it, especially for countries in transition (Bailard 2014). Exposure to online information regarding how democracy functions in advanced democracies may help

citizens define democracy in a way that conforms to global norms (Bailard 2014). Indeed, civic culture and democracy are mutually dependent; it is civic culture that provides “normative and cultural” support for democracy (Dahlgren 2000). An informed public with individuals who both understand and appreciate democratic values are indicators of the existence of such a civic culture.

Guillermo O'Donnell and Schmitter (1986) distinguish between political liberalization and democratization. The former may grant certain rights and protect individual freedoms even without democratization (i.e. in “liberalized authoritarianism”) while the latter requires a structural change (i.e. political institutions). While political liberalization is an ongoing process that enables democratization, the two are distinctive concepts. Thus, while China remains under authoritarian rule, the Internet may be contributing to the gradual liberalization of Chinese society, and this can eventually lead to democratization. The advanced technology of the Internet provides netizens with huge volumes of information, diversified and robust content, and the opportunities to express themselves and collaborate online. The use of the Internet may well change the political orientations of citizens in a country with a “closed” regime in a manner that leaves them more critical of, and less willing to submissively defer to, governmental authority.

Finally, Farrell (2012) advocates that political scientists should think of the Internet as a technology with a bundle of effects, one which should be untied. Very broad questions need to be broken down into more specific questions regarding the Internet's impact. Specific topics would include the Internet's effects on political knowledge, political participation, and the likelihood of getting exposure to different opinions

(Bimber 2012). All of these topics and more are what research on use of the Internet in China can address.

Experimenting with the Internet's 'Transformative Effect'

Lei's (2011) work is one of the first efforts, using representative survey data, to detect the Internet's influence on Chinese citizens' political beliefs and practices. Relying on the 2007 World Value Survey (WVS), Lei uses latent class analysis to test her hypotheses. She found that Chinese netizens, when compared to traditional media users and the non-media users, are more politically opinionated, evidenced by their lesser use of "Don't know" responses to political attitudes questions. Additionally, when controlling for other covariates such as income and education, netizens are more supportive of democratic norms and critical of the political status quo and the party-state in China. They are also more willing to participate in politics (Lei 2011, 291). Surprisingly, being a netizen is a stronger predictor of having these specific beliefs than is social class, an important causal variable in democratization theory (Lei 2011, 312). This is consistent with previous studies that document the Internet's mobilizing effect: Internet users are more politically knowledgeable, interested, and active (Bimber 2001; Hill and Hughes 1998; Johnson and Kaye 1998).

Similar findings were reported by Tang, Jorba, and Jensen who studied the effect of Internet use on political attitudes in China (Anduiza et al. 2012). They claim that even Internet sites are fairly constrained in China; the digital media still provides citizens with opportunities to express, communicate, and seek alternative information. The analysis was based on the China survey in the second wave of Asian Barometer, a cross-sectional

survey conducted in 2008. Although the Internet has no significant effect on citizens' evaluation of the current regime, the authors found that Internet use is negatively associated with citizens' trust in political institutions, and it is positively related to their political efficacy (Anduiza et al. 2012).

Both studies are important because they were based on systematic quantitative evidence (Lei 2011, 329). This is notable progress for research on the Internet in China. However, both studies shared the same limitations, as Lei pointed out: she could only examine the consequences of the rise of the Internet and netizens but not the underlying mechanisms of the microprocesses that politicize these netizens (Lei 2011). Why did Chinese netizens have different political beliefs and practices when compared to traditional media and non-media users? One argument is that the Internet attracts people who are already politically interested or have certain political dispositions (i.e. dissidents). It is unclear whether people with more critical views of regimes and stronger conceptions of citizen rights tend to adopt the Internet, which deepens their attitudes (Anduiza et al. 2012). The other explanation could be that Internet use drives the attitude change or the reverse direction of causation (Bailard 2014). The "transformative effects of the Internet" (Lei 2011, 310) expose netizens to alternate information and opinions that differ from the government's censored news and propaganda. Learning that there are alternatives to the government's censored news and propaganda causes disillusionment with the authoritarian state and increases support for democratic values.

Restricted by the cross-sectional nature of the data, and unable to establish temporal precedence and causality, Lei could not decide between the two explanations.

As a remedy, Lei incorporated as many covariates as possible into her models in an effort to eliminate alternative explanations. She used reverse regression to examine simultaneous causation between the Internet and political beliefs. Generally speaking, the causal interpretation that use of the Internet leads to political beliefs is supported. Nevertheless, Lei cautions that reverse regression cannot exclude interpretations based on simultaneous causation. She concludes it will be challenging to find direct evidence of the Internet's causal effects (Lei 2011).

Conducting an experiment is the best method to detect the Internet's possible transformative effects. Experimental methodology using random assignment to create equivalent treatment and control groups can better rule out self-selection complications. If designed and carried out appropriately, an experiment can isolate competing explanatory variables and give an accurate assessment of the treatment effect. Kedzie (1997), who studied the connection of e-mail access to the level of democracy,³ had to admit that, "one cannot conclusively determine the nature of causality with non-experimental data" (Kalathil and Boas 2003, 156).

Two Templates of Field Experiments on Media and Political Culture

Paluck and Green (2009) conducted a field experiment in post-genocide Rwanda to examine a radio program's impact on individual beliefs, norms, and behavior. They randomly assigned 12 Rwandan communities to listen to a radio soap opera aimed at reducing blind obedience (the treatment group) and a similar radio program dealing with

³ Kedzie used Freedom House scores for civil and political liberty to measure levels of democracy.

HIV (the control group). After one year⁴, they found that the radio program of the treatment group had changed listeners' perceptions of social norms and behavior, measured by standardized questionnaires, focus groups, and behavioral observations. Participants in the treatment group became more willing to express dissent. However, the program had little effect on many of the listeners' personal beliefs⁵.

Furthermore, Paluck and Green (2009) suggest that non-institutional interventions, such as media programs, can change certain aspects of political culture in the short term. The tactical use of media interventions to influence political culture has attracted attention. Paluck and Green (2009, 624) were able to “observe a media program unfold and deploy a methodological design that isolates its causal effects”. The authors' randomized experiment enabled them to observe and assess the change in listeners' deference to authority, willingness to dissent, and participation in collective action. Although they could not claim a complete transformation of Rwandan political culture, the experiment showed that a mass media program was capable of shifting perceived norms and behaviors favoring open expression.

Usually, changes in institutional structures or economic conditions are identified as the causes of fundamental shifts in political culture; however, these changes are far-reaching (Paluck and Green 2009, 636). The authors suggest that rather than reshaping institutions, achieving a small modification of citizens' attitudes and behaviors can be a

⁴ Participants attended listening sessions in-group once a month in each selected site.

⁵ “Personal belief” in Paluck's discussion includes: mass violence, intergroup relations, trauma, and health. “Perceived social norms” include: intermarriage, trust, open dissent, discussing personal trauma and health (Paluck 2009, 580, 581).

potential first step for overall cultural transformation⁶. Furthermore, they argued that public understanding of institutions could be transferred to public understanding through mass communication (Paluck and Green 2009).

Paluck and Green (2009) claimed that to further understand media influences in different sociological landscapes, more studies need to be carried out in various media and institutional settings. They believe that although their findings are revealing of potential media effects, it is more important that their study provide “a template for future work” (Paluck and Green 2009, 638). The adoption of a field experiment involves random assignment of the treatment (i.e. “real world” media interventions) in natural settings. With this study, and other recent experiments and quasi-experiments in developing countries (Blattman 2009; Wantchekon 2003), the authors challenge “the presumed infeasibility of this type of political science research” (Paluck and Green 2009, 638). They advocate the use of their template to study different interventions in various political environments. Indeed, conducting a field experiment to study the Internet’s political impact in China provides a perfect scenario to measure the new media’s effect in a restrained/sensitive political context.

Bailard (2014)’s study provided a direct template for testing Internet’s political impact using field experiments. Bailard (2014) believes that survey instruments do not always measure what they purport to measure. In contrast, field experiments offer a more substantial foundation for causal evaluation, and it is a greatly underutilized method in

⁶ The experiment results showed that new perceptions of norms and new patterns of political conduct can develop without institutions, but whether they can endure without institutional support is unclear.

political communication research. Therefore, she conducted two field experiments in Bosnia and Tanzania to accompany large-n statistical analyses of previously assessed cross-national survey data to test how Internet use shapes citizen satisfaction with their government. She provided coupon booklets with 60 hours of free Internet use for participants in the treatment group to access the Internet in local Internet cafes during a two-month experimental period. The research team gave participants brief tutorials on Internet use and did not restrict what sort of websites the participants could visit.

The result of Bailard (2014)'s experiment showed that the Internet use depressed citizens' satisfaction with the quality of available democratic practices in poor performing democracies. The Internet group's average satisfaction (30%) was lower compared to that of the control group (34%); the result was not statistically significant at .1 level (Bailard (2014)). However, when excluding participants who did not use the Internet while assigned to the treatment group (non-compliers), the differential became significant ($p \leq .1$) (Bailard 2014). The Internet group was significantly less satisfied with their government than the control group. Similar experiments can be conducted in China to test the Internet's political effect on individual citizens of countries in transition. Conducting the experiment in various political contexts can enhance its external validity. Moreover, the experiment can be designed to involve a placebo group to better address the non-compliance issue (see Chapter 6 for details).

The Assumptions and Debates

The Democratic Merit of the Internet in China

The Internet plays a distinctive role in China because of its authoritarian system. Relatively speaking, the Internet in China affords its users the right to access some uncensored information and express opposition against governmental policies and actions. In democracies, citizens take for granted that media information is free of government censorship and that there are multiple ways for citizens to express their opposition. For many Chinese citizens, however, the Internet is the only place they can conduct these political activities with relative safety and freedom. When discussing public issues today, party officials and state-controlled traditional media increasingly refer to “the netizens” and their opinions. In reality, netizens are “disguised” citizens who, although cannot execute their political rights in non-digital realms, are able to make use of the Internet to do so. The Internet provides a degree of insulation from risk, thereby allowing for the expression of political views that would be dangerous to express in other contexts.

The Internet reduces this potential risk through anonymity. To a certain extent, netizens can express their political views, not be identified, and because of that, escape from governmental retaliation. In the history of the People’s Republic of China, the Chinese Communist Party (CCP) has repeatedly suppressed unsanctioned political activities (Shi 1997). The CCP has imposed punishments such as prison sentences when citizens have been caught engaging in unsanctioned political activities; some punishments have even been life threatening. However, on the Internet, netizens can use screen names when writing blogs and posting comments. This substantially facilitates free discussion online and “public opinion supervision” (Zhao and Sun 2007) including

exposing officials' abuses of power. In reaction to these new freedoms afforded by the Internet, governments have begun to work hard at curbing such online behaviors by censoring the Internet and imposing stricter regulations. For example, ID checks at Internet cafes⁷ have been imposed in China. Nonetheless, the Internet provides a safer environment for ordinary citizens to acquire and share information, to criticize government, and to discuss social issues. Although the government can track and figure out the identities of certain bloggers or commentators, it is out of the government's ability or interest to examine the author of every anti-government or sensitive comment online. As Yang states, the Internet creates an environment where "Authority of all kinds is subject to doubt and ridicule" and an online culture full of humor and irreverence (Yang 2009b, 2).

Beyond safety considerations, the Internet might also alleviate the problem of preference falsification (Farrell 2012; Kuran 1997). Kuran suggests that people may conceal their true preference in social situations. Farrel gives an example of people in mildly authoritarian regimes who may conceal their preferences for a different social order to either avoid punishment or to simply lubricate social relations, especially when they believe they hold minority political opinions (i.e. others all support the regime) within their social communities (Mutz 2006). Therefore, others may lack information on what fellow citizens are really thinking and choose to hide their true political opinions.

⁷ Whether or not the café owners follow the requirements is another issue.

As a result, an authoritarian regime would be relatively secure from even widespread dissatisfaction so long as it controls public expression (Farrell 2012)⁸.

However, the Internet may reduce the extent to which individuals conceal their true opinions by lowering the costs of expressing those opinions (Farrell 2012). For one thing, an individual online can use an anonymous screen name when leaving comments and discussing controversial issues online. For another thing, the spectrum of opinion among people is much wider online than in the environments where they live and work (Farrell 2012, 43). The wide variety of opinions found online, often conflicting, make it a more tolerant atmosphere for minority views. Individuals holding such minority views can find common ideological ground with others like themselves. However, there is a question of whether or not the Internet promotes political polarization. It is possible that people with similar views may gravitate to similar websites, and due to clustering and reinforcement of opinion, become more extreme in their positions (Sunstein 2002). Nevertheless, scholars have found that genuine political debate takes place across clusters, and polarization seems not to rise over time (Hargittai et al. 2008). Indeed, the Internet is better at exposing people to dissenting views even if they are strong believers of their own ideology.

Secondly, the Internet lowers the amount of “effort and initiative” (Verba et al. 1987, 53) required for political participation. Initiative means how difficult an activity is for individuals to engage in (i.e. time, money, knowledge, energy, and skills required)

⁸ Lynch (2011) argues that preference falsification is an important element of the Tunisian uprising when people realized that most fellow citizens shared their dislike of the regime at the outbreak of civil unrest (Farrell 2012, 45).

(Asher et al. 1984, 54). Internet activities do require some initiative on the participant's side. At a minimum, participants need to have access to the hardware and software, as well as the basic skills needed to access the Internet. The latter is an obstacle for impoverished and senior citizens, many of whom lack the basic skills. However, with the increase of computer ownership, the Internet café and mobile phone Internet applications, the cost problem decreases significantly. A report issued by the CNNIC shows that more and more low-income citizens have been able to acquire Internet coverage in recent years (CNNIC 2011). The report also shows that the age structure of Chinese netizens has become more balanced. The reduced initiative required from individuals contributes to the increase of online political participations. It is also the case that members of the oldest generation, with little or no interest in using the Internet, and no knowledge of how to do so, over time will comprise an ever smaller proportion of the population.

Morozov (2012) warned that the lower transaction costs brought about by the Internet may encourage citizens to participate in cheap, chauvinistic forms of politics, such as joining Facebook groups, rather than more effective but risky political activities. The latter, such as joining a community or interest groups, lead to longer-term associations and collective action. However, this argument is less relevant to China and other countries with authoritarian regimes since citizens' political participation is already highly restricted, especially activities that are considered to be dangerous, such as group organized protests. Joining a Facebook group is just a few clicks for an American teenager, but the same seemingly innocuous act could prove much more dangerous for a resident in China where Facebook, Twitter, YouTube and other foreign websites and

applications are blocked. Joining independent political groups in China is risky with potential personal costs. The Chinese government is good at tracking down its own people and holding them accountable for their actions. Therefore, it is more than trivial significance when people in China join online political advocacy groups and protests. Although these actions do not always lead to offline collective actions, they do send a signal to the government that citizens are watching what they are doing. Citizens may become more interested in politics by online political participation so that in the future a better informed public will hold government officials more accountable than in the past. The political movements in the People's Republic of China's (PRC) history, and the government's harsh response to independent political activities, make Chinese citizens afraid of engaging in politics. Many never vote, protest, or join interest groups over their entire lives. Therefore, the virtual space provided by the Internet is not trivial. It provides opportunities to gain political knowledge and learn about collective action. Indeed, as the Internet penetrates human life, online expression is significant for its own sake regardless of whether it leads to offline political participation (King et al. 2013).

Thirdly, the interactive nature of the Internet environment weakens censorship and facilitates the flow of information among citizens. The mass media's role in China has always been to act as the CCP's mouthpiece (*houshe*) with the mission of shaping public opinion (Zhao and Sun 2007, 301). The centerpiece of media efforts is to spread positive propaganda. However, the rise of the Internet undermines the state's censorship strategy. The interactive environment of communication created by the Internet is much more difficult to control than traditional media. In the past, the government could keep

the general public unaware of sensitive events by using its administrative control to ban newspapers, radio, and television from reporting on them. Even today, editors or reporters who dare to disobey an order are usually removed from their posts or even arrested. However, in cyberspace, anyone can be a producer of news. With the “comments” function, as well as various video-sharing websites, social networking sites, active bulletin-board system (BBS), blogs, microblogs, emails, and instant messages, ordinary citizens can broadcast events immediately, and directly engage in open political discussion. Simply speaking, the Internet has turned unidirectional communication into a mutual interchange. This opens up new opportunities for communications despite government efforts at censorship and monitoring. With millions of users disseminating information each moment, each day, it is beyond the government’s physical capacity to censor all content netizens post online.

Aside from information acquisition and communication, citizens notably use the Internet to expose officials’ corruption and wrongdoing, appeal personal grievances, form groups for collective actions, and initiate online boycotts and protests. As Zheng (2008) points out, the exposure of rampant corruption online often causes crises of legitimacy for the government. Yang (2009b) called the Chinese online community among the most active in global cybersphere. As mentioned earlier, China now has the highest number of Internet users. Citizens participate in a variety of political actions through the Internet, and “find a new sense of self, community, and empowerment” (Yang 2009b, 2). All of these effects are in sharp contrast to the officially controlled traditional media. Indeed, most traditional media have created their own websites. Interestingly, the content on their

online platforms tends to be more liberal despite being operated by the same entity (Zheng 2008, 117). For example, the CCP's central state media People's Daily has an electronic forum entitled the "Strong Nation Forum" (*qiangguo luntan*) on the *People's Net*. The government allows more liberal and critical political discussion online than in its parent newspaper, thanks to "the nature of freedom of the Internet," its popularity, and its ability to resist control from the state (Zheng 2008, 117).

The diversification of online content has led to assumptions in the proposed experimental design. First-time users of the Internet, being exposed to much diverse information, viewpoints, and communication are likely to challenge their pre-existing political beliefs. The informal communication flows on the Internet enable the "dissemination of ideas across different social groups," such as those between farmers and urban professionals (Farrell 2012, 35). This could be especially important for Chinese rural citizens as they are living in more remote and isolated environments compared to their city counterparts.

The Internet enables people to compare their own life with the lives of others beyond their borders. This has a special meaning for Chinese citizens living under an authoritarian regime. In Mao's era, the Party claimed that two thirds of people in the world were still living in an "abyss of misery," and that Mao would be their liberator. Most Chinese sincerely believed this assertion and felt that they were better off than people living in other countries even when they were suffering from hunger and political persecution in the 1950s and 1970s. Today, using the Internet, a school-aged child could know more about life in other parts of the world than adults of the past. Friedman (2000)

points out that, “the days when governments could isolate their people from understanding what life was like beyond their borders or even beyond their villages are over (67).” Actually, the Internet takes what was once confidential and makes it public, turning it into common knowledge.

In the past, comparison was not entirely implausible, as there were still Chinese people (mostly elites) traveling abroad and writing books about the economic, political, and social systems of other countries. However, because ordinary people may not have a long attention span for politics, few would be interested in reading and learning about other countries. However, the emergence of the Internet makes world information easy to acquire. Even without purposefully searching, one cannot avoid learning basic facts about living conditions in other places.

Negroponte (1995) predicted that the world would become less cohesive with the Internet because individuals would switch from consuming mass-produced information to consuming personalized information. An example is that many young Chinese are no longer watching television or reading newspapers to consume their news. They turn to online forums, websites, “weibo,” and “wechat” to both get updated on the current issues and immediately participate in commenting and exchanging viewpoints. As the use of online forums increased, the popularity of the nightly news program (*xinwen lianbo*) on China Central Television (CCTV) faded. For decades, CCTV news broadcasts have enjoyed the absolute supreme status in China. Almost every family was watching the 7:00 p.m. news broadcast on CCTV 1 everyday, followed by the National Weather Report Service. This is no longer a family routine in China, especially for families headed

by young adults. Some netizens even post videos online making fun of the CCTV news and its old and clumsy way of broadcasting government propaganda. Along with CCTV, the official newspaper *People's Daily* has also become alienated from the general public. Only party and government offices are still required to subscribe to the paper today.

In sum, the Internet has exposed citizens to politically diverse content. They can then form more independent thought and become less susceptible to manipulation by the state (Benkler 2006, 11). Scholars claim that information and online communication promotes democratic citizenship more explicitly in authoritarian regimes (Benkler 2006; Habermas 2006).

The Internet and Democratic Citizenship

Based on the discussion above, what could be the possible effects of the Internet on individual citizens, particularly a first time user? As Dahlgren (2000) states, regular usage of the Internet initially can increase a citizen's public affairs knowledge. "Relevant knowledge and competencies" (377) are a basic requirement of democratic citizenship. An informed public is fundamental for both functioning democracies as well as countries in transition. To achieve this, citizens must have access to reliable reports, analysis, discussions, and debates about current affairs. Both (Tocqueville 1838) and (Putnam et al. 1993) emphasized newspaper readership in their early research on civic culture and democracy. Furthermore, political knowledge has been consistently related to media use (Eveland 2008). Research in communication concluded that most people's contact with politics comes from the media (Eveland 2008). Therefore, it is reasonable to predict that

news media can increase political knowledge although the degree of effect may vary from medium to medium.

The political usage of the Internet is relatively new; however, research in Western democracies has shown that it does increase political knowledge and competencies, provided that the users are searching for political information rather than just leisurely browsing online (Eveland 2008). A similar effect of the Internet on political learning should also occur in China. On the one hand, the Internet significantly decreases the costs of accessing news resources, thus encouraging the ordinary citizen's consumption of news and reports. On the other hand, the Internet is able to provide more comprehensible reports and less biased information than the propaganda-dominated traditional media. Moreover, the Internet enables citizens to discuss politics with many others, enlarging their "discussion network" and exposing them to heterogenic views (Eveland 2008). Discussing politics also contributes to the gain in relevant knowledge of public affairs.

Moreover, with access to more balanced and diverse information, the Internet may increase a citizen's understanding and support for "liberal-democratic values" (Shi 2008, 215). Liberal democratic values are associated with political pluralism and civil liberties. However, Shi's survey shows that Chinese citizens have internally contradictory ideas about democracy. For example, 84% of respondents supported elections for national leaders while only 16.3% agreed with multiparty competition (Shi 2008, 216). Shi posits that liberal democrats typically argue that elections cannot make sense without the competition of political parties to organize elections around conflicting interests. Clearly, however, the majority of Chinese do not hold this view. It is likely that living

under a single-party authoritarian regime has deprived citizens of much understanding of the reasons that underlie democratic practices. The CCP has long indoctrinated citizens on the merits of “socialist democracy,” which claims that the ruling party listens to and works for the people without introducing divisive western-style political competition and the separation of powers (Shi 2008, 213). Actually, the CCP’s claim is consistent with the traditional Confucian ideas of benevolent dictatorship, and its indoctrination of the Chinese people on this point to date seems to have been successful.

In addition, based on a 2002 survey (Shi 2008, 215), Chinese respondents support for the other liberal-democratic values, such as political rights and personal freedom, is relatively low compared to other Asian countries. The increasing use of the Internet in recent decades, however, should lead to increased support for these values. The Internet has promoted a participatory culture, and its use is resulting in citizens who are less intimidated and less gullible (Yang 2009b). Yang believes this is a crucial part of any process of democratization. In contrast, the official media and the government-owned school system tend to create a political culture of unconditional deference. The good citizen is a subject who listens to and obeys party and government officials, not one who creates trouble by making needless claims for political rights and participation. The CCP imposes norms that require people to “follow party and government instruction even if they do not understand the rationale behind them” (Shi 1997, 207). While blind obedience will not contribute to a healthy political culture, Paluck and Green (2009) found that media and radio programs in their study have had a considerable impact on listeners’ willingness to express dissent in post-genocide Rwanda. Analogously, the

Internet might also be able to reduce blind obedience and promote critical thinking among Chinese citizens.

Nonetheless, as the Internet's influence grows, the Chinese government is stepping up efforts to constrain its influence (Zhao and Sun 2007). The OpenNet Initiative reported that China has the most sophisticated Internet filtering regime in the world, and the Chinese state is globally listed as one of the twelve "Enemies of the Internet" (Lei 2011, 298)⁹. Besides shutting down websites and censoring content, the CCP has hired Internet commentators to post comments favorable to the government in order to shape the public opinion. Although the nature of the Internet is open and interactive, it can produce a "marketplace of ideas." Whether "the truth" can prevail is arguable considering the pro-democratic values promoted by the Internet have to compete with the strong state-based ideology. Therefore, it is necessary to test whether the Internet can lead to greater support for democratic values, even with the government's censorship in place.

Moreover, it is doubtful that the Internet will create mass readership of online political information. Although the Internet has been used by netizens to "report news, expose wrongdoing, express opinions, mobilize protests, scrutinize government, deepen participation, and expand the horizons of freedom" (Diamond 2010), it has also been used by criminals and extremists to organize illegal activities (Deibert and Rohozinski 2010). Pornography, gambling, and "trash talk" prevail the web space. As a result,

⁹ The OpenNet Initiative is a collaborative partnership of three institutions: University of Toronto citizen Lab, the Berkman Center for Internet & Society at Harvard University, and the SecDev Group (Ottawa).

meaningful online political commentary might not have a significant impact on ordinary citizens, but rather only the small portion of those who are politically interested and seek out websites with political content. The high expectation of the diversity of content provided by online discussion and the commenting system might not survive what really dominates the Internet. Nevertheless, Wojcieszak and Mutz (2009) find that people tend to be better exposed to dissenting political views in nonpolitical online forums than in explicitly political ones, and nonpolitical blogs comprise about 25% of political postings (Munson and Resnick 2011). Hence, there is no consensus about the effects of online content on citizens' political orientations. The experimental design of this study, which documents participant online behavior and change in their political attitudes, should shed light on this issue.

CHAPTER 3 “THE DIGITAL DIVIDE AND THE INTERNET IN THE CONTEXT OF CHINESE POLITICS”

The Digital Divide and Internet Access in Rural China

To understand the special role the Internet plays in contemporary Chinese society, it is necessary to give a broad picture of the Internet’s development and its political potential in China.

The Internet was first introduced in China in the 1990s (Wang 2009). China was among the first developing countries to promote information technology as a means of empowering social and economic development. Information technology was viewed as the key tool to grow the economy, benefit the society and bridge the developmental gap between industrialized countries (Dai 2003). Information technology, especially the Internet, was at the center of the national Ninth and Tenth Five-Year Plans (1995-2005). After two decades of development, at the end of June 2014, China had 632 million Internet users (CNNIC 2014). According to CNNIC reports, by 2008 China had the largest number of Internet users in the world. The Internet penetration rate was 46.9% in 2014 (CNNIC 2014) and 48.8% in 2015 (CNNIC 2015).

Despite improved accessibility to the Internet, the digital divide still exists between the urban and rural areas of China. Although over half of the country’s population lives in rural areas, most netizens reside in cities, including migrant workers who are from the countryside but become netizens once they move to the cities. The small Internet population in rural areas made it possible to find ideal subjects for the experiment in my study, individuals who have had minimal prior exposure to the web.

The penetration rate of the Internet in rural areas was only 5.1% in 2007, and rural Internet users only accounted for 27.6% of the total in 2013 when the experiment was conducted (CNNIC 2013). The lack of a facility with Internet access was one of the major reasons that prevent farmers from accessing the Internet. In 2000, the ownership of personal computers (PCs) was low; less than 0.5% of rural households owned a computer, compared to 10% of urban households. The disparity became more apparent as the urban area's telecommunications expanded rapidly. In 2006, the ratio of PC ownership between urban and rural areas was 47.2% vs. 2.7%, respectively. The minimal PC ownership in rural areas meant that more than half of rural residents acquired Internet access at Internet cafes (53.9%), a much higher percentage than the national average of café users (37.2%) according to CNNIC's 2007 report. This was no surprise considering the income gap between urban and rural China. The rural average income per capita, 3587 RMB (520 USD) a year in 2007, was less than a third of the urban average, "a gap that is among the largest in the world (Wong 2007, 3)."

One noticeable phenomenon in facilitating Internet penetration in rural areas is the emergence of low priced smartphones. According to the Ministry of Industry and Information Technology, the sales of smart phones in China rose from 118 million in 2011 to 224 million in 2012 (CNNIC 2012). In 2013, it was noticeable that many villagers had upgraded their mobile phones to smartphones when I conducted the field work. The quality of those phones varied, but they were capable of basic Internet access. At the time of the study, however, many owners did not yet pay the data fee to connect to the Internet, nor did they know how to use the Internet function on their smartphones.

Nationwide, mobile Internet users dramatically increased by 80.09 million in 2013 (CNNIC 2013). The proportion of mobile Internet users (83.4%) exceeded traditional PC users (80.9%) for the first time in 2014, and the mobile phone became the number one Internet access device. The growth slowed down after 2014, partly due to the saturated smartphone market. Nonetheless, mobile devices increase penetration of the Internet and grant access to the online world for remote rural areas where telecommunication infrastructures are few or too costly to build. The number of Internet users clearly will continue to grow in rural China.

Beyond the problems of limited facilities and costs, lack of Internet literacy is another common problem in the countryside. From my experience in the field, teaching peasants how to use the Internet was not easy as many of them had low levels of literacy and had no idea what the Internet was about. Learning to use the technology was complicated for the first time users, especially considering most non-Internet-users in rural areas had low levels of education; 87.9% of them had an education level that did not surpass junior high school and only 6.1% of them planned to go online in the immediate future (CNNIC 2014). These people needed hands-on learning experience to master the new technology.

Some local governments have built public access centers such as village libraries, cultural stations, and rural information service stations. In the county where I conducted the experiment, a few villages had established Distance Learning Centers (Centers) for cadres, party-members and ordinary villagers; each had about three computers available. However, few people, even village cadres, knew how to use the computers and there was

no training program available. As a result, like many similar projects in developing countries, the Centers were not effectively accessed by the public and suffered from lack of or poor operation and maintenance.

In addition to the lack of infrastructure and computer literacy, issues with Internet content also led to ineffective access to the facilities. Although there were plenty of agricultural websites, most were without up-to-date and useful information. In my study, I asked villagers what questions they had about farming and showed them how to search for the answer. It turned out that answers from the websites we visited from the results of these searches were often abstract and lacked practicality.

The shortage of useful content supported by discussions of local examples is partly due to the small number of Internet users in rural areas. The Internet is a platform for user created content. A lack of users leads to a lack of relevant information. Conversely, city residents, as part of a large online population, can research problems encountered in daily life and find discussions and answers by fellow urbanites. The limited usefulness to farmers of Internet sources means that the Internet fails to attract their attention and interests. Moreover, the online information dedicated to farmers is usually limited to agricultural content, with little content on other topics of interest such as rural education, healthcare and finance.

The Internet not only can help farmers to use better farming techniques, but it can also help farmers and small rural enterprises cope with the market. The Internet can provide farmers and rural enterprises with “market information, communication channels, and financial resources” that enable farmers to enter markets, diversify those markets to

increase their competitiveness, and help farmers choose crops, advertise, and reduce their costs because of better information about markets (Qiang 2009, 3).

In the county where I conducted the experiment, many farmers transformed their houses to restaurants and/or family inns (*nong jia le*) to provide accommodations for tourists in an effort to offset the loss of traditional farming income. Because of its proximity to a major city as well as attractive landscapes and scenery, the county attracts many urban residents who spend weekends in the villages. However, at the time I conducted my study, these facilities were small in scale and operated in isolation; many owners did not run their small business optimally. If the owners were to use the Internet, they would be able to advertise their business through social networking sites, get ideas about running such as business through others' experiences, and form associations with other owners both locally and nationally. In my lecture given to attract villagers to come and learn to use the Internet, I mentioned these practical benefits of Internet use. Beyond its agricultural and economic benefits, the Internet "brings in modern ideas and forward-looking mindsets from more advanced regions" (Qiang 2009, 4). The online content can "pave the way for transformative ideas and beliefs" (Qiang 2009, 4). For rural residents, exposure to public affairs information on the Internet may enhance villagers' political knowledge and lead to changes in their political attitudes, which are the focus of my study.

The Role of the Internet in Chinese Politics

The Internet plays a distinctive role in contemporary Chinese politics. The Chinese government promoted the development of information and communication

technology (ICT) to develop the economy and made this a policy priority in China's Ninth, Tenth, and Eleventh Five-Year Plans (Wang 2009). After decades of development, it was clear that the Internet posed a potential threat to the CCP's hold on information control and political power. The Internet weakened the capacity of the government to effectively censor news and ideas that it did not want the public to learn about. In response, the government invested vast resources to block citizens' access to such news and inconvenient information, to monitor citizens' online activities (such as utilizing the Firewall and online "police"), and to shape the public opinion by employing Internet commentators.

With the government's intervention, it is uncertain whether the Internet's open environment architecture can offset such censorship and promote information sharing and idea exchange. How well the Internet in China is succeeding in promoting free and open discourse can be gauged by the following: 1) Do citizens become more interested in "high politics" (Shi 1997) with increased information access after using the Internet? 2) Does the Internet facilitate rational-critical deliberation and produce more democratically oriented mindset among the average citizens (Lewis 2013)? and 3) Does the Internet help citizens in a country with an authoritarian regime challenge higher authorities and hold them accountable? There are plenty of examples that demonstrate the potential of the Internet in China to alter the traditional, submissive, and hierarchical relationship between Chinese citizens and government officials, despite the government's censorship. These examples, however, can say little that is general about the actual impacts of Internet use on individual users.

1) “High-Politics” and Information Access

Citizens using the Internet may pay more attention to “high-politics” (Shi 1997) issues and activities. “High-politics” mainly consists of “the formation of policy” (Shi 1997, 6; Bialer 1982). Conversely, “low politics” is where policies are actually implemented. Moreover, high-politics is usually concerned with issues such as democracy and freedom of speech, while low-politics is related to problems and interests that are personal, such as the allocation of housing (Shi 1997, 86, 119).

Government officials in China, because of their discretion, and because of the lack of checks and balances on the exercise of their authority, can easily punish challengers of governmental authority and policies (Shi 1997). They hold a lot of control over important aspects of people’s lives (Shi 1997). With the economic reforms in China, people’s dependency on the government for “livelihoods” (Shi 1997, 116) decreased. The institution of the work unit (*danwei*) and its overwhelming control over workers has faded to some degree. In spite of the government’s control weakening in this area, the government’s ability to take tough measures to harm political challengers has remained strong, especially when citizens have attempted to organize grassroots activities (King et al. 2013). For example, a group of dissenters were put in prison in recent years, including the 2010 Nobel Peace Prize winner Xiaobo Liu, the writer of an online petition calling for democratic reform in China (Liu 2008).

The unique institutional setting in China shapes people’s political participation. It is far safer with greater results for average citizens to focus on issues of low-politics rather than high-politics (Shi 1997, 19). In China, officials have great discretion to carry

out policies made by higher authority (Zhong 1998). Consequently, citizens focus their activities on policy implementation, articulating their personal demands to government officials (sometimes using “quasi-legal” approaches). They generally do not try to influence policies that affect the whole society, something that is futile because they lack the influence to do so (Shi 1997, 19).

There are similarities between big-character posters (*Dazibao*) in the 1970s and 1980s and contemporary Internet forums. Big-character posters were handwritten posters using large-sized Chinese characters and displayed in a public place. They were usually used to “voice criticism and complaints” (Shi 1997, 84). The big-character posters were “a major weapon to influence high politics;” “nearly every major political event concerning high-politics issues in the 1980s started getting public attention with the use of big-character posters” (Shi 1997, 86)¹⁰. For the last two decades, a lot of important public events, debates, and even policy changes first came out of the Internet by what officials called “Internet mass incidents” (Yang 2009b). There are further similarities between the Internet and big-character posters. They both not only provided a platform for ordinary citizens to express political opinions, but they also disseminated information while generating strong public opinion to put pressure on the government.

The citizens’ constitutional right to write big-characteristic posters was abolished under Xiaoping Deng’s initiative (Nathan 1986). Those trying to influence high politics turned to the Internet. There are examples discussed below of netizens achieving some success in influencing policy decisions. Online campaigns and widespread cyber protests

¹⁰ Included the Democracy Wall of 1978 and the Tiananmen Square protest of 1989.

have brought concrete changes to the government's existing policies. A well-known case includes the Sun Zhigang incident in 2003 that led to the government's cancellation of an outdated regulation on urban vagrants (Yang 2009b). Another case occurred in June 2009 when the Chinese government dropped plans to install Internet monitoring software (Green Dam) on all computers sold in China due to "a storm of protest at home and abroad" (Foster 2009). In the latter case, Chinese netizens called for a one-day boycott of cyberspace in protest.

The Internet helps citizens acquire information and pay more attention to broader national and social problems that are relevant to high-politics. According to the CNNIC (2009) report, 87 percent of netizens pay more attention to social affairs or follow public issues more closely after becoming an Internet user. Most scholars agree that the Internet has greatly expanded information access in China for the past two decades even with strict censorship in place (Lewis 2013; Qian and Bandurski 2011; Qiang 2007), and numerous media professionals have claimed that the Internet has dramatically changed the way Chinese citizens access information (Lewis 2013). Journalists post more sensitive parts of their stories online and ordinary citizens frequently report events that happen around them by uploading pictures and videos recorded on their cell phones, tablets, or other personal electronic devices. The online space is much more liberal and active, full of information that would otherwise be blocked from traditional media. The government is unable to keep up with the speed of the news spreading in the virtual community. Occasionally, the circulation of politically sensitive information creates

strong public demand for recognition of the issues, allowing the traditional mainstream media to report on it (Lewis 2013, 685).

In China, the examples of citizen journalism in the digital age include the 2008 Wengan mass incident in Guizhou province where citizens torched the local government's property as a result of a middle schoolgirl allegedly being raped and beaten to death by the son of a deputy mayor. The police reported that the girl had committed suicide, which angered citizens and led to the large scale protest (Yardley 2008). A similar incident was the 2009 Shishou mass riot in Hubei province, which resulted from the dubious death of a chef at a local hotel. The police claimed that the death was a suicide. However, foul play was believed to be involved, based on alleged illegal drug trafficking and a lack of transparency among the city's top officials (Xie 2009). In each case, the government tried to stop the spread of the news by suspending the city's Internet, silencing the press, and blocking the websites that carried the story. However, as an open communication system, the Internet has proven to be much more difficult to control than the state-owned media. With the Internet, anyone can report and disseminate events such as these, rather than merely remain recipients. They wrote, discussed, and uploaded videos of the incidents through online forums and social media. It was difficult for the government to limit the awareness and influence of inconvenient issues to a small area or at the local level before such events attracted national and international attention. The intense online discussion finally brought the issues to the coverage of traditional media.

The most dramatic case was probably the removal of Bo Xilai in 2012. Bo was a promising candidate for the fifth-generation leadership. The manner of his removal was

much different from the manner of removal of top leaders in the past. There was political maneuvering in this case, and this was under the close watch of, and reported by, a large online community that engaged in fierce discussion, teasing, and the spreading of rumors. The Internet played “a now familiar role” in the scandal: breaking news before the traditional press, spreading alternative views and rumors, catalyzing broader discussion, and ultimately, structuring a more diverse and pluralistic public discussion of core political issues (Lewis 2013, 679). This access to the closely guarded information did not exist in previous eras of the People’s Republic of China (PRC) (Lewis 2013).

How does this new media and communication pattern relate to the hypothesis of this study that the Internet can increase users’ political knowledge? First of all, the Internet dramatically increases the political content available for users. Second, news online is usually more interesting or relevant to citizens, compared to the traditional media’s propaganda-dominated reports. Although it is obvious that rumors and trash talk flood the online space, people still learn about political issues from browsing websites. This has special implication for rural Chinese who rely mainly on television for news. For example, nationwide, 84.7% of rural villagers regarded television as their most important information channel (CNNIC 2007). The Internet gives them access to alternative sources of news and potentially leads them to pay greater attention to “high politics issues,” especially news reports on disadvantaged groups like themselves, such as farmers and migrant workers. Rural residents should have empathy for people like themselves, and this may lead them to make demands for social justice.

Despite the discussion above on the merits of the Internet for political usage, there may be significant limits to the potential of the Internet to mobilize rural residents. According to the CNNIC report in 2007, the major online application for rural users in China was online entertainment, such as online movies and television series, streaming music, and online games. It is the only online application that has a similar percentage of usage for urban users (CNNIC 2007). Online entertainment was found not only ineffectual at improving political knowledge, but it was also found to have a potentially negative impact on the users' civic engagement and political participation as well (Norris and Jones 1998; Grossman 1995). The CNNIC first published a report on Internet usage in Chinese rural areas in 2007, and it showed that 66.5% of rural users read online news, compared to 81.5% of urban users, a 15-percentage point difference. Therefore, whether the Internet will positively influence farmers' political knowledge depends on whether users pay attention to diverse online content and not exclusively its entertainment resources. The experiment design of this study creates a group of individuals who access the Internet for entertainment. Thus, I will be able to examine if entertainment usage affects participants' political knowledge.

2) Rational-Critical Deliberation and Democratic Mindset

Beyond gaining information and political knowledge, the possibility to express and exchange political views can contribute to independent thinking and rational-critical deliberation. China probably has one of the most active online communities with a large number of users who are writing blogs and microblogs, sending instant messages, participating in online forums, and leaving comments on websites (Yang 2009b). The

Internet has granted some basic political rights, such as public expression and interactive discussion, to many ordinary citizens for the first time.

The Chinese people's political participation was extremely limited before the emergence of the Internet, especially in terms of prevalence, scope, and influence. This is not to suggest that the Internet alone creates more political participation, for socioeconomic development must be considered as well. However, people do effectively use the Internet to practice their political rights, such as the right-to-speak/express (*fayan quan*) and the right-to-know (*zhiqing quan*), and, in some cases, the Internet even allows them to monitor and hold political officials and government accountable in general. The liberalization process of redefining rights occurs even though the Communist Party is unwilling to limit the restrictions it places on citizens.

A survey in late 1988 and early 1989 showed that nearly 40 percent of respondents in Beijing felt restricted when talking about politics and government (Shi 1997). This survey was conducted before the Tiananmen event, which was regarded as the most liberal period of the PRC in its forty-seven-year history (Shi 1997). New studies revealed a positive association between Internet use and online expression of opinion (Shen et al. 2009). The Internet promoted a greater understanding of politics, and 71% of subjects in a survey by the Chinese Academy of Social Science (CASS) agreed that the Internet granted them more opportunities to express their political opinions (Guo 2003). Open public expression in cyberspace is "a fundamentally new phenomenon in Chinese history" (Lewis 2013, 691). Furthermore, the "large and impactful public sphere" created by the Internet allowed individual citizens to practice public interaction and expression

that they have not experienced before (Lewis 2013, 679). Expressive theories emphasize the inherent value of expressing one's preference even when it does not bring concrete benefits, which is similar to the "paradox of voting" – one single vote cannot determine the outcome or create a private benefit. Nevertheless, voters do turn out in a large numbers (Riker and Ordeshook 1968).

Moreover, netizens are good at using "humor and satire to critique the regime," shown when commenting on online news and with videos they created to make fun of the government and policies, such as criticizing the rubber stamp legislature and the government's poor performance on mine safety (Lewis 2013, 691). Public disagreement with the government was rare in the past since the CCP imposed norms that required people to follow party and government instruction even without understand the rationale behind it (Shi 1997, 207). Shi's survey showed that people's protests in the 1980s mainly occurred in work units (*dan wei*) and were targeted at work unit leaders rather than at challenging the regime (Shi 1997, 111). However, nowadays, it is very easy to see discussions on the Internet that question the political system. In an autocratic regime, people frequently encounter unfair treatment, leading to grievances and appeals online for resolution. Without the Internet, people would never know there were thousands of similar, or even worse, cases happening to their fellow citizens due to the strict censorship in China. Gradually, more and more people realized this is not a case of individual misfortune; instead, they began to question the political regime and the legitimacy of their governmental institution. Perry argues that the current Chinese protesters still use the "authorized language of the state in presenting their grievances –

precisely in order to signal that their protest does not challenge state legitimacy” (Perry 2009, 18). This may be a wise the strategy for protesters to follow considering the risk involved. Moreover, mass awareness is gradual and occurs over a long period of time. However, general loyalty toward the regime has probably decreased in the Internet era. There are times when citizens have even directly challenged the language of the authorities. For example, online demonstrators poked fun at the government’s slogan of a “harmonious society” (*hexie shehui*).¹¹ In cyberspace, “harmony” has become a synonym for censorship. Censored bloggers often say their posts have been “harmonized” (Wines 2009). The Grass-Mud Horse (Cao Ni Ma) case in March 2009 used “a dirty pun” that tweaked China’s online censors and directly condemned the authority’s “harmony” term (Wines 2009). A children’s song about the beast (grass-mud horse) drew about 1.4 million viewers according to a *New York Times* report (Wines 2009).

Although widespread popular protest in China is not likely “a harbinger of some tectonic shift in state-society relations” (Perry 2009, 19), Chinese netizens today are beginning to challenge the state’s legitimacy and demand a more accountable system. There are serious discussions in blogs, chat rooms, and online forums that seek an alternative political system for China. The “legal rights” (Perry 2009, 19) proclaimed by citizens in contemporary China may still be an expression of “politics as usual” (Perry 2009, 18) for many; “rules consciousness” (Perry 2009, 19) tends to be transformed into

¹¹ The “harmonious society” is a new slogan under Hu Jintao regime, which claims the pursuance of social and political stability by sustainable development and people’s welfare.

“right consciousness” (Perry 2009, 19) with the Internet, which grants people concrete, although limited, opportunities to practice their citizenship.

Nevertheless, there is still a long way to go before there is a secure online environment for deliberative discourse in China. “Personal attacks and degradation of opposing views” prevail on websites, partly due to “a shallow history of public expression, weak norms of democratic discourse, and the relative anonymity afforded by the Internet” (Lewis 2013, 693). Netizens actively “engage in accusations and extremist rhetoric” (Lewis 2013, 693). They leave comments on news websites that are full of hatred, meaningless verbal attacks, lies, and recrimination. Commenting on news reports is popular in China; highly trafficked news reports on major news websites such as *163.com* and *sina.com* can easily attract hundreds to thousands of comments. One can almost always find comments that show true wisdom, serious discussion, and brilliant ingenuity; however, those posts might be buried among inappropriate language, lewd jokes, and biased comments. Comment disputes generally originate from the political split rooted between reformists and conservative leftists. The former are usually branded as “slaves to the west” (*wu fen dang*), and whenever someone posts a pro-western democracy comment, there will be opponents immediately branding this person as a traitor (Zhu 2011). The latter are branded as the 50 cents party (*wu mao dang*¹²), government hired Internet commentators who are trained and required to post comments that favor the government and the regime. Whoever posts comments supporting the

¹² 50 cents party (*wu mao dang*): government hired Internet commentators who post comments favoring the government and the regime.

regime will be labeled with that name. Labeling opponents without listening to their reasoning and constantly engaging in personal attacks can silence people, leading many netizens to stop participating in political discussions online.

Furthermore, the Chinese government maintains a large and sophisticated Internet monitoring operation in order to censor the Internet and shape public opinion (King et al. 2013). Websites must hire a large number of censors to comply with the government's regulations. There are approximately 20,000 to 50,000 Internet police (*wang jing*) and Internet monitors (*wang guanban*) (Chen and Ang 2011). Beyond this, there are an estimated 250,000 to 300,000 "50 cent party members" (*wumao dang*) at all levels of government who are employed at central and local levels to participate in online censorship (Chen and Ang 2011). In addition, keyword blocking and "the Great Firewall of China," blocks certain websites from operating in China. This furthers the government's stranglehold over the Internet. Such large scale control must have a negative impact on information sharing and can mislead the public and suppress serious, open political discussions.

In sum, the Internet alone does not create a democratic public sphere. The Internet is a double-edged sword. While it can bring freedom and promote open discussion, it can also isolate people in their own online world and convert them to extremists. Moreover, the government in China engages in large scale censorship, and this limits the Internet's great potential as a mode of information transmission and freedom of expression. Still, given all of these limitations on China's Internet, there is far less deference to political authority on the Internet than on other media. This is especially

relevant for rural areas where public officials are often intimidating and compel citizens to be submissive and supportive of their authorities. What citizens in rural areas can see on the Internet can be totally different from what they experience daily in their encounters with local governmental authorities. It is important therefore to explore how rural citizens react to the relatively liberal and sometimes chaotic content of the Internet.

3) *A New Way to Alter the “Hierarchical Relationship”*

Government officials and citizens are in a hierarchical relationship. There must be certain institutional designs that help alter this unbalanced relationship to encourage government officials to act in the public interest and be accountable to citizens. In democracies, elections and group activities are the most common ways that citizens hold public officials accountable and articulate their interests (Shi 1997). In nondemocratic countries where elections and group activities are absent or extremely limited, citizens have to find other methods to balance the relationship and articulate their interests. One of the means that Chinese citizens use to hold local public officials accountable is to go over their heads and ask higher level officials to intervene. Citizens also expand the scope of the conflict by increasing the number of people involved in the issue. The outcomes of political conflicts are not determined solely by the initial “power” resources of each party, but also the “scope” of conflicts as well: “every change in the number of participants” – whether an increase or decrease – by changing the relative power resources of the contestants can alter the outcomes (Schattschneider 1975, 2). Because of its low-cost and high-coverage feature, the Internet becomes a powerful tool for citizens

to enlarge the scope of their conflict with the government and engage more people to participate in the dispute.

Writing letters to newspapers and other media has been major way to express grievances in China (Shi 1997). However, compared to the large quantity of letters, only a limited number of stories can be published in newspapers every day. Moreover, despite commercialization, traditional media in China remains state-controlled (Zhao 1998). The government's propaganda and censorship practices are sophisticated and comprehensive in regards to the traditional media. With respect to the Internet, however, the government's control and manipulation strategies are still evolving. Many issues brought up by average citizens could not get by the censors. Even some major news agencies had daily internal publications aimed at providing information to higher authorities about the "real situation of the country" (Shi 1997, 65); opportunities to appear on these internal documents were rare.

Although the Internet is not completely open and is highly policed in China, it removes the gatekeeper of traditional media as everyone can produce news and tell stories publicly in blogs, chat rooms and forums. Many citizen journalists (*gongmin jizhe*) emerge when sensitive and controversial public incidents erupt that involve corruption and abuse of power. Occasionally, a huge number of participants and overwhelming public opinion formed through the Internet can influence or even overrule the government's decision. Typical cases include the "70ph" incident in Hangzhou in 2006, where the police finally changed their preliminary findings of a traffic accident because of the public outrage with a suspected police cover-up (Herold and Marolt 2011). Further,

the Deng Yujiao case in May 2009, which came to national prominence through the Internet and created massive public dissent, ultimately influenced court sentencing (Herold and Marolt 2011). Whether individual stories and conflicts with the government can attract public attention depends on the nature of the incident and the strategy the netizens use. In some cases, it was said that skilled individuals and firms, known as Internet marketers (*wangluo tuishou*) were hired to develop strategies that promote the issue online and mobilize the netizens' involvement and attract public attention.

Although netizen participation can sometimes correct the original unjust decisions made by the government, these cases do raise concerns about Internet "justice." A system where justice is accidentally achieved by virtual mobilization and strong public opinion rather than through the rule of law, a fair trial, and well-functioning courts, is worrisome. China's legal system, unfortunately, is underdeveloped, subject to corrupt influence, and lacks transparency as well as the ordinary checks and balances that exist in democracies. Although legal systems tend to be biased in favor of the powerful worldwide, this bias is exaggerated in China, and it is easy for "the powerful" to "act above the law" (Armony 2004). Despite these concerns, the Internet strengthens the public's influence on the courts in some cases and provides them a way to alter the hierarchy in authority in general.

Furthermore, China's netizens use the Internet to expose public officials' wrongdoings. It creates a network that citizens can use to collectively sanction inept and

corrupt officials (Coleman 1988). For example, netizens use “human-flesh search¹³” (*renrou sousuo*) to identify misbehaving officials and their abuses of power. In one such case, a netizen posted a picture of a local official wearing a US \$10,000 watch. Netizens through their searching and sharing of information online succeeded in identifying the name and position of this official and getting the government to investigate this case. In the Li Gang incident in 2010, a drunk driver, who hit two university students on campus, caused one death and one serious injury. He fled the scene and claimed “Go ahead, sue me if you dare. My dad is Li Gang” (Wines 2010; Wan 2010). Outraged netizens read about the incidents in online forums and launched a human flesh search, which revealed that Li Gang was a deputy director of the local public security bureau. This resulted in litigation, which might not have been the case if not for the publicity caused by the online interference.

Most online activities create expressive or “satisfying” benefits for the participants in which people are concerned with issues with potentially broad outcomes even though they may not be personally affected (Shi 1997, 200). They voice their anger even though such expression will not bring any tangible benefit for them. People attacking officials or governmental agencies online might do so to satisfy their anger rather than change policies or reform institutions. This probably applies to most cases of online mass incidents in China. Although such incidents may not result in government action to respond to the grievance, netizens learn about other citizens’ issues, interact

¹³ Human Flesh Search: it is not a web search engine in the traditional sense. It is a behavior of online collaboration to find and review information about a person whose outrages provoke netizens (Tapia and Schoellkopf 2009).

with other netizens, and collaborate online to address the issues that they can form an “imagined community” (Anderson 1983; Edwards and Foley 1997) that encourages future networking.

Netizens do not just use the digital tool to expose corruption and promote accountability; they also use it to organize offline actions, such as protests, referred to as a “walk,” to get around the authority’s regulations because the government’s disapproval of protests and its regulations automatically censor the use of the word “protest.” The Internet’s effect in triggering offline political participation is beyond the scope of this study. It would seem likely, however, that netizens who become aware of opportunities for participation by reading about them online would encourage them to participate. Therefore, it is important to study the Internet’s effect on political engagement as well as its impact on political knowledge and attitudes.

There are numerous case studies showing that the Internet can promote democratic values and participation (Yang 2009b). Nevertheless, as any user of the Internet knows, the Internet is full of distractions such as pornography, celebrity scandals, gossip, gambling, and seemingly endless commercial advertising. For any netizens, much time spent online could be wasted navigating through these distractions. These distractions often crowd out important news reports. Public attention is shifted away from important news. Without such attention, public opinions cannot be formed to exert pressure on the government to address problems and grievances.

In addition, digital strategies such as a “human flesh search” can be used by netizens to an extreme degree that violates others’ legal rights to privacy and creates non-

democratic results. Netizens who lack education and norms of civility can form online mobs to harass individuals holding opposite opinions. For many users who are exposed to the Internet for the first time, this may discourage their further participation in online discussions. Finally, it is the case in all societies that there is only a small percentage of citizens who will invest the time and effort required to follow public affairs regularly and acquire the knowledge base necessary to make well-informed judgments on policy and politics. There is little reason to suppose for the average citizen in China that Internet use will lead to substantial increases in political knowledge and large changes in attitudes. Still, it seems plausible that some of these effects will occur.

In the next chapter, I describe the study's methods. The study involves a field experiment designed to test the impact of exposure to the Internet on villagers' political knowledge and attitudes. I first describe the setting/context of the three villages where I conducted the experiment. I then discuss in detail the specific procedures I followed and their rationale. There is also discussion of problems I experienced in carrying out the experiment and how I dealt with them.

CHAPTER 4 “RESEARCH METHOD”

This chapter lays out and discusses this study’s research methods. I chose to use an experimental research design where participants are randomly assigned to treatment and control groups. The main purpose of random assignment is to insure that groups exposed to different treatments (including a control group getting no treatment) at the outset are alike in all respects. Thus, if differences in outcomes are observed between the groups, such differences must be due to the treatments and not due to preexisting differences among the groups, the so-called selection effect. It is well-known that experimental designs, because they eliminate most threats to internal validity, are superior to other designs for the purpose of inferring causal relationships. An increasing number of political scientists have used such designs in recent years. Another important reason for the choice of an experimental design is that experiments are a cost effective way to study natural political phenomena in developing countries where observational data is scarce or of poor quality (Morton and Williams 2010).

In order to test the Internet’s impact on Chinese citizens’ political knowledge and political attitudes, it would be ideal to sample subjects from a population that has not used the Internet before, assign subjects randomly to an experimental and a control group, provide brief training to the experimental group on how to use the Internet and let them use it for a period of time, and then compare the political knowledge and political attitudes of the experimental and the control groups. Unfortunately, in urban areas of China, it is no longer easy to find people who have not used the Internet. Indeed, it is

very likely that city residents who still do not use the Internet are mainly seniors and poor people and thus not representative of the population of city residents.

Still, in China's rural areas, it is possible to find a large number of people who have not used the Internet or have seldom used it. For example, although some farmers have connected to the Internet, their usage has been minimal and irregular. Subjects selected from this population of farmers would be more representative of China's rural population. In this study, conducted in a rural area, findings on the effects of the Internet should be generalizable to China's rural population, a large portion of China's population that has yet to see the Internet become a regular part of everyday life. The rural population's use of the Internet is certain to increase over time as many people start the same process of learning to use the Internet as the subjects in this study did. For the purposes of this study, conducting an experiment in rural sites enabled access to a population that previously had made little or no use of the Internet. Otherwise, the experiment may not have been feasible because of the difficulty in recruiting subjects and applying the treatments. Beyond methodological and logistical considerations, questions regarding the impact of the Internet on the political knowledge and attitudes of rural Chinese, for reasons argued in prior chapters, are important and worth finding answers to.

The Setting of the Experiment

The three villages (named Village A, B and C) selected for the research are in Guizhou province, located in southwest China. Guizhou province has a population of 34,746,468, which ranks 19th among 31 Chinese provinces according to the 2010 Population Census conducted by the country's National Bureau of Statistics. Ethnic

minority groups made up more than one third of the population. Guizhou is one of the poorest provinces in China, but it is rich in natural, cultural, and environmental resources. Its GDP in 2013, the year the experiment was conducted, was 131 billion (USD) in total and 3,747 (USD) per capita, among the lowest in the country (U.S. Commercial Service 2013b). However, the study was conducted in three rural villages that were relatively adjacent to a major city. Therefore, the subjects in the study might not represent the poorest population of the province who commonly lived in the remote and isolated mountain areas.

Still, the three villages in the experiment reflect the general rural-urban divide in China. As discussed in the previous chapter, the income gap in 2007 between urban and rural Chinese residents was about three to one, respectively; as of 2012 the ratio was similar (United Nations Development Program 2013; U.S. Commercial Service 2013a). Moreover, this measure did not include the subsidies urban residents receive for housing, healthcare, and education. Education resources have long been unevenly distributed in contemporary China. Due to the shortage of funding for rural public education, students are usually forced to drop out of schools at the junior high or even primary level (Fu 2005). The participants in my study had an average of eight years of education; few had the opportunity to take the national College Entrance Examination. It was reported that the percentage of students from rural origins at one of China's top university, Peking University, has fallen from around thirty percent in the 1990s to ten percent in the past decade (Gao 2014) when rural residents composed about half of the country's population. Indeed, Village A in my study had only one elementary school, and the nearest middle

school was located near the township government, which was half an hour away by driving on a narrow, curved mountain road. There was no public transportation available, such as school buses like in America, and few rural families owned a car to send their children to school.

Furthermore, public facilities are almost always inferior in rural areas when compared to cities. For example, many urban schools are equipped with advanced teaching tools while rural students take classes in decrepit school buildings that lack teachers in advanced subjects (Gao 2014). The elementary school in Village A used to have a computer classroom with ten old donated computers. However, there was no instructor available to teach the subject, and the fragile used computers all broke down after a while without appropriate maintenance.

Similar conditions applied to the rural hospitals. For example, village A had a clinic with only one doctor. There was no advanced medical equipment other than the most basic devices such as hospital beds. The nearest hospital, more precisely the health center, was also in the town half an hour away. That health center had about twenty doctors with limited medical devices. During my stay in the villages, I heard of several instances when patients died because they were not sent to the township health centers in time due to the lack of appropriate transportation means, or their conditions were not treatable at the township level hospitals.

Considering these conditions, I tried to adjust to the local situation/culture when I arrived in the villages; for example, I respected the local etiquette when interacting with villagers and always wore plain clothes. On the one hand, I was from the city and they

took me as an outsider (to their local problems). On the other hand, as I spoke the local dialect (although with a city accent), they somehow felt a connection with me. I introduced myself as a graduate student working on my dissertation; however, most of them seemed to just see me as a computer teacher who endeavored to persuade and teach them to access the Internet.

Recruiting the Subjects

There were a number of practical considerations in recruiting subjects for the experiment. First, it was necessary that I get the approval of Wayne State University's institutional review board (IRB). While applying for the IRB approval, I also needed to obtain the approval of local governmental officials in China. With respect to the latter approval, I gained support from a local county government in Guizhou province, allowing me to conduct the proposed study in the county's villages. This step was crucial since it cleared the way for me to recruit subjects as well as use the computers in Distance Learning Centers (Centers) for the study's treatment. As a practical matter, however, I could not rely on the local government/village cadres to reach out for subjects. There was some risk that the subjects would mistake this research as an official act. This might reduce the internal validity of the study since subjects might alter their answers on political attitude questions about the government in expectation of government officials' involvement in the study. Moreover, how much effort the local cadres would exert to help me recruit subjects that can form a representative sample is questionable. On the one hand, local officials were busy and had very limited knowledge of social research. I did not expect that they would have either time or interest in helping me recruit subjects for

the study. On the other hand, experienced Chinese scholars who had conducted fieldwork before warned me that local officials usually recruited pro-government citizens from prosperous households for studies. Therefore, I decided not to depend on the officials to recruit subjects as the sample would not be representative of the general population.

Nonetheless, if I approached and recruited the subjects for the experiment by myself, villagers might regard the research as unimportant due to the lack of the endorsement of the authority, and fail to show up for the treatment. A further difficulty is that my assistant and I were not familiar with the villages although we speak the local dialect. With a limited amount of time and the risk of not being able to recruit a sufficient number of subjects for the experiment, we decided to adopt a method of recruitment that combined both official and nonofficial means.

The experiment was first started in Village A in late May. In order to increase the number and diversity of the sample, the experiment extended to two additional villages (B and C) in July in a neighboring town that was about half an hour's driving distance away. In the first village, my assistant and I spent two weeks visiting households and public places to approaching potential subjects. I introduced myself as a graduate student conducting social research about how the Internet affects rural people's lives and opinions. The purpose of the study was broadly defined, and the procedure was described as filling out questionnaires and participating in a computer-learning program. It was no surprise that most farmers did not understand what research was, not to mention the experiment. There has been very little social research conducted in China that involves citizens' direct participation. Most people do not have experience taking part in an

experiment or even just filling out research surveys. This was especially true in rural areas where research might sound complicated and suspicious to some villagers. Even though I tried to explain the project as research to whomever I approached (as well as on the flyers I handed to them), many people just understood it as free computer training such as other free services provided by the government or nongovernment entities to less developed rural areas (for instance, free physical examinations).

In the villages where I conducted the experiment, many of the villagers were involved in tourist businesses. Family owned tourist accommodations (*nongjia le*) have been popular in recent years in rural China. A lot of households in the three villages turned their houses into restaurants and family inns that host urban tourists for weekends or vacations. A villager in Village A mentioned there had been free training on how to operate such a facility last year. The training lasted for two days in the local elementary school, and participants were rewarded a small amount of money at the end of the training, which served as an incentive for attendance by the local villagers. This inspired me to give lectures about the Internet and the “computer training” program in the elementary school.

After gaining approval from the principal of the elementary school, I was allowed to use the multi-media classroom for three days after school on the condition that I would keep it clean and undamaged. The content of the lecture included a short video on what the Internet was and why the Internet was useful. I prepared a PowerPoint presentation that gave examples of how the Internet was related to people’s daily lives and its implication in the rural area; these were real examples of farmers who utilized the

Internet to cultivate trees, cure their plants, find new markets and advertising for their family tourism accommodation business (*nong jiale*). The presentation was about 30 minutes long. Following the presentation, people who decided to join the research signed up and filled out a pretest questionnaire. Each participant was represented by an ID number and randomly assigned to one of three experimental groups: group 1 mainly used the Internet for political content such as news, group 2 for entertainment purposes, and group 3 served as the control group during the experiment period.

I explained to the participants that by using the ID number rather than their names on the questionnaire, their privacy would be protected. Throughout the experiment, only one person questioned the usage of the ID numbers, pointing out that I still have a main list of their name and contact information, which matches the ID numbers. I explained that I was the only person who had access to the main list and the list would be destroyed once the data collection and analysis were done. For people assigned to the control group, I told them because of the limited seating/computers at the Distance Learning Center, they would not be able to come and learn how to use the computer immediately; however, training would be available for them in about two months after the first class of people completed their learning.

All villagers who attended the lecture signed up for the project. The lecture marked the beginning of the experiment. Participants started to show up in the Distance Learning Center the next day to learn how to use the computer and the Internet. Using the local school rather than the village committee's office for the lecture emphasized that the research was non-governmental (as it was conducted by a graduate student) while lending

credibility to the project as formal and trustworthy. Without any local cadres present, participants would have more leeway in answering sensitive political questions. Moreover, the group discussion following filling out the questionnaires was possible, with some villagers being quite outspoken on issues related to the government.

Similar lectures were held in Villages B and C one month later. I contacted local officials and gained permission to use both village committees' conference rooms. There were three town government officials present in Village B's lecture, so I did not conduct the group discussion. They stayed until the end of the lecture but left the room while I was waiting for the villagers to fill out their questionnaires. They browsed the questionnaire but only paid attention to the questions on the first two pages that asked about participants' computer usage as well as news questions testing participants' political knowledge. No officials showed up in Village C's lecture, so the group discussion was conducted for about half an hour.

The lecture was successful in persuading villagers about the importance of the Internet. Attendees immediately expressed their interest in visiting the Centers in their villages. Although a small number of people showed up at each site (20 in Village A, 12 in Village B, and 11 in Village C), the lectures served as an advertisement for the program and for further recruiting. My assistant and I kept recruiting after the lectures by visiting households and public gatherings such as sporting and cultural events. Meanwhile, we started to operate the Center's hours to let participants use the Internet as well as teach newcomers how to use the computers/Internet. Residents lived spread out in Villages A and B, and they formed smaller units called "*zhai zi*" (stockade village) in the

mountain areas. We visited households in nearby stockade villages by ourselves and relied on local villagers as guides to remote areas. Villagers kept providing valuable information of where and how to find subjects.

Additionally, we went to the weekly market fair (*gan ji*) in each village multiple times. The market fair is the biggest regular gathering in many Chinese villages where people can buy food, clothes, and other items for daily use. We also visited local stores where some owners even allowed us to post flyers, including the only restaurant on the main street of Village A, a barber shop, a small grocery store, an infant supplies' store, and a motorcycle repair store (motorcycles are popular transportation tools for local villagers). In order to reach villagers, we went to open-air fitness dancing on the square (*guangchang wu*) of Village B, two events in which free physical examinations were provided by urban hospitals in Villages A and C, a tourism conference and a whitewater rafting festival that gathered a lot of locals. Furthermore, the Centers are adjacent to their village committees' offices. Therefore, whenever people stopped by the offices to take care of their personal affairs, I invited them to the Center, introducing myself and the research, and asking if they would join.

At the same time, local cadres in all three villages agreed to help me inform villagers about the program. For example, there were 24 village groups in Village A (*cunmin zu*) and each has a group leader. The village head acquired my flyers and promised to hand them out to the leaders and then to the villagers. However, from my experience of visiting numerous households, not many people were aware of the program before I talked to them. Still, a township official in charge of the official Distance

Learning Project in Village B did promote the research by informing people to come to the lecture. Therefore, how much information got out from the official channel was unclear.

In general, most people were supportive of the project and regarded it as free computer training. I found one volunteer in each village who was willing to help recruit their fellow villagers. I gave them each a registration form, copies of flyers, and instructions on how to introduce this study to the villagers. We gave our best efforts to recruit most subjects in all possible places we could reach. However, persuading villagers to come and learn the computer/Internet on a regular basis was not easy as they were either busy, lacked confidence in learning technology, lived far away, or most importantly, did not see the need to learn it. After enormous efforts, we were able to recruit 183 subjects¹⁴ at the pretest across three villages. Among them, 100 came to the Center to learn/use the Internet at least once, and 172 filled out the posttest questionnaire.

Pretest

When a villager agreed to participate in the study, I conducted a pretest by letting him/her fill out a questionnaire of 51 questions. The questions are categorized into five sections: 1) usage of the Internet, 2) political knowledge and entertainment information, 3) political attitudes, 4) level of political satisfaction, and 5) individual's background. The baseline pretest data served as a check on whether randomization created three equivalent groups for the study. Moreover, the pretest data can be used as

¹⁴ Subject 173 (ID number) was randomly assigned to the entertainment group, but failed to fill out both the pretest and posttest questionnaires.

covariates in the regression analysis to reduce the variability in outcomes, which subsequently improves the precision in estimating the treatment effects (Gerber and Green 2012, 95).

The participants' media usage is directly related to this study's treatment, so the questionnaire asked participants questions such as the type of cell phone they were using in order to test their previous experience with the Internet. The political knowledge questions included factual questions as well as questions about the current events at local, national, and international levels. The attitude questions were intended to test participants' support of democratic values. The questions on political satisfaction served as control variables for the attitude variable under evaluation. The background information asked participants' age, sex, education, income, occupation, ethnicity, party membership, and migrant working experience, etc.

Questions in the knowledge section were written based on the most recent public events. Other questions were developed by consulting existing surveys conducted in the field of Chinese studies as well as questionnaires used by the World Value Survey and the Asian Barometer Survey. The English version of the questionnaire was tested by Chinese students that have rural origins but were attending American universities. The Chinese version was tested by local residents in Guizhou province, including two from nearby rural areas. I shortened the questionnaire and made other adjustments based on the feedback from the students and residents.

Occasionally, there were participants whose limited literacy caused their time in answering questionnaires to run long. Accordingly, I had to read the questions to them

before they lost interest in continuing to answer the questions. A majority of the participants, however, completed the questionnaire by themselves. A few people raised questions when they did not understand what was being asked. Some slowed down or stopped filling out the questionnaire after finding out that they didn't have the knowledge to give the correct answers to questions in the political knowledge section. I then approached them asking if they had questions or needed clarification. People usually proceeded after receiving attention. The participants' interest in answering the political attitude questions was higher, presumably since the participants felt the questions were more relevant to their concerns. Partly the reason to put the knowledge questions at the beginning and more sensitive political attitude questions later was to avoid possible scrutiny by local cadres. For example, sections 1 and 2 are on the front page of the questionnaire as local cadres who have interest in reading it usually only go through the first two sections.

I acted as a monitor while people were filling out their questionnaire. As indicated above, the main purpose was to be there to provide clarification if they had questions. Also, if there was more than one participant filling out a questionnaire, I would monitor them to prevent discussion. Unfortunately, there was one group of people who sat together to fill out the questionnaire when one of the villagers started to talk to others about his answers on the news questions. I intervened immediately and asked him to stop talking to others, but it was possible that others overheard his answers. Usually, my assistant or I checked the questionnaire after participants completed it to find any unanswered questions before submission. Following this, I asked for their phone number

in order to contact them for the computer training (no personal information was shown on the questionnaire to protect subjects' privacy). A small amount of money was offered to participants at this point; some declined to accept it.

Demographics

Although it has been common in recent years that many Chinese farmers migrate to cities for work, thereby leaving villages overwhelmed with women, elderly people, and children. This was not a serious issue in the three villages where I conducted the study. This was perhaps due to the three villages' close proximity to a major city in the province. Even if people found a job in the city, they still came back to their home village from time to time. Moreover, many villagers chose to stay in their home village to help out in a family owned countryside tourism accommodation business (*nongjia le*) or to work part time for a local tourism attraction/service industry establishment. According to a local mother of two children, many of her fellow villagers stayed home because they "did not reach the point of starving." In contrast, some farmers from remote areas had no choice but to migrate to the city for low wage jobs because there was no other way to sustain their families.

The situation was reflected in the sample's demographic composition. There were 97 females (53%) and 85 males (47%) among the subjects. The average age was 37 years old. The participants had an average formal education of eight years (38%, 41%, 17%, and 3% at primary, middle, high, secondary school levels). Younger participants tended to have more years of formal education (bivariate correlation, Pearson's $R = -.447$). Many even went to nearby towns or cities for high school, with a few going to

college. As a middle aged villager pointed out, “When we were young, our parents only asked if we have pastured cattle or fed ducks; whereas nowadays, parents ask if their children have finished homework.”

A large majority of the participants claimed their annual family income was equal to or lower than 30,000 *Yuan* (about 4610 USD) (85.5%). The villagers’ occupations varied as 45% (46% Valid Percent) identified themselves as full time or part time farmers; more than 20% were private enterprise owners (including family owned countryside tourism accommodations, *nongjiale*) and/or service workers (including those work seasonally at the local tourism attraction); 7% were teachers or students; and 6% were workers/laborers. Many participants (66%) had worked in a city outside the village before, and 77% had at least one family member or a close friend currently working in a city.

Most participants in the sample (87%) were non-party members (the Chinese Communist Party), and 88% had never held any governmental positions such as local deputy to the People’s Congress and cadres at village or township levels. There was a similar percentage of non-officeholders (90%) among their spouses, parents, and children. Eighty-four percent of the sample identified themselves as Han Chinese; the rest were from four ethnic minority groups.

Background Information Related to the Study

Subjects’ background information closely related to this study was their computer/cell phone usage and the way they gained information. According to the pretest survey, over half of subjects (56%) had never used a computer before. For those who had

used a computer, 10% used it once or several times a year, 11% used it once or several times a month, 9% once or several times a week, and 12% everyday or almost every day. For those who had used the computer before, the most popular application was for entertainment purposes (27%). Following this, 20% of participants claimed to search for useful information with the Internet, and 19% used emails or online chatting tools such as QQ¹⁵. Fifteen percent reported that they have read news online.

More than half of the subjects had a mobile telephone without Internet access (30%) or owned a smartphone but never used the Internet on mobile devices (28%) because they did not have a data plan or know how to access the Internet on the device. Thirty-eight percent of participants reported having used the Internet on their mobile phone. For those who accessed the Internet by phone, they mainly used it for online chatting applications such as Wechat¹⁶ and QQ (38%). Thirteen percent reported reading news by phone.

For their source of information, participants rate television as the most important (55%). This was consistent with my impression after visiting numerous households in the

¹⁵ QQ is an instant messaging software service provided by Chinese company Tencent Holdings Limited. It supports video calls, voice chats, and texting as well as a variety of services such as online games, music, news, and micro blogging. The company claims to have one billion registered users (843 million active user accounts) according to its 2015 Second Quarter Results.

<http://www.tencent.com/enus/content/at/2015/attachments/20150812.pdf>

¹⁶ Wechat is a mobile text/voice messaging and voice/video calls tool also developed by Tencent in China. The company claims it is an all-in-one communication app for free text, calls, group chats, moments, photo sharing, and games. It claims to have 1.12 billion registered users (600 million active user accounts). Similar Apps include WhatsApp, LINE, Kik, etc. For more information, <http://www.wsj.com/articles/SB10001424052702303643304579108924275071910>

villages. The television ownership was high as almost every family had one. The most popular programs are TV dramas and television variety/talent shows. I sometimes observed villagers watching true crime shows/criminal investigation programs, but I rarely saw them watch news, sports, or any other types of programs on TV. Another traditional media – newspaper – only received a small readership (8%) when compared to television. I did not find any family subscribing to newspapers. Even village officials rarely read newspapers. However, the company that operated the local tourism attraction subscribed to local newspapers, so some villagers working there claimed that they have read newspapers occasionally. Finally, 12% of subjects reported using Internet social network applications to gain information while 8% used Internet websites.

Covariate Balance across Groups

Because there were three groups in the study, a multinomial logistic regression was used to predict treatment assignment based on the covariates discussed above. The result, as expected, was insignificant, offering evidence that the random assignment created three equivalent groups that shared similar background characteristics or covariate balance (Gerber and Green 2012, 107, 431). There was no reliable association between participants' characteristics and their assignment to the news, entertainment or control groups. Table 4.1 verifies that the randomization procedure created three very similar (equivalent) groups.

Table 4.1 Sample Pretest Measures Demonstrating Balance among Groups

Group	News	Entertainment	Control/partial news
Sex (% male)	50	46	46
Age (mean)	37	36	38
Years of Education (mean)	8	8	8
Ethnicity (% Han)	85	90	87
Work in a city (% yes)	63	73	71
Party member (% no)	86	91	90
Official (% no)	95	88	89
Used computer (% no)	68	42	60
Application: news (% yes)	10	15	20
Application: entertainment (% yes)	19	37	26
Application: searched for information (% yes)	20	20	21
Application: online chatting (% yes)	16	22	20
Application: work (% yes)	7	3	8
Application: shopping (% yes)	7	13	15
Used Internet on mobile phone (% yes)	39	40	34
Application: online chatting (% yes)	39	42	33
Application: news (% yes)	13	17	10
Application: search for information (% yes)	11	15	16
n	62	60	61

The Design – Setting up the Centers for the Treatment

In order for the experiment to qualify as a field experiment, I designed the treatment based on the two general rules Paluck (2007) used in her study evaluating a radio program's impact on Rwandans: 1) whether the media consumption reasonably

simulates a natural condition, and 2) whether the subjects are the people who would actually consume the media program (Paluck 2007, 128).

There were several potential locations to conduct the experiment. The first potential location to teach people how to access the Internet was the elementary school in each village. However, the local elementary schools did not have computer classrooms (the school in Village A used to have one with ten donated computers, but these all were broken at the time of the study). Additionally, it was impossible to use the school classroom during the daytime when classes were in session. The second potential location was Internet cafés. According to a CNNIC (2007) report, more than half of rural Chinese residents acquired Internet access at Internet cafes (53.9%) because they do not have computers or Internet connections at home. However, a 2008 report claimed many farmers' Internet cafes had to close after a short period of operation (Zhang and Deng 2010). The three villages had Internet cafés at one time, but all had been shut down a couple of years before my study. A third option was local households with Internet access. The study could pay the owner's Internet costs for two months in exchange for allowing participants who lived nearby to use their Internet once a week. There were a limited number of family owned computers that had the Internet; few volunteered their facilities even with an offer of compensation. Furthermore, this arrangement would make tracking participants' compliance difficult, and it would not reflect farmers' usual experience of accessing the Internet.

Fortunately, there were Distance Learning Centers in two of the three villages with a small number of computers and an Internet connection. The Chinese government

developed the Distance Education Project for Rural Schools in the reform years with the goal to improve the basic education in underdeveloped rural areas where teachers and funding were limited. It was hoped that people would access educational resources through the new technology (McQuaide 2009). The Distance Learning Project in the county where the study took place was similar to the Distance Education Project implemented by the national ministry of education, but it was operated by local government. The two Centers in the villages were both located in the same building but in rooms separate from their village committee's offices. Each had shelves of books of different categories, desktop computers, CDs, and DVDs related to farming and other subjects. The Centers were intended to be used by party members and ordinary citizens. However, few villagers knew about the centers, and no one had come to use them or borrow materials before I started this project.

In Village A, the four desktops were old but functional; one had problems with the sound system, and one was very slow. All were equipped with cameras and speakers. However, the secretary and the head of the village did not know how to use the computer. A young relative of the secretary had been appointed to be in charge of the Center. Therefore, the computers were mainly used by this person or by visiting cadres to play games or watch movies. There were frequent inspections in local villages by higher-level officials from the county or city. These inspections were mostly superficial, consisting of a group of officials listening to the village heads' account of the village's situation, and taking pictures of the Center. The person in charge of the Center had to make up a fake sign-in sheet of people who have used the Center for those inspections in case someone

wanted to take a look at it. Therefore, my project was generally welcomed by the local cadres because I was actually utilizing the Center, persuading villagers to come and teaching them to use the computer. Of course, they also welcomed it because the project had received the approval of a higher-level government. The cadres took pictures when villagers were using the computers and counted it as part of their work achievement (*zheng ji*).

The Center in Village B had three desktops without Internet connection because of broken network cards. According to the township officials, the Center was established without funding for maintenance or hiring people to teach villagers to use the computer. The Center in Village B was located on the first floor of the three-story building of the village committee's office. It was locked, and the tables and shelves were covered with dust when I first visited. A young staff member who just joined the committee was also informally taking charge of the Center as he was the one who stayed in the office most of the time. Furthermore, he knew how to use computer and the Internet. He opened the Center's door for me every time I went to Village B and assisted me with finding tools, such as an extra power strip for usage.

Village C did not have a Center, but there was an office of the residents' committee on the first floor of the village committee's building, with two desktops connected to the Internet. The residents' committee generally dealt with nonagricultural population issues in the village such as teachers and retirees. One of the computers was installed by the county's Office of Distance Learning Project, and the other belonged to

the committee. After discussion with the heads of the residents' committee, they agreed to lend me the room and the two computers for use during the project.

I managed to borrow four old laptops from friends and installed routers to obtain Wi-Fi in all three villages. With the Wi-Fi, laptops could be connected to the Internet that increased the number of computers in Village A to eight, Village B to seven, and Village C to six. However, the three desktops in Village B with broken network cards could not be used for Internet access. Therefore, I used the desktops to teach villagers how to type, which was a skill that many participants were interested in learning while waiting for available laptops to get online.

The experiment was formally started in Village A in early June, with Villages B and C added in July. My assistant and I were operating the Centers on Mondays and Tuesdays in Village A, Wednesdays and Thursdays in Village B, and Fridays in Village C. We brought the four laptops with us for each visit and drove to the three villages throughout July and August. The Center was opened from morning to the late afternoon, sometimes into the evening if there were villagers who came in late or called me wanting to use the Internet. Participants could come to the Center to learn or use the Internet anytime when we were there. Using the Center to apply the treatment allowed me a certain degree of control over the procedure while preserving the natural environment required for the field experiment. The Center was where the farmers actually got Internet access, and it mimicked some rural villagers' experiences with using the Internet in an Internet café. Therefore the media consumption simulated natural conditions. Furthermore, the participants were local people who would actually utilize the Internet if

it had been made available to them. Using the Center overcame one major problem of media program field evaluations: as cited by McGuire, they “rely on the self-reported listening or viewing habits of the research population” (Paluck 2007, 50). I was able to track participants’ compliance by collecting detailed information on whether they came to use the Internet and how long they stayed for their visit, as well as evaluate their online experience without putting them under unusual surveillance.

The Treatment – Using the Internet at the Centers

Scholars have pointed out that Internet usage for information and communication may increase civic engagement; however, recreational use might do the opposite (Grossman 1995; Norris and Jones 1998). Similar to the findings on newspapers and knowledge acquisition, political learning is generally less from tabloid newspapers than from broadsheets (Eveland 2008). Therefore, the experiment designed variations in the treatment of accessing the Internet. The three different experimental conditions were as follows: 1) regular access to the Internet with mainly political content for the news group; 2) regular access to the Internet with mainly entertainment content for the entertainment group; and 3) no access to the Internet during the experimental period for the control group, but delayed treatment after the posttest was completed. For the two groups that received Internet exposure during the experimental period, participants in the news group were required to read websites about current events, domestic and international news, and comments before they could visit other content online if they wished. To contrast with the first group, people in the entertainment group used Internet applications more for entertainment purposes, such as playing online games,

downloading music or window shopping online (few villagers had credit cards or debit cards to shop online). The entertainment group served as the placebo group for later analysis (Gerber and Green 2012, 161, 163).

Participants in the first two groups started to show up in the Centers the day after the lecture to learn to use the computer. Over half of the subjects had never used the Internet before, and some had limited literacy. Therefore, the first task was to teach these villagers basic computer skills in a short period of time so that they could later use the Internet on their own. I taught each of them individually, starting with instructions on how to turn on the computer and the screen, and to open a browser to read websites. All of the computers in the Centers installed the Windows operating system with domestic browser software called the “360 browser.” Therefore everyone started with opening and closing either the 360 browser or Internet Explorer, maximizing or minimizing the window, and scrolling up and down on the pages. Some participants could handle the mouse easily and some had difficulty at the beginning, especially the double-click (the alternative was to teach right-click instead to open a window). I downloaded the “Cut the Rope” game on the computers for them to practice using the mouse¹⁷.

After they were able to open the websites, I also taught them to click links on the websites to read content, browse the pages, view pictures, and watch videos (pause, forward and rewind), etc. These operations were difficult for beginners when everything was unfamiliar, especially for those who had no experience with any computer or

¹⁷ One participant had a minor eye disease so it took him a long time to click open the browser. Two participants had lost fingers but managed to use the mouse after practice.

smartphone operating systems before (one senior participant in Village A owned a smartphone but did not know how to make a phone call with it other than to answer incoming calls). For example, they had no idea about what the “browser” was and how it was related to the Internet (Internet was an abstract concept for many farmers even though they had heard about it before). Everything we take for granted with Internet use today had to be explained to the beginners and then practiced to enhance understanding. Many had trouble understanding and using the tabs: opening, closing, and switching among different tabs; some confused it with opening and closing the whole window. Most participants mastered the basic operations and could browse the websites to read news or watch videos on their own after one to three visits.

There were two skills most villagers wanted to learn: typing and online chatting. Many villagers regarded typing as proof of manipulating the computer (feeling that if one can type then one knows how to use the computer, a skill required by many hiring companies). Participants from both groups asked to learn typing skills, including those who already knew the basics but had not mastered typing yet (i.e. did not know how to type Chinese or could only type with two fingers). On the one hand, teaching what villagers wanted was important to attract participants and to keep them in the experiment. In addition, typing was essential for participants to broaden their online experience and take part in the interactive online environment such as leaving comments on websites. On the other hand, I needed to keep an eye on how much time they spent on practicing typing rather than using the Internet as the treatment required. An easy way to solve the dilemma was to let participants take turns. For example, the three desktops in Village B were not

connected because of the broken net cards; therefore, they were used for participants to practice typing while waiting for available laptops to access the Internet. Usually, participants were required to use the Internet first before exercising their typing skills if they wanted.

Most beginners knew some *pinyin*¹⁸, and I was able to teach them to type Chinese after refreshing their memory by watching instructional videos about *pinyin*. I installed typing software for them to practice the finger position, and suggested they copy the keyboard on paper and practice it at home. In the end, a small number of participants became experienced and were able to type quickly. Most people did not achieve that sort of proficiency but were able to type slowly for chatting or leave comments online. One participant even brought a dictionary to check *pinyin* for unknown Chinese characters to assist with typing.

Besides typing, online chatting (specifically video chatting) was emphasized and used as a motivation to attract villagers to come and learn the Internet as many villagers had relatives who had emigrated to cities for work and had not been seen for months or years. Some participants requested to learn Tencent QQ, a Chinese software similar to Skype that allowed users to chat through instant messaging, voice, and video. QQ was the most popular web chatting tool in China at the time of the experiment and had 808 million active users in 2013¹⁹. A participant in Village C was excited to conduct a video

¹⁸ Pinyin is the phonetic system for transcribing the pronunciations of Chinese characters into letters.

¹⁹ According to the company's 2013 Fourth Quarter and Annual Results, refer to <http://www.tencent.com/en-us/content/ir/news/2014/attachments/20140319.pdf>

chat for the first time with her teen-aged son who was in the Zhejiang province. This attracted other participants' attention, leading them to gather in front of the monitor to check how it worked. Another participant, a father of two whose older son went to Shenzhen for work, immediately called his son for his QQ account number.

Occasionally, participants who were already computer literate brought their own technical questions. For instance, a teacher wanted to learn more about Office, and had specific questions such as how to copy students' articles into a word document with a certain type of grid. A staff member at local Family Planning Commission wanted to learn more about Excel. Some participants asked to learn online shopping and downloading music to their cell phones. Generally, people took this as free computer training and Internet usage rather than an experiment. I usually tried my best to find answers for people's questions and taught them what they asked after they had used the Internet for their treatment.

Compliance

We required villagers to sign in when visiting the Centers to participate in the program. If it was the villager's first time participating in the program, he/she filled out the pretest questionnaire and was assigned to a group randomly. If the pretest questionnaire had already been filled out during the lectures or recruiting procedure, I checked the main list to see which group this person belonged to. In order to minimize the risk of cross-contamination between two treatment groups, I used news websites as examples for participants in the news group and entertainment websites for the entertainment group when teaching them to browse around the Internet. The 360 browser

was popular in China, so all the desktops in the Centers and laptops I borrowed for the project had this software installed. The browser had a front page called navigation with different categories of links to major Chinese websites such as news, video sharing, online shopping, and social networking, etc. Clicking the links was the easiest way for new users to start their online session. While learning the basic skills, participants in the news group could usually stay on the news websites for a while, from fifteen minutes to three hours. Even a few individuals with limited literacy could stick to the news websites thanks to the picture news and video news on major websites.

For participants in the news group who already knew how to use the Internet, I informed them that they were assigned to read some news first (for about 15 to 30 minutes) before they could browse recreationally. Young participants liked to login into their QQ account before reading the news, which was fine so long as they read some news for each visit. Villagers who were computer literate had probably paid a fee to use the Internet in an Internet café in cities before, so they perhaps considered the Center as a free Internet café but with certain obligations attached (reading news was one such obligation). Therefore, most people followed the instructions and opened news websites of their choice. Some really liked to read news and stayed on news websites in the Center for hours. However, there were individuals who had zero interest in reading news of any types or form. They were easily distracted and moved on to online gaming, chatting, or shopping very quickly.

Additional steps were adopted to prevent participants in the news and entertainment groups from receiving the treatment of the other group. For instance, there

were occasional discussions across groups toward certain big/shocking news stories (two times on record), such as a man who beat a 2-year-old girl to death on the street in Beijing, or female participants commenting on dresses found on shopping websites. The first step we implemented was separate seating as best as space allowed. We tried to group participants into separate tables when they showed up at the same time and let people from the same group sit together. Sometimes, when it was after the Village Committee's working hours in Village A, I was allowed to borrow their office space to accommodate participants from different groups. I then put the news group people in one room and the entertainment people in another. Second, we required participants to wear headphones when listening to music or watching videos online. These actions somewhat prevented participants from sharing crossover discussion about their online content, which restricted people assigned to the news group from distractions by the entertainment content prior to conducting their intended treatment of news reading.

Mostly, the compliance problem between the news and entertainment groups should not be a serious concern because it was generally acceptable for the news group participants to use the Internet for entertainment purposes if they had read some news first. Conversely, if some entertainment people did not comply with their assignment and read the news during the visits or on their own, it would underestimate the true effects of "reading news online" and yield a conservative estimate of the treatment effect. Thus, the true difference between the news group and the entertainment group would be larger (Paluck 2007, 52). The potential Type II error related to this kind of noncompliance

(failure to reject the null hypothesis of no difference when it is false) would be less severe than a possible Type I error (rejection of the null hypothesis when it is true).

Furthermore, I kept detailed records of participants' attendance and online experience by the sign-in sheet as well as a feedback form at the end of each visit. To preserve the most natural environment, I tried not to interrupt or monitor people's online sessions (once they learned the basic skills) rather than inform them which group they were assigned to. Nevertheless, each participant filled out a short feedback form when they finished each visit to the Center. The form asked multiple choices questions such as how long they had been using the Internet and what they did online today. This allowed me to track participants' compliance without putting them under constant surveillance²⁰.

Nevertheless, this study naturally encountered two-sided noncompliance as many experiments do when adopting "encouragement" design: participants were invited to a program that is available to them even without the invitation (Gerber and Green 2012, 174). On the one hand, only participants in treatment groups were invited to learn/use the Internet at the Centers, but some of the control group people also came to the Centers during the experimental period. Despite informing them about delayed treatment, 30 participants in the control group (49%) showed up in the Centers at least once. Eighteen of them stopped attending after one visit, but some kept visiting such as two senior participants who claimed they had nothing to do at home so they were happy to come to the Center every time it opened. When participants in the control group visited the Centers during the experiment, violating their assignment, I treated them as if they were

²⁰ For the complete feedback form, see Appendix A.

in the news group, and asked them to read some news first. Therefore, I called them the control/partial news group. On the other hand, the news and entertainment groups each had 26 participants who never showed up for their treatments. 58% of participants in the news group and 57% in the entertainment group visited the Centers at least once²¹. As a result, the effect of the treatment (using the Internet at the Centers²²) would be underestimated as only a portion of the “intent-to-treat group” was actually treated (Gerber and Green 2012).

Taking into account the non-compliance issue, the study estimated the *Complier Average Causal Effect* (CACE) rather than the *Average Treatment Effect* (ATE) for the entire subject pool. CACE is the average causal effect among a subgroup, Compliers, who take the treatment only if they are assigned to the treatment group (Gerber and Green 2012, 166). Estimating the CACE prevents the mistake of comparing actually treated to the untreated. An example of this is comparing participants who received treatment in the news group to participants who never showed-up in the Centers in the control/partial news group, ignoring the non-compliers in both groups. Because these groups formed after randomization were comprised of subgroup members from the original groups, they were no longer equivalent groups in terms of pretreatment conditions/background attributes (see Chapter 6 Data Analysis). Usually, groups formed

²¹ To give an example of treatment rate, only 25% of participants who are typically assigned to treatment group can be reached by the canvassers in face-to-face canvassing experiments (Gerber and Green 2012).

²² Participants’ outside usage of the Internet rather than in the Centers was not a measure in the study. This should not be a big concern as general access to the Internet was low in the rural area.

after randomization do not have comparable potential outcomes (Gerber and Green 2012, 173).

In anticipation of noncompliance, the experiment adopted a design that combined conventional and placebo designs; the entertainment group served as the placebo group. Based on the design, four binary comparisons were developed: 1) the news group (the treatment group) was compared to the entertainment group (the placebo group) to estimate the CACE of reading news online in the placebo design (reading news was measured by participants' visits to the Centers); 2) the news group (treatment) was compared to the entertainment group (control), scaled by the proportion of Compliers, to estimate the CACE of reading news online in the conventional design (reading news was measured by the records of participants' online activities during their visits); 3) similarly, the news group (treatment) was compared to the control/partial news group (control), scaled by the proportion of Compliers, to estimate the CACE of reading news online in the conventional design; and 4) the entertainment group (treatment) was compared to the control/partial news group (control), scaled by the proportion of Compliers, to estimate the CACE of using the Internet for entertainment purposes in conventional design (see Chapter 6). It was noticed in the last comparison that the treatment of Internet usage changed from news to entertainment in order to test the hypothesis that accessing the Internet for entertainment purposes would not increase users' political knowledge or support for democratic values.

One difficulty in estimating the CACE in the conventional treatment-control group design arises when the control group is a mixture of Compliers and Never-Takers

(Gerber and Green 2012, 162). As the name indicates, Never-Takers are subjects who never take the treatment whether they are assigned to the treatment group or control group (Gerber and Green 2012, 136). By using an intentionally ineffective treatment, the placebo design can screen out the “Never-Takers” (Gerber and Green 2012). This is the advantage of employing a placebo design when compared to the conventional treatment and control group design. Subjects were randomly assigned to the treatment and placebo groups given/following compliance (Gerber and Green 2012, 161). Therefore, the CACE can be directly estimated by comparing the outcome of those treated in the news group to those that received placebo treatment in the entertainment group. In contrast, the conventional design compares the average outcome in the treatment and control groups based on subjects’ assignment status ignoring whether subjects were actually treated, obtaining the *Intent-to-treat effect* (ITT), and then scaling by the estimated proportion of compliers (the ITT_D) (Gerber and Green 2012, 163).

Both the conventional and placebo designs provide consistent estimation of the CACE. The three-group design allows two different ways to estimate the CACE. The conventional design is usually preferable when compliers compose at least half of the sample (Gerber and Green 2012, 162). As shown in Table 4.2, the compliance rate (at least one visit to the Center) is slightly above 50% in my study. However, the 50% rule assumes an untreated baseline, while the control group in my study was partially treated as some control group participants visited the Center regardless of their assignment²³.

²³ It was noticed that the control/partial news group had the largest number of one-time visitors. Most of them were recruited at the Center and used the Internet after they filled

Therefore, the placebo design estimated the CACE more precisely than the conventional approach in this study (although there could have been a slight loss in efficiency because the compliance rate was above 50%).

Table 4.2: Assigned and Realized Treatment (Number of visits by group)

Assigned group		Frequency	Percent
1. News	0	23	40.4
	1	6	10.5
	2-11	28	49.1
	Total	57	100.0
2. Entertainment	0	23	41.1
	1	12	21.4
	2-11	21	37.5
	Total	56	100.0
3. Control/partial news	0	29	49.2
	1	13	22.0
	2-11	17	28.8
	Total	59	100.0

In order for the placebo design to generate an unbiased estimation, the subject's actual treatment should be independent of the assignment message (Gerber and Green 2012, 163). In my study, there was no reason to assume that subjects showing up to the Centers would be affected by whether they were assigned the treatment or placebo conditions, which they were unaware of until they arrived (and received the treatment/after compliance status was achieved). Therefore, it was acceptable to exclude those who failed to show up. Moreover, the placebo treatment should have no effect on

out the pretest questionnaires. They were also counted as treated because of the exclusion restriction, which assumed that assignment had no effect on subjects who were untreated.

the outcome of interest. Although the impact of entertainment usage was also an outcome we wanted to measure (and happened to be of interest rather than the sole purpose of screening out “Never-Takers” in the experiment), it did not seem plausible that entertainment use would literally subtract from what people already knew about politics (or change their political beliefs)²⁴. Rather, the participants in the entertainment group simply did not improve their political knowledge as much as the news group was able to through the Internet; as a result, they fell behind in comparison. This facilitated the entertainment group still functioning properly as a placebo group.

I examined the reasons for the participants’ absence for the training in the next section to further demonstrate that their actual treatment status had nothing to do with their assignment. In addition, as mentioned above, the compliance rates for the news (58%) and entertainment (57%) groups were nearly identical, and the background attributes demonstrated balance between the two groups without the “Never-Takers” (see Table 4.3) (Gerber and Green 2012, 164). The largest difference between the two groups in terms of background attributes was their history of computer usage (and the content they were exposed to on the Internet prior to the experiment). However, the Chi-Square value between the group and computer usage was not significant, $\chi^2(df=4) = 8.515$, $p = .074$. Therefore, it seems that the two variables, group assignment and computer usage, were not associated. Further, the difference turned out to favor the entertainment group, as 41% of its subjects had never used the computer before when compared to 70% in the

²⁴ Acknowledged by Gerber and Green, it is hard to imagine an intervention that could uncover Complier status while having no possible effect on the subject (Gerber and Green 2012, 163).

news group. The news group would be expected to be less sophisticated regarding public affairs (through their exposure to the Internet). Finally, using a similar method with the full sample earlier in this chapter, we tested whether the observed degree of imbalance was within the expected range by a regression of the assigned treatment on the covariates discussed above (and calculating the F-statistic) (Gerber and Green 2012, 162, 432). The result was, again, insignificant, which indicated that the two groups were equivalent and any imbalance was due to random chance.

Table 4.3 Sample Pretest Measures Demonstrating Balance among Treatment and Placebo Groups, Excluding the Never-Takers

Group	News	Entertainment
Sex (% male)	56	59
Age (mean)	36	35
Years of Education (mean)	8	8
Ethnicity (% Han)	80	91
Work in a city (% yes)	54	73
Party member (% no)	80	94
Official (% no)	92	85
Used computer (% no)	70	41
Application: news (% yes)	11	15
Application: entertainment (% yes)	19	38
Application: searched for information (% yes)	22	15
Application: online chatting (% yes)	14	27
Application: work (% yes)	6	0
Application: shopping (% yes)	6	9
Used Internet on mobile phone (% yes)	33	38
Application: online chatting (% yes)	33	44
Application: news (% yes)	8	15
Application: search for information (% yes)	8	12
n	36	34

Reasons for Noncompliance in the Treatment Groups

It was difficult to persuade participants to visit the Center and to keep attending for two/three months. As mentioned above, based on interviews with villagers and our observations, some possible reasons that prevented people from visiting the Centers were 1) having low interest about the Internet, 2) being busy, 3) having low confidence in their ability to learn how to use the Internet, and 4) living too far away from the Centers. As mentioned above, none of these reasons were related to the participants' treatment status.

On the one hand, the majority of interviewees mentioned "too busy" as the reason why they could not come to the Centers to learn or use the Internet. Farming work (it was rice planting season), seasonal jobs at the tourist attractions (from dawn to dark), and social activities such as assisting and attending wedding feasts (a big part of rural social life) were examples of activities that kept people busy. Some villagers who owned a business such as barbershops, motorcycle repair stores, or family run tourism accommodations (*nong jia le*) claimed they could not spend time away from their store to visit the Centers.

On the other hand, a general lack of interest and reluctance to invest time in a skill they may not need urgently were fundamental reasons why villagers were not eager to attend the seminars. Many farmers did not see the relevance of the Internet to their daily life, and did not know that the Internet would play an important role in their future. The pace of rural life was relatively slow; villagers had limited concern for the input that accessing the Internet could provide, favoring the old fashioned way of acquiring useful information from in-person communication with relatives and friends. Social life in the

villages has always involved interactions based on close ties with kin. It is mostly the young in rural areas who have become aware of the broader networking and socialization opportunities on the Internet, and many of these young are educated and have studied/worked in cities. Scholars who have studied Internet expansion in western rural China found that the cultivation of a fitting social environment for Internet adoption is critical in addition to an external push (Zhang and Deng 2010). Many villagers would rather spend all their spare time gambling in *Mahjong* games²⁵ at home or in *Mahjong* parlors than coming to the Centers for free Internet. The Internet was something abstract and irrelevant to their dealings with daily affairs in the rural setting, in contrast to the urban population whose lives are deeply intertwined with the Internet.

Low confidence in their skills was another concern for villagers in learning how to use the Internet, especially for seniors and middle-aged villagers. Several mentioned that their “education level was low,” and they could not acquire the knowledge and abilities needed to use the computer/Internet. To them, the computer/Internet is high technology with a complex operating system that was out of reach of ordinary farmers. I once invited a middle age villager to learn to use the Internet when he passed by the Center in Village A; he declined but brought his younger relatives in another day to participate in the program. I persuaded him to sit in front of the computer and taught him the basic steps of opening a website. He started to gain some confidence and said “it is not that hard.” Nevertheless, the lack of confidence proved to be a significant barrier,

²⁵ Mahjong is a traditional and popular Chinese game usually played by four people around a square table, using tiles rather than playing cards.

preventing some villagers from even trying to use the computer or continuing to visit the Center to get familiar with using the Internet.

Additionally, some participants lived too far from the Center (as many households were spread out in the mountain area). This distance interrupted visiting the center regularly. It would take almost one hour to walk to the Center for the most distantly located participant without transportation. In Village A, a bridge to a stockade village (*zhaizi*) was broken after a storm, which made transportation inconvenient during the reconstruction. Finally, villagers often move to find work. As the three villages are not very far from a city, many villagers from time to time moved to the city or other counties for temporary jobs such as construction projects. Consequently, there were some participants who had been coming to the Centers for a week or a month, but failed to attend the rest of the program because they were not in town.

Measures to Increase Compliance

Steps were taken to address the issue of noncompliance caused by absences. One solution was to teach participants to do what they indicated they were interested in doing on the Internet. As discussed earlier in the chapter, I taught people how to type and chat online, which were popular demands among the villagers. Beyond that, the following steps were adopted to relieve the problems of absence caused by accessibility and lack of interest: First, I called participants in the news and entertainment groups in Village A every Monday morning, reminding them to come and use the Internet that day; next, I applied the same procedure for Village B and C on Wednesday mornings and Friday mornings. Occasionally, one or two individuals hung up the phone but most people

would politely decline if they could not come that week. Sometimes, participants' phones were out of service; I usually tried two or three times before giving up. The calls were useful in reminding participants about the time and schedule of the Center operating in their village. Villagers did not remember the schedule well especially at the beginning of the experiment. When successful, the calls were useful for bringing participants in for their treatment. For example, eight people showed up to the Center soon after I called them on July 24th. Each stayed to learn or use the Internet for at least two hours, some even stayed for four hours. Another time I called participants in Village B who were playing *Mahjong* nearby. Two of them came to the Center later that day and made a joke saying, "this (using the Internet) does not cost money" (comparing to gambling losses when playing *Mahjong*).

Second, we extended the hours of operation for the Centers. Rural life is less structured and often without precise times and schedules. Some villagers never paid attention to the hours. Therefore, I extended hours to accommodate their schedules and tried to be as flexible as we were able. I posted my contact information on the door of each Center, as well as on flyers handed to villagers. I sometimes received calls from participants in Village A on Wednesdays or Thursdays asking if I was in the Center. In that case, I would schedule an after hour appointment with them and drove to Village A to open the Center in the evening after closing the Center in Village B. Occasionally, people showed up at the time I was closing the Center and packing up all the laptops; I usually unpacked them and kept the Center open so they could use the Internet for a while.

Third, we gave rewards for participants who visited the Center to learn and/or use the Internet. At the beginning, I gave participants a small amount of money at the end of each visit as an incentive, or a reimbursement for their transportation costs. However, many participants declined, and I found that the small amount of money was not very useful in attracting people to attend. Those who decided to come would do so without the reward, those uninterested would not participate for this small reward. Hence, I slightly adjusted the distribution method. Instead of giving them money each time, I granted the reward when they visited the Center every five times, so that the reward would be a more attractive sum, the equivalent of about \$10 (USD). Once I instituted the compound reward, some villagers who had not yet attended began to ask the time and location of the study when I called them. Still, many participants said that they came because they wanted to learn rather than for the money. Nonetheless, most accepted the accumulated reward on their fifth/tenth visit.

In conclusion, it was difficult to keep participants coming in for the treatment, especially for the entire evaluation period. One hundred participants came to the Center to learn/use the Internet at least once, including 36 participants from the news group and 34 from the entertainment group. A similar percentage of participants from the control/partial news group showed up in the Centers at least once; about half of them stopped attending after being notified at their first visit that their participation in the experiment would begin later. However, some control/partial news group participants kept coming when they had the time. For example, several villagers who worked at the tourism attraction tended to visit the Center together. Attendance was inconsistent, with

days where three participants stayed for an entire day and days where twenty came in a single afternoon. Fortunately, when participants *did* come, they usually spent at least one hour online for each visit, with some even staying until the Center was closed. The total time the news and entertainment groups spent online in the Centers was above 662 hours. Compared to many villagers' indifference about the Internet, some participants showed enormous interests in learning and using it. For example, several participants working at the tourism attraction came to the Center after the roll call in the early morning and stayed until their co-worker on "sentry duty" called them reporting guests had arrived. Many mothers brought their children to the Center, and a participant from Village 3 always came early before he went to village markets to sell fruit for the rest of the day.

Problems Encountered in the Field

We faced challenges while doing fieldwork as we had never been to the villages, and did not know anybody before we arrived. Our first concern was safety. The villages were in a mountain area with narrow, curved roads that had sharp turns along edged cliffs. Driving on these roads was challenging, especially in the evening without street lights. For example, driving in the evening was unavoidable when extending the hours of the Center to suit/fit participants' schedules. In addition to this, villagers' dogs posed another danger. Rural families in China were not accustomed to keeping dogs on a leash. There were serious incidents of villagers bitten by other families' dogs. Therefore, I was cautious when visiting households to recruit people (or later collecting the posttest questionnaires). One time, a villager who guided me to a stockade village (*zhai zi*) picked up a stick near the entrance in order to protect us from aggressive dogs.

Fortunately, no incidents concerning personal safety and property occurred during the experiment. However, one event in late July nearly ended the experiment in Village C. As mentioned earlier, Village C did not have a Center but a residents' committee office that owned two desktops; one of the computers was installed by the Distance Learning Project. I converted the office to a Center during the study after gaining approval from the head of the committee. However, on July 26, the head suddenly refused to let the villagers to use the office, citing that they had deleted documents on the one desktop that belonged to the office (it was later proven that participants had not done this), and stained the office furniture (this may have been done by participants' children). Moreover, he claimed all participants were farmers who were not supposed to be served by the residents' committee office. After talking with the head for one hour and gaining support from another official of the committee, the head finally allowed me to continue using the Center for the study. I promised to clean the whole office after each session and keep villagers away from the office desktop.

Furthermore, dealing with local cadres was complicated and delicate. On the one hand, I needed their support to conduct the experiment in the villages and use the Centers for the treatment. On the other hand, I needed to protect the study's independence by distancing myself from the cadres. Many villagers believed the cadres to be corrupt and prone to abuse their power. Fortunately, many villagers saw me as an outsider and were quite open in expressing their political views during interviews and group discussion. Overall, I maintained a good relationship with the local officials and was allowed to use the government's facilities without any interference by officials on how to conduct the

study. There were a few occasions when cadres in Villages A and B wanted to showcase the villagers using the computers to inspection officials. I generally cooperated so long as it did not interrupt the participants' visit. However, a township official in charge of the Distance Learning Program once asked me to operate the Center in Village B on a Friday for a higher-level officials' inspection. I declined because Fridays were scheduled for Village C's Center, and I could not afford to lose any session of treatment or participants.

My assistant and I could only operate one Center on each day. We tried our best to accommodate the requirements of the experiment within the constraints of our time and ability. Limited staff and resources were always a challenge. On days of higher attendance, it was challenging to simultaneously teach new-comers basic computer skills, answer questions from participants who encountered problems with the computers, and collect feedback sheets upon each participant's departure.

Technical problems struck intermittently; desktops in the Centers were all previously used and tended to have minor hardware and software problems. For example, the sound system of one computer in Village A was broken, making listening to the audio difficult or impossible. The Internet in Village A crashed twice, and I tried all sorts of ways to restore it. Additionally, the speed of the Internet in Village B was very slow for the first few days and there was nothing we could do about it.

Other challenges were minor when compared to the issues discussed above, such as the inconvenient living/working condition in the rural area: mosquitoes, second-hand-smoking, temporarily cut-off water supply, and sanitation situations. Despite the

problems encountered in the field, the experiment was completed, as generally planned, in four months.

CHAPTER 5 “THE MEASUREMENT OF OUTCOMES”

This chapter discusses the procedures for collecting the posttest questionnaires and obtaining the outcome measures. The chapter restates the hypotheses and discusses in detail how the two outcome variables, political knowledge and political attitudes, were measured by the posttest questionnaires, along with information about how the answers were coded. Further, the chapter provides measurements on the independent and control variables: political and socioeconomic satisfaction, interests in politics and evaluation of political efficacy. The questions on the pretest questionnaire were similar to those on the posttest; to check the equivalence of the groups at the outset, the pretest measures were compared. The pretest outcome measures also served as covariates in the data analysis (see chapter 6).

In addition to administering the questionnaires, I also conducted 28 interviews with participants from all three groups regarding their opinions about the Internet. This provided supplemental, qualitative information about the participants and the Internet’s impact on them. The supplemental information reinforces findings concerning the estimate of the causal effect based on analysis of the experimental data.

Data Collection Procedure

I began to collect posttest questionnaires in late August, first starting in Village A. Doing so gave one more week for participants in Village B and C to visit the Centers (as they started the treatment later than Village A). The collection of questionnaires required more than two weeks. During the first week, we mainly spent daytime hours at the Centers; during the evenings until 10pm, we visited participants. During the second

week, we located subjects wherever they happened to be (home, workplace, entertainment venues, etc.).

For the first week, participants followed the regular schedule, visiting the Centers to use the Internet on the day when it was open in their village; I then asked them to fill out the posttest questionnaire at the end of their visit. Similar to the pretest survey, I offered the equivalent of \$2 (USD) for each participant to complete the posttest survey. If time allowed, I conducted individual or group interviews with them after they finished the questionnaire, using open-ended questions asking them about their opinions regarding the Internet. Some participants kept coming to the Centers to use the Internet even after they had already finished their posttest questionnaires. Participants who had attended the treatment were usually cooperative in filling out the questionnaire. Depending on the participant, the questionnaire took between 10 to 50 minutes to complete. Some may have seen it as a way to thank me for teaching them to use the computer/Internet, and patiently spent time thinking through each question. However, some subjects were less literate or less motivated to complete the questionnaire. To assist with completing the survey, my assistant and I read the questions to them so that they would not lose interest and stop answering questions. For participants who did not attend the Centers, it was not easy to obtain their posttest survey. We made an extra effort to reach them before we left the villages.

Collecting the Questionnaires

The collection of the posttest questionnaires presented challenges. Our strategy was to carefully schedule visits so as to reach the largest number of participants possible.

I called every participant who did not fill out the questionnaire in the Centers, asking them when and where I could bring the questionnaire for them to fill out at their convenience. Following that, I made a schedule arranging the location and time for visits in order to maximize the number of participants I could reach. Some households were far apart even within the same village; some villagers traveled to other counties or other provinces for construction work, and would be home only on a certain day. Therefore, it was challenging to accommodate everyone's schedule.

Beyond setting up the schedules, locating the participants presented challenges. Relying on the volunteer guides, I was able to locate participants' houses. However, because villagers commonly know each other by nicknames but wrote their formal names when they signed up for the experiment, it was difficult to find specific individuals. It often required asking several villagers about a formal name and who it belonged to for me to figure out who that person was. My assistant and I drove or walked to all corners of the villages to find participants: people's homes, construction sites, work zones along the highway, highway emergency vehicle lanes, village feasts, tourism attractions, restaurants, and *mahjong* parlors. On one occasion, my assistant and I walked for two hours on a round trip to a secluded mountain area to reach a participant in the control group. On another occasion, we drove half an hour on a damaged, bumpy road to a participant's house at the top of a mountain. On the one hand, most villagers were unfamiliar with social research and could not understand why it was necessary to find them to also fill out the posttest questionnaires. Some argued that I could ask their relatives or friends to fill out the questionnaires for them. On the other hand, there were

participants who were very cooperative. Some came to the Centers to fill out the questionnaire after receiving my call. One participant volunteered to ride his motorcycle to pick up two participants and send them to the Center for the posttest; others voluntarily guided me to fellow villagers' houses.

In the end, of the 183 subjects who enrolled for the study, 172 of them completed the posttest questionnaire, including 10 that responded orally over the phone (because they were out of town). Regarding the 11 remaining subjects who failed to finish the posttest, one refused to fill the questionnaire after two follow-ups; one had fled from the village because of debt. Two moved to the city, changed phone numbers, and could not be reached. Lastly, two could not be identified at the time of the posttest (they probably used fake names and numbers to register). The rest were not in town and failed to answer the questionnaire over the phone after three attempts.

In an experiment, attrition occurs when the outcome measure is missing for some subjects. Attrition can be associated with bias. This occurs when there is differential attrition; those with a missing outcome measure from the treatment group are different in one or more ways from those missing the outcome measure from the control group, and these differences are related to the outcome measure. The treatment and control groups, initially the same because of random assignment, are no longer the same because of differential attrition. Fortunately, attrition in this study, in both the experimental and control groups, was small and similar (see Table 5.1)²⁶. Further, there was little reason to

²⁶ Moreover, as identified above, most subjects who missed the outcome did so because they were not in their villages when I collected the posttest. It was unlikely that subjects

think that there was significant differential attrition. Those not completing the posttest were not unusual with respect to personal characteristics or group assignment (Gerber and Green 2012, 220). A regression of attrition (1= posttest; 0 = no posttest) on pretest covariates²⁷, $R^2 = .046$, $F(10,149) = .722$, $p = .703$, and experimental assignment, $R^2 = .007$, $F(2,180) = .651$, $p = .523$, generated an F value that was not statistically significant. Therefore, neither the subjects' background attributes/personal characteristics, nor their assignments to groups could predict attrition; this provided two instances of attrition independent of potential outcomes (Gerber and Green 2012, 220). The hypothesis of the equivalence of the groups, even after attrition, is supported.

Table 5.1: Low and Similar Attrition rates across Groups

	Complete the post		Total
	No	Yes	
Group 1. News	5 8.1%	57 91.9%	62 100.0%
2. Entertainment	4 6.7%	56 93.3%	60 100.0%
3. Control/partial news	2 3.3%	59 96.7%	61 100.0%
Total	11 6.0%	172 94.0%	183 100.0%

were out of town in order to avoid filling out the posttest questionnaire. Therefore, the absences should be independent of potential outcomes.

²⁷ Covariates included in this regression: age, gender, years of education, income, ethnic, party membership, whether the participant had worked in a city, whether the participant had family members in a city, or whether the participant or family member(s) is an official.

As discussed in Chapter 4, the experiment adopted a placebo design. Therefore, we also calculated the attrition rate when excluding the Never-Takers in the treatment group (news) and the placebo group (entertainment). It turned out that the attrition rates between the two groups were also similar (two out of 36 and one out of 34 were missing the outcome in the two groups, respectively).

Filling Out the Questionnaire

There were some minor incidents when participants filled out the questionnaires. For example, one participant from Village A was trying to search for the answers online while responding to questions in the knowledge section. I stopped him and reemphasized that this was not an exam. In another case, a middle-aged female participant let her daughter to fill out the questionnaire for her. I stopped this and asked her to fill out the survey on her own.

As will be discussed below, the phrasing of the questions in the political attitude section was adjusted to avoid politically sensitive content. For example, the question which tested respondents' support for democratic elections asked them to choose between "allowing more than two competing political organizations to exist" and "the government listening to other political organizations' suggestions." One participant directly asked me if this question was about the Communist Party's one-party rule. This indicated that at least some villagers understood the hinted political language even when it was not explicitly articulated in the questionnaire. Occasionally, when people chose more than one option for a single-answer question, I tried to find the mistake and asked them to correct it as I usually checked the questionnaire quickly before they submitted it.

In general, some people refused to fill out the questionnaire at the beginning (particularly those who never showed up in the Center to use the computer). However, once I persuaded them to finish the survey, and they did so, they became much more friendly; some even declined the small amount of money offered as an incentive for completing the survey.

Interviews

Completing the posttest questionnaire marked the end of the experiment. In addition to the experiment, I conducted interviews with 28 participants from all three groups after they finished their posttest questionnaires. While the experimental method provides causal estimation of the Internet's impact on the participants, the interviews provide supplemental, qualitative information, through open conversation, about the participants themselves and their attitude towards the Internet. The main goal of these interviews was to record participants' freely expressed opinions about the Internet, especially for those who had accessed it during the experiment. For participants who never showed up in the Centers, the interviews served the purpose of assessing why they were reluctant to attend sessions to learn to use the Internet. The following three questions at the end of the posttest questionnaire asked if respondents felt that their knowledge about news and their ability to search for information had changed when compared to a couple of months before.

1) Compared to a couple of months ago, how much do you think your ability to acquire news information has changed?

2) Compared to a couple of months ago, how do you think your knowledge about news and current social issues has changed?

3) Compared to a couple of months ago, how do you think your ability to search for information has changed?

Beyond these three questions, the open-ended questions in the interviews directly asked their thoughts about the Internet and its impact on themselves and society in general. These interviews provided opportunities for participants to share their personal experience and express their opinions about the Internet in addition to the closed –ended questions in the survey.

The interview started with a question asking for participants’ general impression of the Internet, what they thought the Internet was good for, what most surprised them about the Internet, what they enjoyed doing online, as well as whether they thought the Internet was useful to them and their children. The interview also included questions asking participants’ thoughts on the “comments” people left on the Internet. I further discussed with them whether they had left any comments online. If so, I asked what they had commented about, and if not, why they had not. For those who did not know how to type, I asked what they would comment on if they were able to do so. Moreover, I asked whether they thought people should limit what they say in the comments.

The interview proceeded with questions about three skills participants learned on the Internet, whether the Internet had changed the way they now think about anything, and whether they thought the Internet would change the country (if so, how?). These questions could provide additional information to the political attitude questions listed in

the standard survey. Finally, during the interview, I inquired about the participants' opinion on the difference between the Internet and the traditional media in China. For those who had just learned to use the Internet at the Centers, I asked how they felt differently about the Internet now that they had used it. If time allowed, I also pursued other political topics with interviewees, particularly about two political issues frequently brought up by villagers: their faith in the central government juxtaposed with their distrust against the local authorities, as well as the misconduct involved in local village elections.

The Hypotheses and Measurement of Variables

Various sections of the questionnaire included items necessary to test two different sets of hypotheses. The first set of hypotheses pertains to whether and how different uses of the Internet affect political knowledge. The following were hypotheses:

Hypothesis 1a: For those who use the Internet for political content (the news group), there will be an increase in political knowledge.

Hypothesis 1b: For those who use the Internet primarily for entertainment purposes (the entertainment group), there will be no change in political knowledge.

The second set of hypotheses examines whether exposure to the Internet can increase users' support for liberal-democratic values:

Hypothesis 2a: For those who use the Internet for political content (the news group), there will be an increase in support for liberal-democratic values.

Hypothesis 2b: For those who use the Internet primarily for entertainment purposes (the entertainment group), there will be no change in support for liberal-democratic values.

Outcome Measure: Political Knowledge

To obtain measures of political knowledge, I asked multiple-choice questions about current news and basic political factors on both the pretest and posttest questionnaires. These were questions that tested participants' knowledge of current news and events in different policy areas (i.e. health, criminal justice, transportation, and international affairs) and different domains (local, domestic, and international). The questionnaires also included basic questions to assess political facts and concepts that the respondent remembered or recognized (Eveland 2008), such as knowledge of prominent government leaders and institutions.

The political knowledge section of the pretest questionnaire had eleven questions and the posttest had twelve. Participants were instructed to select one of five provided multiple choice answers for each question. I counted the number of correct items out of the 11 questions on the pretest and the 12 questions on the posttest. Therefore, the potential range of correct answers on political knowledge varied from 0 to 11 on the pretest and 0 to 12 on the posttest for each subject. I listed the knowledge questions on the pretest and the posttest in Appendix B.

The posttest questions on news were updated based on the most recent events, while some factual knowledge questions remained the same. The twelve posttest questions contained four factual questions; three of them were the same as in the pretest:

Question: Do you know what office Li Keqiang holds now?

Question: Who is the current first lady in China (the wife of the president)?

Question: Who is the current president of the United States?

News questions were developed based on major events or issues that were covered by both traditional and digital media in China; most events made the front page. Some sensitive news events first appeared online. As the news stories were disseminated and generated enormous public attention, the traditional media then reported on them. Thus, the news questions asked about the most recent and important news stories or major events that received broad media attention, such as the incident where a watermelon vendor was beaten to death by the municipal police (*chengguan*) in Hunan province (posttest question 5) or China having launched a manned spaceflight in June (posttest question 3). The questions also referred to ongoing international conflicts that generated news updates, such as the war in Syria and the dispute over the Diaoyu/Senkaku Islands (pretest question 12 and posttest question 14, respectively). Finally, questions regarding recent policy changes related to peasants, such as the new rural cooperative medical system (*xinnonghe*) (pretest question 8). All questions were designed to test respondents' awareness of the events rather than how much detail they remembered. Therefore, the questions asked for general knowledge rather than for specific detail of the events, such as the dates of the events or the names of individuals. For example, the question referring to the war in Syria was worded as follows: "Which of the following Middle Eastern countries is currently in civil war?"

Finally, the pretest and posttest questionnaires each had two entertainment questions at the end of the knowledge section, regarding a famous athlete, a local sports

team, a film director and celebrities who had appeared in recent events (see Appendix B).

Outcome Measure: Political Attitudes

In order to test the second set of the hypotheses about the participants' support for core democratic values, the survey measured respondents' levels of agreement with a sequence of statements that were mostly about prescriptive norms – “that is the way things should be,” comparing to descriptive norms – “that is the way things are,” which were mainly used for testing political and socioeconomic satisfactions in the study (Paluck, 55). I consulted the existing state of the nation surveys conducted in the field of Chinese social political study as well as the questionnaires used by the World Value Survey and the Asian Barometer Survey to develop questions²⁸. The phrasing of some questions was changed to make it less sensitive in the Chinese political context. I also borrowed official language in the introduction of the section that asked questions about democracy. For example:

The 18th National Congress of the Communist Party of China advocates further developing democracy in China. Next are some opinions given by other people about democracy and the rule of law (*fazhi*). We want to know whether you agree or disagree with them, and if you agree or disagree somewhat or a lot.

The pretest and the posttest had identical questions on the political attitude section (except for six questions). The revisions in the posttest were designed to make the questions clearer and more relevant, based on the responses from the pretest. 1) Pretest question 30 and posttest question 31 asked about the same topic but in different formats.

²⁸ As well as questionnaires developed by the Research Center for Contemporary China at Peking University such as “Attitudes towards Citizenship in China: Data Report of a National Survey.”

On the pretest, the question was “Protecting freedom of speech should be among the top aims of our country,” and respondents were asked to rate their opinions through one of five options: strongly disagree, agree, neutral, agree, and strongly disagree. On the posttest, the question was changed to “There are two opinions below; which do you agree with more? A. Protecting freedom of speech should be among the top aims of our country. B. Government should decide which topics are allowed to be discussed by the public. C. Disagree with both.” 2) Pretest question 31 and posttest question 32 received a similar alteration. The prompt was “Protection of civil liberties is an essential characteristic of democracy” on the pretest. In contrast, the respondents were asked to choose among four options on the posttest: “Protection of civil liberties is absolutely more important,” “Protection of civil liberties is more important,” “Economic development is more important,” and “Economic development is absolutely more important” 3) Pretest question 35a, “In a democratic society, officials tend to listen to public opinion” was replaced by posttest question 36a, “Societies are democratic only when officials listen to public opinion.” 4) Pretest question 35c “In a democratic society, incapable officials will be easily replaced” was changed to posttest question 36c, “We should preserve a democratic election even though some problems exist.” 5) Lastly, two questions on the pretest were deleted in the posttest: first, “In a democratic society, important officials need to be elected, but people lack knowledge about the candidates; therefore voters frequently elect less qualified officials,” and second, “Democracy can solve our society’s problem.”

Eighteen political attitude questions were asked on the posttest (see Appendix C) and 20 on the pretest²⁹. Most answers had five previously mentioned options ranging from strongly disagree to strongly agree (except for those specified below, all used the five response categories). Each answer was coded from 1 (least) to 5 (most) to measure support for democratic values. For the three questions that had three options (such as the question mentioned above where subjects need to choose from two opinions and a “Disagree with both” answer), they were rescaled into a five-point scale as follows: the answer, which showed the least support for democratic values was coded with a value of one, the opposite was coded with a value of five, and the “Disagree with both” answer was coded with a value of three. Similar coding applied to the two questions that had four answers (for example, posttest question 32 mentioned above); they were rescaled as 1, 2.33, 3.67, and 5, with one (least) and five (most) to measure support for democratic values. Therefore, to construct the political attitude scale from the items on the posttest, the scores of the 18 questions were added together for each subject. The potential range of scores on the political attitude, thus, varied from 0 to 90. The scores were then divided by the number of questions the participant answered in order to gain the average political attitude score for each individual. The 20 pretest items were also added and averaged to form the pre-political attitude scale, which served as a covariate for analysis.

The attitude questions were categorized into four major areas that tested the Internet’s impact on an individual’s support of democratic values:

²⁹ The attitude questions listed below were on the posttest. Except for the six questions discussed in the previous paragraph, the questions on the pretest were identical.

- 1) support for competitive elections
- 2) opinions about the rule of law
- 3) consciousness of civil/political rights and prioritization of liberties and personal freedom
- 4) tolerance and willingness to challenge authorities (Zhong 2005). These are widely regarded by political scientists to be the essential elements of liberal democratic values (Zhong 2005).

Measurement of Independent and Control Variables

In addition to the two sections measuring participants' political knowledge and attitudes, two other sections of the questionnaire assessed participants' political and socioeconomic satisfaction; a third section tested participants' interests in politics and their evaluation of its political efficacy. The last section involved demographic information. All of these factors could potentially influence people's degree of support for core democratic values. Answers to these questions on the pretest served as control variables (see Appendix D for the questions and coding process).

Comparing Groups on Pretest Outcome Measures

As discussed in the previous chapter, the pretest served as a control variable to detect any initial differences among the participants' level of political knowledge. The data showed that there were no significant differences among the three groups at the initial test in terms of political knowledge (see Chapter 6 data analysis). The regression analysis showed that the model was not significant, $R^2 = .011$, $F(2, 180) = 1.038$, $p = .356$. Regression coefficients indicated that assigned to the news group ($M = 2.66$, $SD =$

2.415) had slightly higher score (.06) than assigned to the entertainment group ($M = 2.60$, $SD = 2.695$), but not significantly, $b = .061$, $\beta = .012$, $t(180) = .135$, $p = .893$. Assigned to the control/partial news group ($M = 2.07$, $SD = 2.428$) had slightly lower score than assigned to the entertainment group, but not significantly, $b = -.534$, $\beta = -.100$, $t(180) = -1.169$, $p = .244$. This is further evidence that the random assignment at the time of the initial test created equivalent groups with respect to knowledge. Any difference in knowledge between the groups at the time of the posttest favoring the groups using the Internet can in fact be attributed to their use of the Internet.

Special Arrangements for the Control Group

As mentioned in Chapter 4, I told participants in the control group that due to the capacity of the Center, they had to come in late August after people in the news and entertainment groups finished their training. Villages A and B each had a staff member from the village committees who was in charge of the Centers (for example, the nephew of the Village Secretary in Village A). Although the Centers were equipped, they were not in operation before my research project started. The two staff members cooperated with me during the experiment and observed how I taught the participants to use the computer and the Internet. They infrequently helped me with tutoring the villagers when multiple participants showed up simultaneously. Therefore, I discussed with the officials of the villages and townships about continuing the training program with the two staff members upon my departure from the village, and informed participants in the control group to visit the Centers when I was collecting the posttest questionnaires.

Because Village C did not have a Center, I had to turn the residents' committee office into a Center during the experiment. As a result, the office could not keep operating after the project started. Fortunately, Villages B and C belonged to the same township and were relatively close geographically. Thus, I informed participants in Village C to go to the Center in Village B to learn to use the computer/Internet if they wished. In addition, a Village Cultural Station with computers and Internet available was under construction on the main street of the township during that summer. With its planned operation date in September, villagers should have more opportunities to use the Internet. Although this arrangement was not perfect, I tried to provide delayed treatments to the control group participants without my presence in the villages to make sure that the postponement was not a sacrifice.

The next chapter analyzes data collected through the questionnaires, focusing on the first outcome variable: political knowledge. The analysis uses two regression models (with and without a covariate) in two different designs (the placebo and the conventional designs) to estimate the causal effect of the Internet.

CHAPTER 6 “RESULTS – POLITICAL KNOWLEDGE”

This chapter presents the results of the first outcome variable of the experiment, political knowledge. It should be noted that the experiment can estimate the *Complier Average Causal Effect* (CACE) and not the *Average Treatment Effect* (ATE) (Gerber and Green 2012). As discussed in Chapter 4, this study encountered noncompliance issues as it adopted the encouragement design; some subjects assigned to the news group (treatment group) and the entertainment group (placebo group) failed to visit the Centers to receive their treatments. Further, some subjects assigned to the control group attended the training regardless. The CACE estimates the ATE among a subset of the subject pool, known as Compliers, who are treated only if assigned to the treatment group (Gerber and Green 2012; Angrist et al. 1996). In short, the participants in the news group (treatment) had significantly higher scores on political knowledge questions than the entertainment group (placebo). Therefore, the finding suggested that exposure to online news increases users political knowledge.

In anticipation of noncompliance, the experiment adopted an experimental design of three groups: treatment, placebo, and control. This allowed for the estimation of the CACE in two ways: the placebo approach and the conventional approach. Both yielded consistent estimates of the CACE, and together they enhanced the accuracy of estimation when merged (Gerber and Green 2012).

We first present the results of the *intent-to-treat* effect (ITT) – the average effect of the assigned treatment on outcomes – regardless of whether or not all the subjects in the treatment group actually received the treatment. Second, we estimate the CACE in the

placebo design by comparing the outcome of treated participants in the news group to those who received the placebo treatment in the entertainment group. Next, we estimate the CACE using the conventional approach, which scales the *ITT* by the proportion of Compliers (*ITT_D*). Finally, we assess the interaction hypotheses between age and treatment as well as education and treatment in the placebo design.

The *Intent-to-treat* Effect

The *ITT* is calculated as the difference between average outcomes in the assigned treatment and control group (Gerber and Green 2012, 205). For experiments with full compliance, the treatment assignment is the same as the actual treatment, so the *ITT* is the same as the average treatment effect (*ATE*) (Gerber and Green 2012). The *ITT* is informative if the researcher only cares about whether a program “made a difference.” Therefore, noncompliance is not a concern (Gerber and Green 2012, 139). The *ITT* describes the effectiveness of a program (whether it changed the average outcome), regardless of the proportion of subjects that actually receive the treatment (Gerber and Green 2012).

Before we estimate the *ITT* in this study, we first present the average outcome variable, political knowledge, in each experimental condition while providing additional information regarding the variation of the outcome variable on the pretest and the posttest.

Outcome Variables of Each Group

The outcome for each subject in the three experimental groups was calculated by adding up the correct answers of the twelve posttest questions aimed to test the

participants' political knowledge. The posttest contained two types of questions at the local, national, or international levels. The first type consisted of basic factual knowledge, which involved asking respondents if they recognized certain high-level national leaders or government institutions. The second type of question tested respondents' awareness of major domestic and global news. On average, the news group ($M = 5.32$, $SD = 3.129$) scored higher on these questions in the posttest than the other two groups. The entertainment group ($M = 4.25$, $SD = 2.986$) had the lowest mean, and the control/partial news group's mean ($M = 4.68$, $SD = 3.143$) was in between the news and the entertainment groups. Compared to the pretest on which eleven knowledge questions were asked, all three groups had a higher mean percentage of correct answers (see Table 6.1).

Table 6.1. Means and Deviations of Correct Answers on Political Knowledge by Group

Group		Pretest correct #	Posttest correct #	Pretest correct %	Posttest correct %
News	Mean	2.66	5.32	0.24	0.44
	n	62	57	62	57
	SD	2.415	3.129	0.220	0.261
Entertainment	Mean	2.6	4.25	0.24	0.35
	n	60	56	60	56
	SD	2.695	2.986	0.245	0.249
Control/ Partial news	Mean	2.07	4.68	0.19	0.39
	n	61	59	61	59
	SD	2.428	3.143	0.221	0.262
Total	Mean	2.44	4.75	0.22	0.4
	n	183	172	183	172
	SD	2.515	3.101	0.229	0.258

Across the groups, the news group had an equal or larger proportion of participants who answered six to nine questions correctly (50%, 35.3%, 52.9%, 75% for

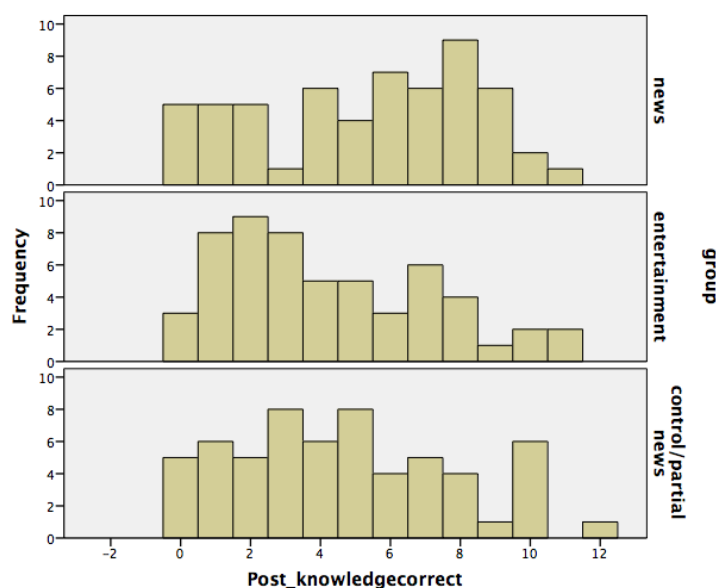
six, seven, eight, and nine right answers, respectively) (see Table 6.2 and Figure 6.1). Within group percentages, the largest share of participants in the news group (15.8%) answered eight out of twelve questions correctly. In contrast, the largest share of the entertainment group (16.1%) answered only two questions correctly, and the control/partial news group answered three or five questions correctly (13.6%) (see Table 6.2).

Table 6.2. Number and Percentage of Correct Answers (0-12) on Posttest Knowledge Questions by Group

Posttest Correct		Group			Total
		News	Entertainment	Control /Partial news	
0	Count	5	3	5	13
	Group %	8.80%	5.40%	8.50%	7.60%
1	Count	5	8	6	19
	Group %	8.80%	14.30%	10.20%	11.00%
2	Count	5	9	5	19
	Group %	8.80%	16.10%	8.50%	11.00%
3	Count	1	8	8	17
	Group %	1.80%	14.30%	13.60%	9.90%
4	Count	6	5	6	17
	Group %	10.50%	8.90%	10.20%	9.90%
5	Count	4	5	8	17
	Group %	7.00%	8.90%	13.60%	9.90%
6	Count	7	3	4	14
	Group %	12.30%	5.40%	6.80%	8.10%
7	Count	6	6	5	17
	Group %	10.50%	10.70%	8.50%	9.90%
8	Count	9	4	4	17
	Group %	15.80%	7.10%	6.80%	9.90%
9	Count	6	1	1	8
	Group %	10.50%	1.80%	1.70%	4.70%
10	Count	2	2	6	10
	Group %	3.50%	3.60%	10.20%	5.80%

11	Count	1	2	0	3
	Group %	1.80%	3.60%	0.00%	1.70%
12	Count	0	0	1	1
	Group %	0.00%	0.00%	1.70%	0.60%
Total		57	56	59	172
		100.00%	100.00%	100.00%	100.00%

Figure 6.1. Number of Correct Answers by Group



News Group = 57 subjects; Entertainment Group = 56 subjects; Control/Partial News Group = 59 subjects

There are three factual questions that appeared on both the pretest and the posttest. Table 6.3 shows the percentages of subjects who gave correct answers on each of the three factual questions on both tests. For example, for the news group, the percentage of subjects who answered the Premier question correctly increased by 24%, from 32% to 56%. However, for the entertainment group, the percentage answering correctly decreased by 4% (the Control/Partial News Group increased by 8%). The data

showed that subjects' knowledge about basic political facts was low, especially on the pretest. The other two factual questions in the pretest, which asked about the country where the United Nation has its headquarters and about China's highest state body according to the Constitution, also received a low percentage of correct answers (total of 19.1% and 9.3%, respectively).

Table 6.3 Numbers and Percentages of Participants Who Answered Correctly on Three Knowledge Questions Asked on Both Pretest and Posttest, by Group

Group	Premier		First lady		US President		Total n	Total n
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
News	20	32	26	26	35	29	62	57
	32%	56%	42%	46%	57%	51%	100%	100%
Entertainment	26	22	19	19	25	26	60	56
	43%	39%	32%	34%	42%	46%	100%	100%
Control /Partial News	20	24	20	23	25	25	61	59
	33%	41%	33%	39%	41%	42%	100%	100%
Total	66	78	65	68	85	80	183	172
	36%	45%	36%	40%	46%	47%	100%	100%

For the news items in the political knowledge section, all three groups improved their scores on these items from the baseline test to the posttest. On average, all groups answered about one of the six news questions correctly on the pretest and three questions correctly on the posttest. The news group improved from 17% ($M=1.00$, $SD=1.19$) correct answers in the pretest to 45% ($M=3.56$, $SD=2.07$) in the posttest, the entertainment group from 19% ($M=1.13$, $SD=1.35$) correct answers to 35% ($M=2.82$, $SD=1.81$), and the control/partial news group from 13% ($M = .80$, $SD =1.24$) correct to 41% ($M=3.27$, $SD=2.10$).

Table 6.4 Mean Correct Answers on News Items from Pretest to Posttest, by Group

Group		Pre (#)	Post (#)	Pre (%)	Post (%)
News	Mean	1.00	3.561	0.167	0.445
	N	62	57	62	57
	SD	1.187	2.070	0.198	0.259
Entertainment	Mean	1.133	2.821	0.189	0.353
	N	60	56	60	56
	SD	1.346	1.810	0.224	0.226
Control/partial news	Mean	0.803	3.271	0.134	0.409
	N	61	59	61	59
	SD	1.236	2.100	0.206	0.262
Total	Mean	0.978	3.221	0.163	0.403
	N	183	172	183	172
	SD	1.258	2.011	0.210	0.251

Finally, for the four entertainment questions appearing on the pretest and posttest (two on each), there was a similar trend among the three groups as they all increased their scores from the pretest to the posttest survey. The news group improved from 14% ($M=.27$, $SD=.518$) correct answers in the pretest to 22% ($M=.44$, $SD=.627$) in the posttest; the entertainment group from 8% correct answers ($M=.17$, $SD=.418$) to 15% correct answers ($M=.30$, $SD=.537$); and the control/partial news group from 7% correct answers ($M=.13$, $SD=.386$) to 20% correct answers ($M=.41$, $SD=.673$). The regression analysis showed that there was no significant difference in terms of correct answers on the initial entertainment questions among the three groups (see table 6.5). The model was not significant, $R^2 = .019$, $F(2, 180) = 1.726$, $p = .181$. Regression coefficients indicated that those assigned to the news group ($M=.27$, $SD=.518$) had a higher score than those assigned to the entertainment group ($M=.17$, $SD=.418$), but not significantly, $b = .108$, $\beta = .114$, $t(180) = 1.335$, $p = .184$. Assigned to the control/partial news group ($M=.13$, SD

= .386) had a lower score than those assigned to the entertainment group ($M = .17$, $SD = .418$), but not significantly, $b = -.036$, $\beta = -.038$, $t(180) = -.439$, $p = .661$.

Table 6.5 No Significant Difference on Entertainment Questions among Groups on the Pretest

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.167	0.057		
Assigned news group	0.108	0.081	1.335	0.184
Assigned control/partial news group	-0.036	0.081	-0.439	0.661

Dependent Variable: Pretest Entertainment

Estimating the Intent-to-treat Effect

Two statistical models are used to estimate the average effect of assigned treatment (ITT) – the Internet’s effect on participants’ political knowledge based on their assigned groups rather than their actual treatment status. The first is the unadjusted Ordinary Least Squares (OLS) regression of the dependent variable, political knowledge of the posttest, on the dummy variables of assigned experimental group. The second model is built on the first model by including pretest scores obtained at the baseline survey as a covariate to improve precision. Regression offers adjustment for covariates and could estimate the effects of several different treatments (Gerber and Green 2012, 102). Random assignment of subjects to treatments enables unbiased estimates by either model. However, adding covariates can eliminate observed differences across groups and reduce the unexplained variability in outcomes that decreases the standard error of coefficient b , therefore improving the precision of estimation (Gerber and Green 2012). In general, the covariate-adjusted estimate should be regarded as more accurate than the difference-in-means estimate, if the decision to include certain covariates was planned in advance based on whether the covariate was thought to predict outcomes, rather than

driven by the consideration to show impressive experimental outcomes (Gerber and Green 2012).

I present the results for both difference-in-means estimates (model 1) and the covariate-adjusted estimates (model 2) to show that the choice of the models does not determine the experiment's results as both models generate similar estimates and the same conclusion on the significance tests. The first model involves a regression of the posttest score of political knowledge (denoted by Y), which comprises the dependent variable, on the two dummy variables for treatment assignment: (X_1) is equal to 1 if the subject was assigned to the news group (read news online) and 0 otherwise; X_2 is equal to 1 if the subject was assigned to the control/partial news group and 0 otherwise. Therefore, subjects marked 0 on both dummy variables were in the final category, the entertainment group ($X_1 = X_2 = 0$), which was the reference group. The *intent-to-treat* (ITT) effect for the news group and control/partial news program are represented by the parameter b_1 and b_2 . The unobserved factors that affect posttest knowledge and random error are denoted ε_i . The model is written as

$$Y_i = a + b_1 X_{1i} + b_2 X_{2i} + \varepsilon_i.$$

The regression analysis showed that the model is not significant, $R^2 = .020$, $F(2, 169) = 1.707$, $p = .185$. However, the regression coefficients indicated for the news group ($M = 5.32$, $SD = 3.129$) were significantly larger than that for the entertainment group ($M = 4.25$, $SD = 2.986$), $b = 1.066$, $t(169) = 1.834$, $p = .034$ (one-tail³⁰) (See Table 6.6),

³⁰ The news group was expected to have higher scores in the posttest than the entertainment group, and the treatment the news group received was supposed to have a

which suggests that being assigned to read news online improved people's political knowledge when compared to those who were assigned to use the Internet mainly for entertainment purposes. The estimated coefficient of 1.066 implied that assignment to the news group generated a 1.066-point increase in political knowledge score (See table 6.6). Assigned to the control/partial news group ($M = 4.68$, $SD = 3.143$) also had higher scores than the entertainment group, but not significantly, $b = .428$, $t(169) = .743$, $p = .456$ (two-tail). Finally, when we changed the reference category from the entertainment group to the control/partial news group, the regression showed that the news group's score is higher than the control/partial news group, but also not significantly, $b = .638$, $t(169) = 1.112$, $p = .134$ (one-tail). It was not surprising that the news and the control/partial news groups did not differ significantly as non-compliance was involved. The range of treatments that were administered in the two groups did not vary enough to generate significant differences (see Chapter 4 and Table 2 for the assigned and realized treatment by group).

The second model included pretest scores on political knowledge as a covariate. The inclusion of the pretest score as a covariate controls for unhappy random assignment or initial differences in knowledge between the groups. The regression analysis in Chapter 4 showed that there was no-significant difference in the covariate across groups and the assumption was met. The pretest covariate was denoted as P , and the model was written as

positive effect (one-direction). The null hypothesis was little to no effect; therefore, a one-tailed test was appropriate (Gerber and Green 2012; Agresti and Finlay 2008).

$$Y_i = a + b_1 X_{1i} + b_2 X_{2i} + b_3 P_i + \varepsilon_i.$$

After controlling for pretest scores, the model was found significant, $R^2 = .517$, $F(3, 168) = 59.905$, $p = .000$. This is a substantial improvement from the 2% of variance accounted for without the covariate. When controlling for the pretest, the news group still scored significantly higher than the entertainment group, and the p-value is noticeably smaller, $b = 1.076$, $\beta = .164$, $t(168) = 2.630$, $p = .005$ (one-tail) (see Table 6.6). Furthermore, when controlling for the pretest, the control/partial group was found to be significantly higher than the entertainment group, $b = .929$, $\beta = .143$, $t(168) = 2.281$, $p = .012$ (one-tail). When pretest scores were controlled, the entertainment group's posttest score ($M_{Adj2} = 2.248$) was less than the control/partial news group's ($M_{Adj3} = 3.007$). This contrasted with the original means for each group when the pretest was not yet controlled for, in which the entertainment group's post score ($M = 4.25$) was also shown to be lower than the control/partial news group's ($M = 4.68$), just not significantly. Therefore, the results of the covariate-adjusted estimate support the hypothesis that exposure to online social and political content increases users' political knowledge when controlling for prior political knowledge levels.

Table 6.6. Ordinary Least Squares Estimators of the Impacts of the Internet on Villagers' Political Knowledge based on Treatment Assignment (ITT with and without the Control Variable – Political Knowledge on Pretest)

Variable	Model without Control for Pretest Knowledge			Model 2 with Control for Pretest Knowledge		
	<i>B</i>	<i>SE</i>	<i>Sig.</i>	<i>B</i>	<i>SE</i>	<i>Sig.</i>
News Group	1.066	0.581	0.034	1.076	0.409	0.005
Control/Partial Group	0.428	0.576	0.459	0.929	0.407	0.012
Pre Knowledge				0.871	0.066	.000

The CACE in the Placebo Design

In order to estimate the Compliers Average Causal Effect (CACE), we need to first define compliance by specifying what it means to receive the “treatment.” In the placebo design, subjects who visited the Centers at least once to read news online were classified as having received the treatment. The reason for a more conservative scoring of the treatment is the exclusion restriction, which assumes that assignment has no effect on those who are scored as untreated. If we define treated as two or more visits, this assumes that participants with only one visit experienced no treatment effect; however, that may not be the case³¹.

Non-compliance is an expected feature of experiments that adopt encouragement designs where subjects in the treatment group are encouraged but not required to take treatment while subjects in the control group receive no encouragement, but are not banned from accessing the treatment (Gerber and Green 2012). *Two-sided noncompliance* occurs when some subjects in the treatment group go untreated while others in the control group actually receive the treatment (Gerber and Green 2012). In this study, subjects who visited the Centers to access the Internet and read news online at least once (treated) included subjects in both the treatment group and the control group. As mentioned in Chapter 4, in anticipation of the two-sided noncompliance, we employed a placebo design in addition to the traditional treatment-control approach.

³¹ More discussion below about the exclusion restriction and other assumptions for estimating the CACE.

We first assume *one-sided noncompliance* in order to employ the placebo design. One-sided noncompliance occurs when some subjects assigned to the treatment group fail to receive the treatment, but no one in the control group receives the treatment. Subjects in an experiment with one-sided noncompliance are either Compliers or Never-Takers. Compliers are treated only if they are assigned to the treatment group, while Never-Takers never take the treatment regardless of whether they are assigned to the treatment or control group. Now, we only include subjects who visited the Center at least once in the news group (treatment) and the entertainment group (placebo) in the placebo design, and it fit the one-sided noncompliance assumption.

The placebo design compares the treatment group with the placebo group, which is encouraged to participate in a “non-treatment” activity that diverts them from the treatment. In this study, subjects who showed up at the Centers were randomly selected to use the Internet to read news (treatment group) or for entertainment purposes (placebo group). The placebo design “isolates a random sample of Compliers whose untreated potential outcomes can be measured,” and the CACE estimates by comparing the outcome of those who read news and those who accessed the Internet for entertainment (Gerber and Green 2012, 162).

The challenge of estimating the CACE in the conventional design that encounters non-compliance is that the control group is a mixture of Compliers and Never-Takers. For subjects in the control group who never attended the sessions at the Centers, it was unclear who the Compliers were, who followed their assignment, and who the Never-Takers were who did not show up even if they were assigned to treatment. Fortunately,

the placebo design screens out the Never-Takers. “Compliers in the treated state can then be compared directly to Compliers in the untreated state, which eliminates the noise generated by the presence of Never-Takers in both the treatment and control groups” (Gerber and Green 2012, 162).

Outcome Variables of Each Group in Placebo Design

Similar to estimating the intent-to-treat effect (ITT) in the previous section, we first present the outcome for the treatment group and the placebo group when excluding the non-compliers/Never-Takers. Political knowledge was still measured by the twelve multiple choice posttest questions. As expected, the news group ($M' = 5.91$, $SD = 3.156$) still scored higher on these questions in the posttest than the entertainment group ($M' = 3.67$, $SD = 2.630$). Moreover, the mean correct answers were slightly higher in the news group and lower in the entertainment group than the calculated average based on full samples in the conventional design ($M_1 = 5.32$, $M_2 = 4.25$). Therefore, the difference between the two groups should be larger in the placebo design.

Table 6.7. Means and Deviations of Correct Answers on Political Knowledge by Groups in the Placebo Design

Group		Pretest correct #	Posttest correct #	Pretest correct %	Posttest correct %
News	Mean	2.67	5.91	.24	.49
	N	36	34	36	34
	SD	2.662	3.156	.242	.263
Entertainment	Mean	1.94	3.67	.18	.31
	N	34	33	34	33
	SD	2.449	2.630	.223	.219
Total	Mean	2.31	4.81	.21	.40
	N	70	67	70	67
	SD	2.568	3.101	.233	.258

Similar, but more notable, in the placebo design, the news group had a larger proportion of participants who answered six to ten questions correctly (80%, 75%, 75%, 83.3%, 100% for six, seven, eight, nine, and ten correct answers, respectively) (see Table 6.8). Within group percentages, the largest share (17.6%) of participants in the news group answered eight out of twelve questions correctly on the posttest. In contrast, the largest share (22.2%) of the entertainment group answered only two questions correctly (see Table 6.8).

Table 6.8. Number and Percentage of Correct Answers (0-12) on Posttest Knowledge Questions by Group in the Placebo Design

Posttest Correct		Group		Total
		News	Entertainment	
0	Count	2	2	4
	Group %	5.90%	6.10%	6.00%
1	Count	2	4	6
	Group %	5.90%	12.10%	9.00%
2	Count	4	7	11
	Group %	11.80%	21.20%	16.40%
3	Count	0	6	6
	Group %	0.00%	18.20%	9.00%
4	Count	3	4	7
	Group %	8.80%	12.10%	10.40%
5	Count	2	4	6
	Group %	5.90%	12.10%	9.00%
6	Count	4	1	5
	Group %	11.80%	3.00%	7.50%
7	Count	3	1	4
	Group %	8.80%	3.00%	6.00%
8	Count	6	2	8
	Group %	17.60%	6.10%	11.90%
9	Count	5	1	6
	Group %	14.70%	3.00%	9.00%

10	Count	2	0	2
	Group %	5.90%	0.00%	3.00%
11	Count	1	1	2
	Group %	2.90%	3.00%	3.00%
Total		34	33	67
		100.00%	100.00%	100.00%

Similarly, if we only examine news items in the knowledge section, the two groups in the placebo design improved their scores from the baseline test to the posttest, with the news group scoring higher than the entertainment group on the posttest. The correct answers of the news group rose from 17% ($M=1.03$, $SD=1.362$) on the pretest to 53% ($M=4.21$, $SD=2.02$) on the posttest. The correct answers of the entertainment group rose from 15% correct ($M=0.91$, $SD=1.31$) on the pretest to 31% ($M=2.45$, $SD=1.62$) on the posttest. The progress recorded in the news group in the placebo design was larger than using the whole sample (increasing 36% in placebo vs. 20% in conventional designs).

Estimation of the CACE in the Placebo Design

The subjects selected in the placebo design are all compliers (the proportion of compliers – the ITT_D – equals to one); the CACE can be calculated by directly comparing the outcome of the subjects who receive the intended treatment to the subjects who receive the placebo “treatment.” Again, we used both unadjusted and adjusted Ordinary Least Squares (OLS) regression analysis to estimate how the outcome of political knowledge was changed by the intervention of online news reading. In the first model, we regressed the posttest scores of the political knowledge (Y) on the dummy variable of

the treatment status (X_i), equal to one for the treatment group (news) and zero for the placebo group (entertainment). The CACE was measured by the parameter b , where ε was a random disturbance term. The unadjusted model was written as:

$$Y_i = a + bX_i + \varepsilon_i.$$

The overall model was significant using the placebo approach, $R^2 = .133$, $F(1, 65) = 9.974$, $p = .002$ (see Table 6.9). Furthermore, participants in the treatment group ($M = 5.91$, $SD = 3.156$) scored significantly higher than the placebo group ($M = 3.67$, $SD = 2.630$), $b = 2.245$, $t(65) = 3.158$, $p = .001$ (one-tail). The two groups had similar scores on the pretest, but the treatment group scored more than two points higher than the placebo group on the posttest. Noticeably, the coefficient measuring the treatment effect is significant at the .01 level. The level of significance is stronger in the placebo design ($p = .001$) when compared to using the full sample to calculate the ITT between Groups 1 and 2 with both the unadjusted ($p = .034$) and adjusted ($p = .005$) models. In sum, the size of the program effect is substantial, especially considering that the program was implemented for only two to three months.

The second model was built on the unadjusted model by adding the pretest scores as a covariate in order to improve the efficiency of the estimation. The pretest covariate was denoted as P , the model was written as:

$$Y_i = a + b_1 X_{i1} + b_2 P_i + \varepsilon_i.$$

The multivariate regression analysis showed that the model was significant, $R^2 = .587$, $F(2, 64) = 45.424$, $p = .000$, which was up from 13.3% of variance accounted for without the covariate. When controlling for the pretest, the treatment group still scored

significantly higher than the placebo group, and the p-value was smaller, $b = 1.784$, $t(64) = 3.584$, $p = .0005$. The coefficient measuring the treatment effect is significant at the .001 level. Reassuringly, participants gained more political knowledge when they were exposed to the Internet and read some news. Both the adjusted and unadjusted models yield similar estimates; the results were consistent with the test using the ITT above. The findings indicate that the Internet, if used in a certain way, can help cultivate informed citizens and redress the imbalance of information in the less developed rural areas for the underserved population.

Table 6.9. ITTs and the CACE in the Placebo Design, with Both Unadjusted (without the Covariate of Pretest Scores) and Adjusted Models (with the Covariate of Pretest Scores)

		R^2	b	SE	p
ITT					
Unadjusted model	ITT: entertainment group as reference group	0.02 (.185)			
	news group		1.066	0.581	0.034
	control/partial news group		0.428	0.576	0.456
Adjusted model	ITT: control/partial news group as reference group	0.02 (.185)			
	news group		0.638	0.097	0.134
	entertainment group		-0.428	0.576	0.459
CACE in Placebo Design					
Unadjusted model	CACE: entertainment group as reference group, compliers	0.133 (.002)			
	news group		2.245	0.711	0.001
Adjusted	CACE: entertainment group	0.587			

model	as reference group, compliers	(.000)			
	news group		1.784	0.498	0.0005

The CACE in the Conventional Design

As mentioned above, ITT is informative if the purpose of the experiment is to evaluate a program's effect regardless of the fraction of the treatment group that is actually treated. However, experiments are usually designed to estimate the average treatment effect, not the average effect of assigned treatment (ITT) (Gerber and Green 2012). In this study, we seek to measure the effectiveness of the treatment (Internet usage) on subjects who actually accessed the Internet rather than subjects who were merely assigned to the news group. Nevertheless, if we ignore the failure-to-treat and compare the subjects who were treated in the news group to those untreated in the control group, it will lead to serious bias because groups formed after random assignment will not have comparable potential outcomes (see Chapter 4 discussion) (Gerber and Green 2012, 173). The feasible estimand for experiments that encounter non-compliance is no longer the ATE, but the CACE (the average treatment effect for a subset of the subjects; the Compliers). The result of the CACE using the placebo approach has already been presented. Now the CACE will be estimated using the conventional approach, which divides the difference in the treatment and control groups' outcomes (ITT) by the proportion of subjects who are Compliers (ITT_D). First, we still compare the news and entertainment groups, but with the full sample to obtain the CACE using the conventional approach. The entertainment group serves as the control group in the conventional

design. Second, we examine the CACE with the full sample in the news and control/partial news groups. The estimation suffers from small proportion of Compliers (ITT_D) because of sizable non-compliers in the control/partial news group who showed up once at the Center. Nevertheless, we present the results in Appendix E for reference. Lastly, the entertainment and control/partial groups were compared to assess the CACE of entertainment usage (see Appendix E).

There are four types of subjects in experiments with two-sided noncompliance. We will first classify the subject types and discuss the assumptions in order to identify the CACE using the conventional approach. In addition to Compliers (those who receive the treatment only when assigned to the treatment group) and Never-Takers (untreated regardless of their assignment), Always-Takers and Defiers are added under two-sided noncompliance. Always-Takers are treated regardless of their assignment, and the Defiers are treated when assigned to the control group, while remaining untreated when assigned to the treatment group (Angrist et al. 1996; Gerber and Green 2012).

Assumptions

The CACE estimation based on the ITT/ITT_D ratio relied on substantive assumptions: monotonicity, excludability, non-interference, and random assignment. Monotonicity assumption rules out Defiers because it is reasonable to regard Defiers as rare and unusual. Without Defiers, it is possible to estimate the proportion of Always-Takers, Never-Takers, and Compliers (Gerber and Green 2012, 179).

Excludability assumption states that the potential outcomes should be caused solely by the treatment rather than by any extraneous factor (Gerber and Green 2012). A

pretest may introduce bias if it provokes different reactions in the treatment and control groups (Gerber and Green 2012, 99). However, this should not be a concern in the study as all enrolled subjects, regardless of groups, undertook identical pretest questionnaires without any difference in the way the pretest was administered. Moreover, admitting questions about “unrelated” topics might cloak the primary aim of a study, so the tests would not cause different reactions in the treatment and control groups (Gerber and Green 2012, 99, 192). The entertainment questions, as well as a question asking subjects what they want to learn about computer/Internet usage during the “training,” served the purpose, and shored up excludability. Moreover, most of the participants were there to use, or learn to use, the Internet and did not care about the purpose of the experiment. Therefore, the pretest really did not affect their posttest results.

Non-interference assumes that subjects’ potential outcomes are unaffected by the assignment or treatment of other subjects (Gerber and Green 2012, 194). The experiment implemented extra measures to prevent cross contamination among subjects while they were learning or using the Internet at the Centers (see Chapter 4). It was unlikely that one subject’s potential outcomes would change depending on other subjects’ treatment.

Random assignment indicates that the assigned treatment is unrelated to potential outcomes (Gerber and Green 2012, 194). This assumption is satisfied at the beginning of the experiment by random assignment of experimental conditions, but attrition may undo the randomization. Fortunately, attrition was not a major concern in this study as evidence showed that attrition was independent of potential outcomes (see Chapter 5). In sum, there should be no special concerns regarding threats to the four assumptions listed

above, and the CACE can be identified by ITT/ITT_D.

Estimation of the CACE in the Conventional Design

We used two kinds of regression models to obtain parameter estimates: 1) the ordinary least squares regression (OLS) to estimate the ITT (see the first section) and ITT_D, and 2) two-stage least squares regression (2SLS) to estimate the CACE. In addition to the regressions, we calculated the three estimates by hand to confirm the results.

CACE in the News and Entertainment Groups

In the conventional design, the treatment is further specified as reading online news during visits to the Centers for the comparison between the news and entertainment groups. Participants filled out feedback sheets after each visit, which indicated what they had used the Internet during the visit and how much time they spent reading news and/or using entertainment applications. Based on the record, we created a dummy variable, which scored 1 if the subject used the Internet to read news during their visits and 0 otherwise.

A regression of the outcome variable (political knowledge) on the assigned treatment to estimate the ITT is equivalent to a difference-in-means estimation (Gerber and Green 2012, 157). The estimated coefficient of the ITT is 1.066 between the treatment group (news) and the control group (entertainment) (see above section, Estimation of Intent-to-Treat effect as well as Table 6.10 below).

Table 6.10. Regression Estimate of the ITT (the news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	4.25	0.409		
Assigned news group	1.066	0.576	1.852	0.034

Dependent Variable: Post knowledge

Next, actual treatment (Treated) was regressed on treatment assignment to estimate the ITT_D . Treatment scored 1 if the subject visited the Centers to read news at least once and 0 otherwise. Treatment assignment (Assigned the news group) scored 1 if the subject was assigned to the treatment group and 0 otherwise. There were 13 subjects in the entertainment group who had read online news once (including three subjects who had read news for 10 minutes). These subjects were Always-Takers under the conventional design (the 13 subjects have been counted as Compliers under the placebo design because these Compliers were those who showed up to sessions). The coefficient .347 indicates that assignment to the treatment group caused 34.7% of the targeted subjects to be treated. Therefore, the estimated share of Compliers in the subject pool is 34.7%.

Table 6.11. Estimation of the ITT_D (the news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.232	0.062		
Assigned news group	0.347	0.087	3.974	.000

Dependent Variable: Treated (read news)

Finally, the CACE between the news and entertainment groups is estimated using a two-stage least squares (2SLS) regression in the conventional design. The regression model includes two equations. The first one involves the outcome variable:

$$\text{POLITICAL KNOWLEDGE}_i = a + b_1 \text{TREATED}_i + \varepsilon_i, \quad (1)$$

where b_1 is the CACE. The first model does not include the Assigned news group, which reflects the exclusion assumption. In the second model, the Assigned news group is an “instrumental variable,” which predicts Treated:

$$\text{TEATED}_i = a + a_1 \text{ASSIGNED}_i + e_i \quad (2)$$

Post political knowledge is regressed on actual treatment using treatment assignment as an instrument. The results showed that visiting the Center to read online news increased political knowledge scores by 3.073 points among Compliers (see Table 6.12). Therefore, both the placebo and conventional approach reach the same conclusion.

Table 6.12. Estimation of the CACE (the news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.537	0.742		
Treated (read news)	3.073	1.676	1.834	0.035

As outcome variables in this study did not have highly skewed distributions, it was appropriate to use the conventional t-tests for the hypotheses test. Therefore, we skipped the sharp null hypothesis test, which assumes the treatment effect is zero for all subjects (rather than for the average treatment effect); it would generate similar results.

Lastly, we present the calculation of the ITT, the ITT_D , and the CACE by hand, which matches the results of the regression analysis.

Table 6.13. Post Knowledge Scores by Experimental Group (news and entertainment groups)

	Treatment group (news)	Control group (entertainment)
Postknowledge correct (N treated)	6.09(33)	4.85 (13)
Postknowledge correct (N untreated)	4.25(24)	4.07 (43)
Overall Post knowledge correct (Total N)	5.32(57)	4.25 (56)

The ITT is the difference in means between the treatment (5.32) and the control groups (4.25), which equals 1.07 (1.066). Participants assigned to the treatment group have a political knowledge score 1.07 higher than those assigned to the control group.

The ITT_D is the proportion of treated subjects in the news group (0.579) minus the proportion of treated subjects in the control group (0.232), which equals 0.347³². In other words, the rate of Compliers is equal to the proportion of Always-Takers and Compliers in the treatment group subtracted by the Always-Takers in the control group (Gerber and Green 2012, 178). Therefore, the estimate of CACE is formed by the ratio of the two estimates – ITT/ ITT_D – which equals 3.073, thereby confirming the results obtained through the regression analysis.

Interaction Hypotheses Tests

Finally, we conducted the interaction hypotheses tests for the treatment of reading online news. The interaction effect exists when the treatment effect varies from one subgroup to the next (heterogeneous effect), such as defined by participants' age. Experiments often use covariates to assess hypotheses about when treatment effects change (Gerber and Green 2012). In this study, we assessed two treatment-by-covariate interactions in the placebo design: treatment by age and by education.

To test whether age moderates the relationship between treatment of reading online news and political knowledge, we conducted a two-step regression analysis including an interaction term age by the treatment. Treatment (X_i) is dummy coded as 1 if the subject was assigned to the news group and 0 otherwise (subjects in the placebo design are all Compliers; thus, all subjects assigned to the news group received the treatment). Age (A_i) is calculated from year of birth. The model is written as

³² One subject in the news group visited the Center once but did not read news during the visit. Therefore, the treated in the news group is 33 here compared to 34 when defining treatment based on showing up to sessions.

$$Y_i = a + b X_i + c A_i + d X_i A_i + \varepsilon_i.$$

Results show that the model is significant, $R^2 = .165$, $F(3, 63) = 4.141$, $p = .01$. However, the interaction between age and treatment (news group) is not significant (see Table 6.20). Therefore, it is plausible that the treatment effect applies to every subject rather than subjects of a certain age.

Table 6.20. Test of the Interaction Hypothesis: Age

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	5.488	1.285		
	News group	2.308	0.705	3.275	0.002
	Age	-0.052	0.034	-1.539	0.129
2	(Constant)	5.791	1.812		
	News group	1.728	2.53	0.683	0.497
	Age	-0.061	0.05	-1.221	0.227
	Age*News group	0.016	0.068	0.239	0.812

Dependent Variable: Post Knowledge

Assessing the interaction of treatment with subjects' years of education yields similar results. We replaced Age (A_i) with Years of Education (E_i). The model is written as

$$Y_i = a + b X_i + c E_i + d X_i E_i + \varepsilon_i.$$

Results show that the model is significant, $R^2 = .216$, $F(3, 63) = 5.769$, $p = .001$. However, the interaction between education (Years) and treatment (news group) is not significant (see Table 6.21). Therefore, it is plausible that the treatment effect applies to every subject rather than subjects of a certain education level.

Table 6.21. Test of the Interaction Hypothesis: Years of Education

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	1.583	0.941		
	News group	2.225	0.682	3.263	0.002
	Years of education	0.253	0.098	2.584	0.012
2	(Constant)	1.786	1.355		
	News group	1.877	1.793	1.047	0.299
	Years of education	0.228	0.153	1.488	0.142
	Yearsofedu*News group	0.042	0.2	0.21	0.834

Dependent Variable: Post knowledge

Alternatively, we can partition years of education by the median; subjects are divided into two subgroups, with E_i scored one if the subject's level of education is above the median. The regression shows that the model is significant, $R^2 = .262$, $F(3, 109) = 12.915$, $p = .000$. However, the interaction between education (above or below the median/high or low) and treatment (the news group) is, again, not significant (see Table 6.22).

Table 6.22. Test of the Interaction Hypothesis: Education (above or below the median)

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	2.6	0.456		
	News group	1.461	0.509	2.867	0.005
	Education (higher/low)	2.981	0.51	5.849	0
2	(Constant)	2.76	0.538	5.126	0
	News group	1.179	0.714	1.652	0.101
	Education (higher/low)	2.692	0.724	3.719	0
	Education*News group	0.577	1.022	0.565	0.573

Dependent Variable: Post knowledge

Nevertheless, when we use another variable, Education (rather than interval scale variable of Years of Education), to test the hypotheses, the interaction between education and treatment becomes significant. The Education variable includes seven categories: 1) No formal education; 2) Primary; 3) Middle school; 4) High school (including

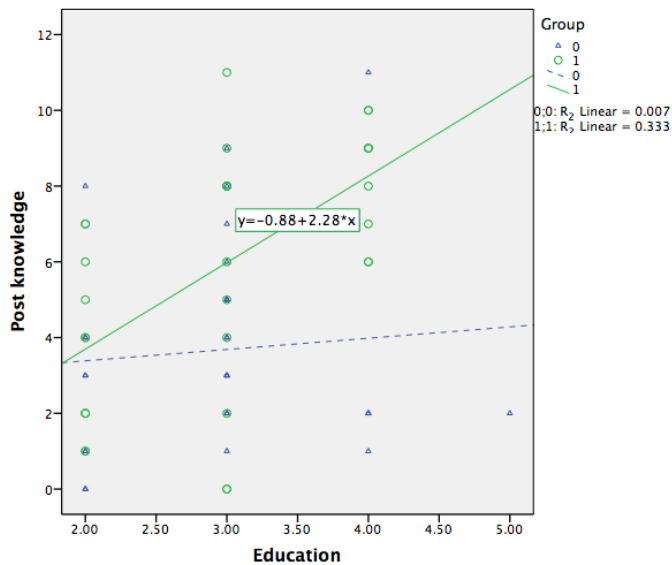
technical/vocational type); 5) Secondary; 6) University; and 7) Post-graduate degree. Results showed that the main effects of treatment and education accounted for 24.8% of the variance in political knowledge, $F(3, 64) = 10.556, p = .000$ (see Table 6.23 and Figure 6.2). The model is significant. Treatment of reading news online is a significant positive predictor, $b = 2.202, p = .002$. Education is also a significant predictor, $b = 1.371, p = .003$. Further, the interaction between treatment and education on political knowledge is significant. $\Delta F(3,63) = 5.465, b = 1.986, p = .023$. The interaction accounts for an additional 6% of the variance in political knowledge. The results suggest that the effect of the treatment varies with education: the treatment's effect increases as the level of participants' education increases. In other words, the treatment of reading online news in enhancing political knowledge is more effective for participants with higher levels of education.

Table 6.23. Test of the Interaction Hypothesis: Education

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	-0.362	1.373		
	News group	2.202	0.667	3.3	0.002
	Education	1.371	0.438	3.129	0.003
2	(Constant)	2.79	1.892		
	News group	-3.665	2.592	-1.414	0.162
	Education	0.298	0.624	0.478	0.634
	Edu*News group	1.986	0.85	2.338	0.023

Dependent Variable: Post Knowledge

Figure 6.2 Test of the Interaction Hypothesis: Education



Group: 1=News Group, 0=Entertainment Group

Education: 1) No formal education, 2) Primary, 3) Middle school, 4) High school (including technical/vocational type), 5) Secondary, 6) University, and 7) Post-graduate degree

Conclusion

In conclusion, the experiment adopted a three-group design to estimate the treatment effect of reading online news at the Centers on participants' political knowledge. Both the placebo and the conventional designs reached consistent conclusions: assignment to the treatment group increased political knowledge on the posttest among Compliers. The findings have important implications given that the rural villagers had very limited political knowledge on the pretest. Most farmers' media exposure was limited to TV dramas. Their awareness of current political and social events was even more restricted. Indeed, the treatment of the Internet gave them a channel to gain political knowledge and helped them become informed citizens, which was crucial for their further political advocacy and engagement. In the next chapter, we

will focus on the second outcome variable, political attitude, to test whether the treatment of reading online news promotes participants' support for democratic values.

CHAPTER 7 “RESULTS – POLITICAL ATTITUDES”

This chapter presents the results of the second outcome variable of the experiment, political attitudes. Similar to the estimation of political knowledge in chapter 6, the experiment evaluation was limited to the *Complier Average Causal Effect* (CACE), and not the *Average Treatment Effect* (ATE) (Gerber and Green 2012). This results from the noncompliance that occurs when the actual treatment did not coincide with the assigned treatment (participants do not always comply with their assigned treatment). The same strategy will be used to estimate the CACE on political attitudes in both placebo and conventional designs. First, the *intent-to-treat* effect (ITT) – the average effect based on the assignment – will be presented. Next, the estimation of the CACE, using the placebo and conventional approaches among different groups, will be presented. Finally, the result of testing the heterogeneous treatment effects, to check if participants of a certain age or educational background are more responsive to the treatment, will be presented.

The *Intent-to-treat* Effect

The *intent-to-treat* (ITT) effect is the average effect of the intended assignment rather than the actual treatment (Gerber and Green 2012). In order to calculate the ITT, the average outcome of the political attitudes in each assigned group must first be presented.

Outcome Variables of Each Group

The outcome for each subject of the three groups was measured by the mean score on the eighteen posttest questions that tested participants’ support for democratic

values³³. Most questions on attitudes had five answers that respondents could choose from: strongly disagree, disagree, agree, neutral, agree, and strongly disagree. Thus, the potential range of mean scores on political attitude varied from 1 to 5. All answers were reversed or recoded into the five-point scale, with 1 representing the least supportive of democratic values, and 5 representing most supportive (refer to chapter 5 for details). On average, the three groups nearly scored identically on the posttest regarding the attitude questions (see Table 7.1). The news group ($M = 3.343$, $SD = .342$) scored slightly lower than the entertainment group ($M = 3.430$, $SD = .346$) and the control/partial news group ($M = 3.459$, $SD = .381$). This matched the order of the results on the pretest. All three groups scored similarly on the pretest, with the news group ($M = 3.352$, $SD = .319$) yielding the lowest average, the control/partial news group ($M = 3.429$, $SD = .356$) had the highest mean, and the entertainment group ($M = 3.378$, $SD = .282$) scored in between the news and control/partial news groups.

³³ The reliability analysis showed that the Cronbach's Alpha Based on Standardized Items is .528 for the 18 items.

Table 7.1. Means and Deviations of Political Attitude by Group

Group		Pretest attitude	Posttest attitude
News	Mean	3.352	3.343
	N	62	57
	SD	0.319	0.342
Entertainment	Mean	3.378	3.430
	N	59	55
	SD	0.282	0.346
Control /partial news	Mean	3.429	3.459
	N	61	59
	SD	0.35614	0.38141
Total	Mean	3.3864	3.411
	N	182	171
	SD	0.32061	0.35883

Estimating the Intent-to-treat Effect

Similar to the estimation on political knowledge, we used both unadjusted and adjusted Ordinary Least Squares (OLS) regression analysis to assess the ITT on political attitudes. The ITT evaluates the Internet's effect on participant political attitudes based on their assigned groups regardless of the fraction of participants that were actually treated. First, we used the unadjusted analysis to regress mean political attitudes on the dummy variables that matched each assigned experimental group. Next, we used adjusted the analysis to include pretest political attitudes and other covariates to improve precision. The first model used was written as:

$$Y_i = a + b_1 X_{1i} + b_2 X_{2i} + \varepsilon_i$$

Where Y_i is the outcome variable (the mean political attitudes on the posttest) and X_i is the dummy variable for treatment assignment: Assigned 1 (X_1) took the value 1 if the subject was assigned to the news group to read news online and 0 otherwise; assigned 3

(X_2) took the value 1 if the subject was assigned to the control/partial news group and 0 otherwise. Therefore, subjects marked 0 on both dummy variables were in the final category, the entertainment group ($X_1 = X_2 = 0$). The ITT of the news group and control/partial news group are represented by the parameter b_1 and b_2 respectively. The ε_i is a random disturbance term.

The regression results showed that the model is not significant, $R^2 = .019$, $F(2, 168) = 1.653$, $p = .195$. Further, the regression coefficients indicated that participants that were assigned to the news group ($M = 3.343$, $SD = .342$) had slightly lower scores than those that were assigned to the entertainment group ($M = 3.430$, $SD = .346$), though not significantly, $b = -.087$, $\beta = -.115$, $t(168) = -1.293$, $p = .099$ (one-tail) (see Table 7.2). Additionally, participants assigned to the control/partial news group ($M = 3.459$, $SD = .381$) had slightly higher scores than those that were assigned to the news group, though not significantly, $b = .029$, $\beta = .039$, $t(168) = .433$, $p = .665$ (two-tail) (see Table 7.2).

The adjusted model, built on the first model by adding covariates, improved the efficiency of the estimations (Mo, 2013). We first added the pretest scores on mean political attitude as a covariate, and then expanded the model to include three other predictors from the pretest: 1) political satisfaction, 2) socioeconomic satisfaction, and 3) interests levels in politics and political efficacy (refer to chapter 5 for question wording and coding). The pretest covariate was denoted as P , and the model was written as

$$Y_i = a + b_1 X_{1i} + b_2 X_{2i} + b_3 P_i + \varepsilon_i.$$

After controlling for pretest scores, the model was found significant, $R^2 = .223$, $F(3, 167) = 15.983$, $p = .000$. The higher R^2 indicated less disturbance, and the standard

error for estimated treatment effect lowered as the R^2 went up. The news group still scored slightly lower than the entertainment group, but not significantly, $b = -.075$, $\beta = -.099$, $t(167) = -1.245$, $p = .108$ (one-tail) (see Table 7.2). The control/partial news group scored slightly higher than the entertainment group, though not significantly either, $b = .009$, $\beta = .013$, $t(167) = .158$, $p = .875$ (two-tail).

The results of both the unadjusted and adjusted models with the pretest on political attitudes as a covariate suggest that there are no significant differences among the three groups following the experiment. Consequently, the treatment of visiting the Centers to read news showed no prominent impact on political attitudes.

Table 7.2. Ordinary Least Squares Estimators of the Impact of the Internet on Villager's Political Attitudes based on Treatment Assignment (ITT with and without the control variable – political attitudes on pretest)

	Model 1				Model 2			
Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.43	0.048			1.729	0.261		
AssignedNews	-0.087	0.068	-1.293	0.198	-0.075	0.06	-1.245	0.215
AssignedControl /partial News	0.029	0.067	0.433	0.665	0.009	0.06	0.158	0.875
Pre attitudes					0.503	0.076	6.618	.000

Dependent Variable: Political Attitudes

Further, we added three control variables to the adjusted model in addition to the pretest score on attitudes (denoted as P): 1) political satisfaction (denoted as P'), 2) socioeconomic satisfaction (denoted as S), and 3) interest in politics and political efficacy (denoted as I). Participants assigned to the news and control/partial news groups were still denoted as X_1 and X_2 respectively, and the model was written as

$$Y_i = a + b_1 X_{1i} + b_2 X_{2i} + b_3 P_i + b_4 P'_i + b_5 S_i + b_6 I_i + \varepsilon_i.$$

After controlling for the four predictor variables, the model was found significant, $R^2 = .265$, $F(6, 163) = 9.793$, $p = .000$. The news group still scored slightly lower than the entertainment group, but not significantly, $b = -.096$, $\beta = -.126$, $t(163) = -1.580$, $p = .058$ (one-tail) (see Table 7.3). The control/partial news group scored slightly higher than the entertainment group, though not significantly, $b = .009$, $\beta = .013$, $t(163) = .159$, $p = .874$ (two-tail).

Table 7.3. Ordinary Least Squares Estimators of the Impact of the Internet on Villager's Political Attitudes (Model 3: add four covariates)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	1.794	0.311		
Assigned news group	-0.096	0.061	-1.58	0.058
Assigned control/partial news group	0.009	0.059	0.159	0.874
Pre-attitudes	0.459	0.077		
Pre-political Satisfaction	-0.04	0.042		
Pre-socioeco Satisfaction	-0.06	0.035		
Pre-interests Efficacy	0.152	0.057		

Dependent Variable: Political Attitudes

The CACE in the Placebo Design

The process of using the placebo approach to estimate the Compliers Average Causal Effect (CACE) for political attitudes was identical for both political attitudes and political knowledge. Subjects who visited the Centers at least once were Compliers in the placebo design. We still assumed one-sided noncompliance; the placebo design screens out the Never-Takers, and the CACE can be estimated by comparing Compliers in the treated state (those who read the news at the Centers) to Compliers in the untreated state (those who primarily access the Internet for entertainment) (refer to chapter 6 for the reasoning and logic of our placebo design). Therefore, to estimate the CACE in the

placebo design we excluded subjects who never showed up in the Centers in the news and entertainment groups. In the following section, we first present the outcomes for the treatment group and the placebo group.

Outcome Variables of Each Group in Placebo Design

Political attitudes were still measured by the eighteen posttest questions aimed at testing participants' support for democratic values. Similarly, the compliers in the news and entertainment groups scored nearly identically on the posttest attitude questions (see Table 7.4); the news group ($M = 3.377$, $SD = .336$) still scored slightly lower than the entertainment group ($M = 3.388$, $SD = .358$). On the pretest, the two groups had similar scores.

Table 7.4. Means and Deviations of Political Attitudes, among Compliers, by Group, in the Placebo Design.

Group		Pretest attitude	Posttest attitude
News	Mean	3.401	3.377
	N	36	34
	SD	0.314	0.336
Entertainment	Mean	3.375	3.388
	N	34	33
	SD	0.308	0.358

Estimation of the CACE in the Placebo Design

The subjects compared in the placebo design are all compliers, and the CACE can be estimated by directly comparing the outcome of the subjects who receive the intended treatment to the subjects who receive the placebo "treatment." Again, we used both unadjusted and adjusted Ordinary Least Squares (OLS) regression to examine whether

the outcome of political attitudes was changed by the intervention of attending sessions at the Centers for online news reading. First, we regressed the posttest mean attitudes (Y) on the dummy variable of the treatment status (X), equal to one for the treatment group (news) and zero for the placebo group (entertainment). The CACE was measured by the parameter b , and ε was a random disturbance term. The unadjusted model was written as:

$$Y_i = a + bX_i + \varepsilon_i.$$

The overall model was not significant in the placebo approach, $R^2 = .000$, $F(1, 65) = .018$, $p = .894$. Additionally, participants in the treatment group ($M = 3.377$, $SD = .336$) scored slightly lower than the placebo group ($M = 3.388$, $SD = .358$), but not significantly, $b = -.011$, $t(65) = -.134$, $p = .447$ (one-tail) (see Table 7.5). Similar to the estimation of ITT using the full sample, the coefficient measuring the treatment effect was not significant. Consequently, there were no substantial differences between the two groups in the placebo design regarding political attitudes after the treatment, and the CACE yielded negligible estimated effect.

Next, we used the adjusted model to estimate the CACE, first including the mean attitudes on the pretest (P) as a covariate before adding three additional predictors as we did for the ITT estimation (political satisfaction, socioeconomic satisfaction, and interests in politics and political efficacy). The first adjusted model was:

$$Y_i = a + b_1 X_{i1} + b_2 P_i + \varepsilon_i.$$

The multivariate regression results showed that the model was significant. $R^2 = .252$, $F(2, 64) = 10.786$, $p = .000$. When controlling for the pretest, the treatment group still scored slightly lower than the placebo group, but not significantly, $b = -.019$, $t(64) =$

-0.251, $p = .402$ (one-tail) (see Table 7.5). The coefficient measuring the treatment effect was not significant. The result fortified the findings of previous models that short-term exposure to online news did not change the participant's political attitudes.

Table 7.5. Ordinary Least Squares Estimators of the Impact of the Internet on Villager's Political Attitudes in the Placebo Design (with and without the control variable, political attitudes on pretest)

	Model 1				Model 2			
Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.388	0.06			1.522	0.405	3.755	
Assigned News	-0.011	0.085	-0.134	0.894	-0.019	0.074	-0.251	0.803
Pre Attitudes					0.553	0.119	4.642	.000

Dependent Variable: Political Attitudes

Additionally, we added three control variables to the adjusted model in addition to the pretest score on attitudes (denoted as P): 1) political satisfaction (denoted as P'), 2) socioeconomic satisfaction (denoted as S), and 3) interests in politics and political efficacy (denoted as I). Participants that were assigned to the news group was still denoted as X_i ; the model was written as:

$$Y_i = a + b_1 X_i + b_3 P_i + b_4 P'_i + b_5 S_i + b_6 I_i + \varepsilon_i.$$

After controlling for the four predictors, the model was found significant, $R^2 = .280$, $F(5, 59) = 4.580$, $p = .001$. However, the estimated CACE was still not significant. The news group scored slightly lower than the entertainment group, though not significantly, $b = -.038$, $\beta = -.054$, $t(59) = -.478$, $p = .318$ (one-tail) (see Table 7.6). Therefore, no matter how we estimated the CACE, it was found substantially small. The effect of the treatment on participants' political attitudes was negligible.

Table 7.6. Ordinary Least Squares Estimators of the Impact of the Internet on Villager's Political Attitudes in the Placebo Design (Model 3: add four covariates)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	1.516	0.486		
Assigned news group	-0.038	0.079	-0.478	0.635
Pre-attitudes	0.536	0.132	4.068	.000
Pre-political Satisfaction	-0.035	0.068	-0.509	0.613
Pre-socioeco Satisfaction	-0.019	0.052	-0.368	0.714
Pre-interests Efficacy	0.093	0.084	1.108	0.272

Dependent Variable: Political Attitudes

The CACE in the Conventional Design

Adopting the placebo design allowed us two methods with which to estimate the Compliers Average Causal Effect (CACE). The results comparing the news and entertainment groups using the placebo approach were presented in the previous section. The conventional approach will now be presented by first comparing the same groups (news and entertainment), followed by the news and control/partial groups to estimate the treatment effect of reading online news (as mentioned in chapter 6; note that, in the latter comparison, the precision of estimation suffered from low rates of compliance in the control group). In addition, we compared the entertainment and control/partial news groups to assess the effect of online entertainment usage (for discussions on assumptions and reasoning of the conventional design, please refer to chapter 6).

The estimated CACE is the ITT scaled by the ITT_D in the conventional design. The ITT reflects the intended assignments; it is the average effect of the assigned treatment while the ITT_D is the proportion of Compliers. We used the ordinary least squares regression (OLS) to estimate the ITT (see the first section in this chapter) and

ITT_D, followed by two-stage least squares regression (2SLS) to estimate the CACE. Further, we calculated the three estimates by hand to verify the results.

CACE in the News and Entertainment Groups

In the conventional design, the treatment is defined as reading online news during the visits to the Centers for the comparison between the news and entertainment groups. We used the dummy variable articulated in the previous chapter when examining political knowledge to indicate the subject's treatment status³⁴. The dummy variable received a score of 1 if the subject used the Internet to read news during their visits and 0 otherwise.

We first regressed the outcome variable (mean attitudes) on the assigned treatment to estimate ITT, which equaled -.087 (refer to the previous section and Table 7.7 below). The ITT is not affected by the actual treatment; it reflects the intended assignments.

Table 7.7. Regression Estimate of the ITT (the news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.43	0.046	73.916	.000
Assigned news group	-0.087	0.065	-1.343	0.182

Dependent Variable: Political Attitudes

Next, we regressed the actual treatment (treated) on the treatment assignments to estimate the ITT_D (the ITT_D is the same as presented in chapter 6 when we estimated the proportion of compliers in the news and entertainment groups in the conventional design). The treatment received a score of 1 if the subject visited the Centers to read news at least once and 0 otherwise. Treatment assignment (Assigned news group) received a

³⁴ Whether the subject had read news during their visit was based on the feedback sheet they filled out at the end of each visit.

score of 1 if the subject was assigned to the treatment group and 0 otherwise. As mentioned in chapter 6, there were 13 subjects in the entertainment group who had read online news once (including three subjects who had read news for 10 minutes). These subjects were Always-Takers under the conventional design, but were Compliers under the placebo design where compliance was defined as attending their sessions (refer to discussion in chapter 6). The coefficient .347 indicates that assignment to the treatment group caused 34.7% of the targeted subjects to be treated. In other words, the estimated share of Compliers in the subject pool is 34.7%.

Table 7.8. Estimation of the ITT_D (news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.232	0.062	3.746	.000
Assigned news group	0.347	0.087	3.974	.000

Dependent Variable: Treated (read news)

Finally, we used two-stage least squares (2SLS) regression to estimate the CACE between the news and entertainment groups in the conventional design. The regression model includes two equations. The first one involves the outcome variable:

$$\text{POLITICAL ATTITUDES}_i = a + b_1 \text{TREATED}_i + \varepsilon_i$$

b_1 is the CACE. The first model does not include the Assigned news group, which reflects the exclusion assumption. In the second model, the Assigned news group is an “instrumental variable,” which predicts Treated:

$$\text{TREATED}_i = a + a_1 \text{ASSIGNED}_i + e_i$$

Mean political attitudes on the posttest are regressed on actual treatment using treatment assignment as an instrument. The results showed that visiting the Center to read online news decreased participants’ support for democratic values by 0.255 points among

Compliers, though not significantly (see Table 7.9). Therefore, both the placebo and conventional approach reached the same conclusion.

Table 7.9. Estimation of the CACE (news and entertainment groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.49	0.091	38.322	.000
Treated (read news)	-0.255	0.205	-1.246	0.108

As outcome variables in this study did not have highly skewed distributions, it was appropriate to use conventional t-tests for the hypotheses tests. Therefore, we skipped the sharp null hypothesis test, which assumes the treatment effect is zero for all subjects (rather than for the average treatment effect) because it would generate similar results.

Lastly, the calculation of the ITT, the ITT_D , and the CACE by hand, which matches the results of the regression analysis, will be presented.

Table 7.10. Mean Political Attitudes on the Posttest by Experimental Group (news and entertainment groups)

	Treatment group (News)	Control group (Entertainment)
Post Attitudes Mean (N treated)	3.3858(33)	3.4058 (13)
Post Attitudes Mean (N untreated)	3.2837(24)	3.4377 (43)
Overall Post Attitudes Mean (Total N)	3.3428(57)	3.4301(56)

The ITT is the difference in means between the treatment (3.3858) and control groups (3.4058), which equaled - 0.0873. Participants assigned to the treatment group have a political attitudes mean 0.087, which is lower compared to those who were assigned to the control group, though not significantly. The ITT_D is the proportion of

treated subjects in the news group (0.579) minus the proportion of treated subjects in the control group (0.232), which equaled 0.347³⁵. In other words, the estimated rate of Compliers equals the proportion of Always-Takers and Compliers in the treatment group subtracted by the Always-Takers in the control group (Gerber and Green 2012, 178). Therefore, the estimate of the CACE is formed by the ratio of the two estimates – ITT/ITT_D – equating to -0.253, which confirms the results obtained through the regression analysis.

Interaction Hypotheses Tests

We conducted the interaction hypotheses tests for the treatment of reading online news. The effect of the treatment on the participant political attitudes was not significant as shown in the previous sections. We further investigated the interaction effect to evaluate if the treatment effect varies between subgroups, such as defined by the age of the participants. For example, the impressionable years hypothesis states that political attitudes tend to change during late adolescence and young adulthood, and become difficult to change with the increase of age (Krosnick and Alwin 1989). It was therefore worth investigating whether younger participants were more responsive to the treatment. In this study, we assessed two treatment-by-covariate interactions in the placebo design: treatment by age and by education.

We included the interaction term, “age” by “the treatment,” in a two-step regression. Treatment (X_i) was dummy coded as 1 if the subject was assigned to the news

³⁵ One subject in the news group visited the Center on a single occasion, but did not read news during the visit. Therefore, the treated in the news group is 33 in this analysis, compared to 34 when defining treatment based on attendance to sessions.

group and 0 otherwise (subjects in the placebo design are all Compliers; thus, all subjects assigned to the news group received the treatment). Age (A_i) is calculated from year of birth. The model was written as:

$$Y_i = a + b X_i + c A_i + d X_i A_i + \varepsilon_i.$$

Results show that the model was not significant, $R^2 = .038$, $F(2, 109) = 2.081$, $p = .130$. The interaction between age and treatment (news group) was also found not significant (refer to Table 7.17). Therefore, it appears that the conclusion of the no treatment effect on participant political attitude applies to all ages among the groups.

Table 7.17. Test of the Interaction Hypothesis: Age

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	3.387	0.054		
	News group	-0.093	0.065	-1.433	0.155
	Age	0.099	0.065	1.529	0.129
2	(Constant)	3.377	0.062		
	News group	-0.072	0.089	-0.812	0.418
	Age	0.122	0.093	1.308	0.194
	Age*News group	-0.045	0.13	-0.343	0.732

Dependent Variable: Post Attitudes

Assessing the interaction of treatment with the subjects' years of education yielded similar results. We partitioned years of education by the median; subjects were divided into two subgroups, where E_i scored 1 if the subject's level of education was above the median. We replaced Age (A_i) with Education (E_i). The model was written as

$$Y_i = a + b X_i + c E_i + d X_i E_i + \varepsilon_i.$$

The regression results showed that the model was significant, $R^2 = .076$, $F(3, 108) = 2.945$, $p = .036$. However, the interaction between education (above or below the median/high or low) and treatment (news group) was found, again, not significant (refer

to Table 7.18). Therefore, there was no variation in regard to treatment effect on political attitudes as a result of a participant's level of education.

Table 7.18. Test of the interaction hypothesis: education (above or below the median)

Model		<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
1	(Constant)	3.335	0.058		
	News group	-0.063	0.064	-0.988	0.325
	Education	0.169	0.064	2.642	0.009
2	(Constant)	3.341	0.069		
	News group	-0.075	0.09	-0.827	0.41
	Education	0.157	0.092	1.719	0.088
	Education*News group	0.023	0.129	0.18	0.857

Dependent Variable: Post Attitudes

Conclusion

We used both a placebo and conventional approaches to assess the treatment effect of reading online news at the Centers on participants' political attitudes among Compliers. The results showed the same conclusion in both designs: assignment to the treatment group did not increase participant support for democratic values on the posttest among Compliers. The short period (2-3 months) of exposure to the Internet and online news had no effect on participant political attitude although it increased political knowledge (as reported in chapter 6). In the next chapter, we will interpret and discuss the meaning of the results and how this study can contribute to our understanding of the Internet's political impact and implications in rural China.

CHAPTER 8 “DISCUSSION AND CONCLUSION”

In this chapter, I discuss the findings of the study and evaluate the results of the experiment. After examining the data collected during the four-month experiment, I can answer some of the questions outlined at the beginning of the study. The key component of the inquiry was to discern both whether and how exposure to the Internet impacts the political knowledge and attitudes among rural Chinese. The short answer, based on the data analysis in previous two chapters, reveals that short-term exposure to the Internet affects political knowledge but not political attitudes. Moreover, I examined personal and group interviews conducted with participants in addition to the causal analysis through the experiment to further investigate: 1) whether the results for the participants can be applied to the general population in the rural area, 2) why the treatment is effective in increasing political information among participants, but not in regards to changing their political attitudes, and 3) the potentially more substantial effect of long-term exposure, as short-term exposure only had a limited impact on participants’ political attitudes.

Finally, I evaluate the implications and applications of the study for the scholarly and policy communities, discuss the limitations of the study, and suggest improvement for future experiments and future research regarding the Internet’s political implication.

DISCUSSION

Political Knowledge

My hypothesis was that participants who used the Internet to read news would increase their political knowledge, while participants mainly exposed to online entertainment would not. In order to test this, I conducted a field experiment and

randomly assigned subjects to three treatment conditions set up within three villages (two different townships) in Guizhou province. The treatment group was asked to read news for at least 15 minutes each time they visited their respective research site, while the placebo group used the Internet for entertainment purposes. Conversely, the control group was not invited to use the Internet during the experiment, but was informed about delayed treatment.

The results of the experiment using both a placebo and conventional approaches through adjusted and unadjusted models showed that participants from the news group increased their political knowledge on the posttest. Reading online news, even for a limited time, contributed to gaining political knowledge among villagers. Thus, this study provides evidence regarding the unsettled debate on whether the Internet has a transformative effect on individuals, or simply attracts people that are already either politically inclined or knowledgeable (Lei 2011). Because the experiment created equivalent treatment and control groups at the outset through random assignment, the difference in political knowledge on the posttest between groups can be attributed to the influence of the treatment and not preexisting differences between the groups. Therefore, rather than only study the consequence of increased Internet usage in China as many previous studies have (Lei 2011), this experiment was able to identify one causal effect of Internet usage upon individual citizens: reading online news, even for a short-term, can improve political knowledge.

The finding provides causal evidence to the long-standing argument on the Internet's role in China's democratization. As scholars have pointed out, rather than

exploring the broad question of whether the Internet can democratize authoritarian countries, it is more practical to ask more narrow questions that research can answer, such as the Internet's effect on political knowledge and political participation (Farrell 2012; Bimber 2012). This study responded to the advocacy to specify the inquiry and identified one variation between netizens and non-Internet users. Unlike much previous data collection that focused on the government's restrictions on the Internet, this study provides solid quantitative evidence of the Internet's impact on individual citizens. Using a randomized experiment, the observed differences in posttest scores between the assigned groups can be safely attributed to various types of exposure to the Internet. Based on this causal evidence, it is reasonable to predict that the Internet can have a substantial influence on China's political development, and in particular citizens' levels of political knowledge; further, this impact should be considered a relevant topic when discussing the country's democratization process.

Explanations

The finding that participants gain political knowledge through the Internet has several important implications. Politically knowledgeable and informed citizens can better articulate their political opinions, are better able to understand politics and civic affairs, and are more capable of becoming actively involved in both political and civic activities. Especially important for consideration is that most rural villagers in this study had very limited political knowledge. As previously discussed, 64% of the participants did not know the name of the current Chinese premier, and 54% did not know the name of the current President of the United States on the pretest. Furthermore, their knowledge

of news and current events was even less developed. However, the news group improved significantly on the posttest regarding the news items (from 17% to 45% correct answers from the pretest to the posttest).

The causes for improvement can be attributed to the Internet as an additional, accessible, and new channel of political information. The villagers' primary consumption of mass media was through television, rather than any other media such as newspapers and radio; mostly, when they watched television, they focused on entertainment programming (such as TV dramas and talent shows). Most villagers claimed that they were not interested in watching news and they did not discuss politics with relatives and friends. One female interviewee even claimed, "people who discuss politics with friends are silly (*bu kaiqiao*).” Therefore, accessing the Internet provided an extra source for them to gain political information when considering their limited access to news media. One of the few places where we found newspapers was at a tourism company in Village A. The managers of the company, who were non-local residents, read newspapers. Some villagers who were hired at the tourism attraction would browse the newspaper, presumably gaining some social and political information.

Furthermore, as discussed in chapter 2, online news is more varied and interesting to read than in traditional media. This encouraged some participants to access news and political information. For example, one female interviewee said that she did not watch TV for the news, yet she liked to read news online by referring to Tengxun.com. She claimed that there was only political news on TV, which was boring. When asked how she defined "political news," she said it was all about the affairs of the state and the news

about the national leaders; she explained her disregard for televised news by stating, “what they (the national leaders) were talking about had nothing to do with us.” This is reminiscent of the Nightly News Program (*xinwen lianbo*) on China Central Television (CCTV). Local television stations are required to simultaneously broadcast this program across the country. It is part of the government’s propaganda efforts and become a source for netizens to make jokes about, satirizing the 30-minute nightly news program in online forums. One example of such criticism reads: “First 10 minutes: the leaders are always busy. Second 10 minutes: the people are perfectly happy. Final 10 minutes: the world outside of China is extremely chaotic.” Another example of comments described the program as, “decades of telling lies and empty stories people don’t want to hear³⁶.” The aforementioned interviewee gave an example of recent online news that impressed her: reports on a problematic infant formula sold in China. Apparently, she did not define such news as politics.

According to a survey conducted by the University of California, Los Angeles and the Chinese Academy of Social Science in five Chinese cities, around 80% of residents feel that they better understand politics from using the Internet, compared to 43% in the United States. Moreover, nearly 61% of Chinese Internet users believe they can speak more freely about the government, compared to 20% in the United States (Guo 2005). The Internet’s impact should be relatively larger in China’s rural areas than in the cities, considering that rural areas, especially less developed regions, have very limited

³⁶ Molly Roberts’ “Detecting and Understanding Propaganda in Chinese Newspapers” presentation at the International Methods Colloquium, February 27, 2015.

access to information and have a conservative political culture. In fact, many participants stated in the interviews that the Internet enabled them to gain news about the country, policies, and the economy, and helped them understand the society better. One interviewee appreciated that they could know what happened in other places through the Internet even though they were in the countryside (*xiangxia*).

Whether participants gain political knowledge through the Internet depends on how they use it. Our experiment results are consistent with the previous literature regarding the entertainment usage of the Internet, political participation, and communication. In general, recreational uses of the Internet do not contribute to civic engagement; only users who access the Internet for political purposes had higher levels of political interest, knowledge, and efficacy (Davis 1998; Norris and Jones 1998; Kwak et al. 2004). On the posttest in our experiment, the participants in the entertainment group showed lower scores on the political knowledge section when compared to the news group even though many participants in the news group only read the news for 15 to 30 minutes and switched to entertainment content during each visit. Therefore, the results showed that reading news, even when for a short period of time, could contribute to political knowledge.

What about this experiment's external validity? Would villagers in the larger community actually use the Internet for news or would they use it exclusively for entertainment? There is some evidence that using the Internet for news will for some rural villagers be a somewhat demanding task. We could not force every participant in the treatment group to read news for the required minimal amount of time. Moreover, in

order to preserve the natural environment of the online experience, I tried not to interfere with their online behavior. Instead, I reminded each participant of their group assignment when he or she arrived at the Center. I also used the self-completed feedback sheet as a tool to check their compliance. In addition, I referred to group relevant websites to teach participants how to use the Internet (i.e. news websites for participants in the news group). These measures assisted the news group participants to comply with their assignment. However, people had different levels of interest, and it proved difficult to persuade everyone to read news. Some participants could only stay on the news websites for 10 minutes before they switched to music, TV shows or movies.

Many female participants' favorite website was Taobao.com, an online shopping website. Despite the fact that they did not have a credit or debit card to make a purchase, they enjoyed browsing the products (especially clothing and shoes). Occasionally, they showed dresses they liked to fellow participants and excitingly discussed the style and the price. However, there were also times when they became bored with even these types of activities. For instance, a group of women in the entertainment group claimed they wanted to read some online news and asked me to teach them how to access it; according to the record based on the participants' feedback sheet, there were 13 subjects in the entertainment group who read online news once during their visit. Therefore, it is possible that villagers would be interested in reading news at certain points when they access the Internet on their own, even without being required to do so by the experiment. Furthermore, according to our results, the citizen gains political knowledge if they read some news, and not even necessarily on a daily bases or for a long period of time. The

minimal interaction with online news resulted in improved political familiarity and had special implications for the program's external validity. Nationwide, despite a large proportion of the population using the Internet either exclusively or primarily for entertainment purposes, many people still use it for political information and deliberation (Wang, 2009, 96). Certainly, as rural villagers' levels of political knowledge increase from use of the Internet, using it for that purpose will become less demanding and, for some, a habit.

In fact, from my observation, several villagers seemed to develop an interest in reading online news through the experiment and demonstrated that they could easily read news for several hours each time they visited the Center. Participants had different preferences for the types of news they would read, such as military news, news of officials' corruption stories, or criminal cases. The large amount and variety of news available online made it easier to meet readers' preferences. In addition, the multi-media forms of news reporting made it simpler for readers with less education and low literacy. For example, text news with links to related videos or pictures attracted many senior participants. After learning how to pause and replay the videos online, one senior participant commented that the function was very helpful for her as she could replay the video several times to better understand the story, as opposed to news on TV that could only be viewed once. This demonstrates that the Internet affords the readers greater control over the news they consume and how to consume it. There is a good chance that villagers would use the Internet for news reading when they could gain access to it.

Finally, it was easy to find online reports that dealt with matters of interest to villagers. These relevant stories attracted the attention of even those who had less interest in reading the news. For example, during the experiment, the news about a watermelon vendor from a village in Hunan province who was beaten to death by municipal police (*chenguan*) received a high rate of readership (Jacobs 2013). Reports of the incident remained on the front page of major Chinese web portals for a few days, and most participants in the news group chose to read about the story (including a participant who himself was a watermelon vendor). Other examples of news which participants paid attention to included a female villager from Henan province whom was sent to a psychiatric hospital because she appealed to higher authorities for her grievance³⁷. News regarding the second child policy was widely read by participants who were parents, including a father who, during his visit to the Center, told me that he was forced to pay 10,000 RMB as a fine for having fathered a second son. A female participant who worked for the family planning commission in the village was not interested in news but started to read when she noticed a report on an angry father who stabbed two birth control officials to death in Guangxi province³⁸.

The second concern regarding external validity is whether the treatment effect would only be observed in the specific setting of an experiment. That is, did the research settings make a difference in people's online experience that affected their learning?

³⁷ The China News Service report by Jiedan Men, on July 18th, 2013
<http://www.chinanews.com/fz/2013/07-18/5059496.shtml>

³⁸ Deccan Chronicle, China Executes Man for Murder of "Birth Control" Officials: Report, on November 13, 2015 (the incident occurred in 2013).

Would similar learning occur from use of the Internet in other settings or through the use of other devices such as smartphones? Originally, rather than using a lab with specific designs and manipulations, the research sites of the study (the Distance Learning Centers) were built for the rural residents' regular usage. Therefore, the media consumption reasonably simulates the natural condition. Furthermore, while the government had not effectively operated or maintained the Centers prior to the study, the result of farmers learning basic skills using the Internet demonstrates that the facility can be put to better use. Moreover, the penetration of personal computers and the Internet in rural families is still low as many villagers require Internet cafes for access. The Centers provided a very similar experience to that of an Internet café. Further, most participants were not familiar with research and the experiment. Despite informing them about the general purpose of the study and procedures, the participants simply regarded it as a computer training class. Lastly, while the participants used the Internet in the Centers as a group, their online experience was independent; they controlled their own computers and online activities. Therefore, there is reason to think that the effect of Internet usage would be the same for villagers who accessed the Internet at home on an individual basis rather than in a Center or café. Nevertheless, with the spread of smartphones in rural areas, the users' experience of accessing the Internet could be different, and whether or not use of smart phones results in gains of political knowledge is a question that should be addressed in another study.

Finally, although the experiment was conducted in rural China and there are special socioeconomic and political contexts for Chinese villages and villagers, the effect

of exposure to the Internet was not unique to Chinese villagers and might be applied to other authoritarian regimes where censorship is commonplace.

Political Attitudes

The result of chapter 7 showed that reading online news at the Centers did not increase participants' support for democratic values on the posttest; there are no main effects on political attitudes and alignment. It is apparent that two to three months of exposure to the Internet only affects participants' political knowledge. I now discuss some possible reasons why the participants' attitudes about democracy remained unchanged. Further, would long-term exposure to the Internet generate a different outcome?

A Plausible Explanation?

The most likely reason why views toward democracy did not change is that such beliefs are particularly difficult to change, especially within a short period of time. The result is consistent with the literature and other studies, which have found that beliefs did not change from media exposure (Ball-Rokeach et al. 1984; Schofield and Pavelchak 1989). Paluck and Green's (2009) experiment in Rwanda, which was one of the few studies that adopted a field experiment to examine this relationship, used an educational radio program as the treatment. Although the program had a substantial impact on listeners' behavior, it had little effect on many kinds of listeners' personal beliefs. The "lifelong persistence theory" argues that political attitudes are resistant to change and what is learned early in life tends to endure over time (Sears 1983). Similarly, the "impressionable years hypothesis" states that political attitudes are susceptible to change

during late adolescence and young adulthood, but becomes stable afterward (Krosnick and Alwin 1989). Thus, attitudes change gradually and such change decreases with age (Alwin 1994).

There is an opposing theory, known as “the lifelong openness hypothesis,” that argues that people are open to change throughout their lives in response to varying life experiences (Sears 1983). Accessing the Internet could be one life experience that affects people’s political attitudes. However, because beliefs and attitudes are notoriously difficult to change (Wood 2000; Bem 1972), such change takes time. Further, since online information is more balanced and diverse, it would promote critical thinking and encourage political discussion. It would expose the villagers to ideas that they had never encountered before and provide them with opportunities to interact with other netizens of different classes and backgrounds through the online commenting system. For these things to happen, however, the villagers needed to first understand the cyber languages netizens used in their comments in order to know the meaning in the correct context, be able to type their opinions, and share their perspectives online in order to interact with different online contributors. Chinese netizens are adept at creating and using cyber language to cope with the government’s censorship through “keyword blocking,” as well as to protect themselves from potential risk when criticizing the government. They use analogies, metaphors, and satire; the Chinese language offers novel evasions, such as substituting banned words with characters that have unrelated meanings but the same pronunciation or visual likeness (King et al. 2013). For example, netizens substitute official state policies of a “harmonious society” with “river crab,” which is phonetically

similar when spoken (in Chinese as “*hexie*”) but written differently (河蟹 as “river crab” and 和谐 as “harmony”) (King et al. 2013). As mentioned in chapter 3, “harmony” has become a synonym for censorship. For example, netizens say their posts or comments have been “harmonized” when they are blocked and removed from websites (Wines 2009).

Most urban netizens and sophisticated Internet users are familiar with cyber language. Rural villagers and first time users, however, have difficulty in understanding the meaning concealed in these words, which prevents them from fully understanding the opinions posted online. For example, one participant in the news group was reading news about a collapsed building in Sichuan province, which was a result of inadequate construction that left the building without a firm foundation. Many netizens left comments which blamed the shabby construction and jerry built projects (*doufuzha gongcheng*). One netizen commented: “good looking outside, broken inside (apple of Sodom) – the typical feature of the Celestial Empire (*tian chao*).” Ancient Chinese emperors used *Tian chao* to describe the Chinese Empire, indicating their regime applies to the entire world rather than simply the nation-state. Today, this term is commonly used by netizens to satirize the current communist regime; it became a jocular moniker for contemporary China or the Chinese government, indicating that the country “under the Chinese Communist Party’s tight control is a continuation of the old class society³⁹”. In the above comment, the netizen was using an analogy of the collapsed building to refer to the regime, alluding that although the country seemed prosperous, there were serious

³⁹ Contemporary Colloquial Chinese, <http://ccc.zmxv.com/2012/01/tian-chao.html>

problems underneath. However, my conversation with the participant, after he had read the comment, revealed that he did not understand what the context of the comment indicated, primarily because he did not know what “*tian chao*” meant here, nor how people used the term in cyber space. Another netizen also commented on the news story by saying he was “surprised that the building does not have a foundation (*meiyou diji*). It is that true anything without a foundation would collapse, just like ‘something’ (*jiuxiang mouxie dongxi yiyang*).” A netizen then replied to this post commenting, “this ‘something’ has profound implications (*yuyi shenyuan*).” The two netizens implied the “something” was the Chinese regime; however, it took time for first time users, especially villagers in rural areas who had less knowledge and experience in political discussions, to understand the satire and online comments⁴⁰. In the interviews, several participants (especially seniors) in the news group revealed that they could not understand some comments posted online.

Reading and Writing Comments Online

Despite the difficulties in understanding some of the online languages, many of the news group participants showed a strong interest in reading online news and comments; beyond this, some participants even learned how to type Chinese⁴¹ and started to leave their own comments. For example, a male participant from the news group once

⁴⁰ Another example of commonly used cyber terms that villagers did not understand was the “50 cents party” (*wu mao dang*): government hired Internet commentators who post comments favoring the government and the regime.

⁴¹ Typing Chinese is difficult for first time users, as the language is based on character rather than an alphabetical script. The users needed to learn the input method developed on either phonetic readings or root shapes of Chinese characters in order to type with a standard keyboard.

asked me for a piece of paper to write down some of the interesting comments he read online. It was most commonly the shocking stories (and comments on them) that the villagers felt were relevant; in cases where the participants disagreed with comments, they were prompted to leave some themselves. For example, several participants left comments on the reports of the watermelon vendor case mentioned earlier. Although typing was difficult for new users, they felt strongly enough about the case to learn to register an account and slowly type their thoughts. Some of the comments they posted online included: “officials shield one another (*guanguan xiangwei*),” “the victims are always peasants,” and “many urban management officials (*cheng guan*) and traffic police enforce the law in a similar way, a little less serious. If such things happen again, (the society) might fall into chaos.” The first participant who asked to learn how to leave comments was a young woman in the news group. She was incensed after reading a news story, as well as other netizens’ comments, regarding a twelve-year old girl who was raped by her teacher and gave birth to a boy.

It was a milestone for the participants to see their comments successfully posted online. Occasionally, online commenting led to offline discussion among participants. For example, three female villagers of the news group, including a senior, discussed the Diaoyu Dao/ the Senkaku Islands dispute between China and Japan after reading online news and comments. In general, most participants in the news group who had read comments stated that they liked reading them. One participant claimed that they appreciated the opportunity to know and understand “others’ thoughts” and felt they could “refer to others’ opinions” as there were so many different perspectives expressed

online. Several interviewees claimed that people tend to tell the truth in online comments. However, they also pointed out that many comments online were meaningless and full of hatred and abusive language for the purpose of personal attack. This was one major concern when we discussed the online environment in chapter 3: that insightful commentary and meaningful conversations might be buried among pointless assaults, lewd jokes, and biased statements (including those contributed by government hired commentators). Nevertheless, through the experience of the participants who had read online comments, they did find useful and interesting viewpoints in the comments and enjoyed reading others' opinions. Nevertheless, some participants did not comment on anything during the experiment. The participants explained in the interviews that their lack of commenting was due to either not knowing how to type or claiming they were "less educated" (*wenhua qian*) and therefore "did not feel confident to post comments online." Finally, some participants simply stated that they did not want to post any comments online.

In sum, reading and writing comments regarding online news was an important political activity for its own sake. Previously, studies of Internet behavior were evaluated by how well their measures approximated offline behaviors; however, online behavior has become an inseparable part of human life now that the expressions observed online are important regardless of whether they estimate non-Internet freedoms and behaviors (King et al. 2013). Although the short-term exposure to the Internet through our experiment did not increase participants' support of democratic values or have an impact on their political attitudes in general, exposure to online news, comments, and

interactions with different online contributors was a whole new form of political participation and engagement for the rural villagers. The measurement of the long-term effects of such involvement needs additional experiments that are conducted under conditions that differ from mine. I would speculate that diverse online opinions might gradually affect villagers' political attitudes if they become familiar with the online environment and were exposed to more pro-democratic perspectives for a longer period of time.

The Villagers' Political Attitudes at a Glance

Although short-term exposure to the Internet did not change participants' political attitudes in our experiment, the long-term effect of reading online news is yet unknown. We will first review the villagers' political attitudes regarding democratic values through individual and group interviews, and then discuss if any of these opinions would be subject to modification through the influence of the Internet in the future.

In general, the villagers' support for democratic values was in the medium range. Their mean scores on the attitude questions on both the pretest and posttest were around three points, on a five-point scale, for all three groups (please refer to Chapter 7). This indicated that although the villagers were not strongly pro-democratic, they were not as conservative as the traditional concept that rural farmers held values incompatible with democracy (Zhong 2005). When the participants were asked how they define democracy, some mentioned equal status: "officials will not be superior above others (*gaoren yideng*)"; some said freedom: "you can say whatever you want to say"; some stated, "the government helps ordinary people realize their wishes." Conversely, a few stated that to

them, “democracy means popular election,” while some just claimed that they did not know.

The villagers had internally contradicting ideas about democracy. Over half of respondents in our experiment supported elections for national leaders (51.1% on the pretest and 59.1% on the posttest) but less than one fourth of them agreed with multiparty competition (13.1% on the pretest and 19.1% on the posttest). The result was similar to the findings of a national survey, where a larger majority of respondents supported elections for national leaders (84%) while only 16.3% approved multiparty competition (Shi 2008). Liberals usually believe that competing political parties are essential for elections in a democracy. In addition, many respondents did not have a clear understanding of notions such as the separation of power. As a result, many agreed that judges should heed the opinion of the local government when deciding cases. However, most participants primarily embraced the rule of law, as many (56.3% on the pretest and 57.4% on the posttest) disapproved of the opinion that the government could ignore laws and regulations in order to create faster economic growth. Over half of respondents chose protection of civil liberties over developing the state’s economy, but most of them prioritized the right to life and work over civil liberties (for example, the right to vote and freedom of expression). Further, over half of the respondents either strongly agreed or agreed that government leaders are similar to the head of a family; people should follow their decisions (52.5% on the pretest and 52.0% on the posttest).

The most noticeable opinion was villagers’ overt trust in the central government. This is consistent with previous research, such as O’Brien and Li’s study on contentious

politics in rural China (O'Brien and Li 2006). The general support for central government remained high, at least for the villagers in our study. In contrast, almost all villagers blamed local officials as corrupt and untrustworthy. The main reason for the disparity was the villagers' belief that "the central government's policies were good"; it was the local government that "failed to implement these policies." For the villagers, good policies meant government subsidies. In the interviews, participants frequently mentioned they believed that local officials had embezzled the disaster relief fund and subsidized goods. "Too many (local cadres) are waiting to be fed (by the public fund from the higher level government), with their mouths open wide (*zhangzhe zuiba deng*)."⁴² Several villagers cited the subsidy for single children that only those with connections to the local cadres received. A female interviewee stated, "When I asked the village committee, they said my family did not qualify for the subsidy. However, my family's situation was exactly the same as a woman who received it. The only reason was that her mom is a head of our village group⁴²."

Most villagers believed that the central government did not know about incidents of corruption at the local level, which was the reason why good policies were not implemented. One interviewee gave an example of a high level official who made an inspection trip to his village without informing the local cadres and was able to solve a number of the villagers' issues.⁴³ Many participants had limited knowledge about research but wanted to know if the survey I conducted would be submitted to higher-level

⁴² The group leaders in the villages were informal officials appointed by the village committees with loose terms and responsibilities.

⁴³ I had no direct knowledge of the specific event/incident the interviewee cited.

government; one interviewee said: “if not, this is meaningless.” In general, villagers blamed local officials for being corrupt, citing examples of houses the cadres bought in nearby cities, expensive cars they drove, and various recreational activities as being paid for with public funds. The local officials criticized villagers as lazy and selfish. As one cadre said during an informal conversation with me: “(the villagers) are lazy, they just wait for charity (*shi she*). There are more favorable national policies toward farmers now and their lives are much easier than before. However, they are still so obstinate and never want to be taken advantage of.”

Throughout the interviews, only three villagers clearly expressed disapproval of the central government or the communist party. One middle-aged male participant claimed, “The central government is bad: if policies are good, why do they not implement them? Fish begins to stink at the head (*shangliang buzheng xialiang wai*). Officials shield one another at the central levels too. Good words without deeds.” Another young man stated, “The communist party has been bad all the time (*yizhi buhao*)”; the third villager claimed, “the communist party killed many people (*haisi henduo ren*).” However, these individuals were outliers. Most villagers considered the current state of the country as “good” and felt that living conditions had improved. They credited the central government and attributed their dissatisfaction to the local officials. As one interviewee pointed out, “we are ordinary people who are satisfied so long as we can live and sustain ourselves (*neng shengcun, guodequ*). The society is generally good, but not the local (government).”

Future Questions

The villagers' strong support of the central government might change as a result of long-term exposure to the Internet. First, their trust in the central government was partly due to an imbalance of information. As one participant pointed out, "the central government on the television is all good." In contrast, the news and comments online are more divergent. When participants were asked if the Internet had changed any of their opinions, most agreed, save for a few senior villagers. One male participant explained, "The officials here suppress people; the village committee does not listen to the ordinary people. Now I feel this is the same situation everywhere (after reading online)." This villager continued, "ordinary people should have the right to make suggestions (*jianyi quan*). It should not be the government that decides everything. There are too many problems in our society and a wide (developmental) gap compared to other countries." Villagers cited some news they read online which shocked them, such as the watermelon vendor's case in Hunan province: "in the past, I did not realize things were so bad. I knew that municipal police (*chenguan*) beat people, but I never knew that they beat people to death before reading this case." Other news cited by villagers included instances of the Shanghai Higher People's Court judges going "whoring" together (Perlez 2013), as well as reports on forced abortion by family planning officials under the One-Child Policy. One participant even claimed that he lost hope for the society after reading the online content of celebrity scandals, rich people flaunting their wealth (*xuan fu*), and officials keeping mistresses (*bao ernai*).

Obviously, there is more negative news on the Internet than in the traditional media. As one villager said: "the government is good on television, but corrupt on the

Internet.” When asking interviewees to compare the traditional media with the Internet, some claimed that newspaper and television were more trustworthy and factual, while there was a lot of fake information posted online by netizens. However, they also pointed out that the news on the Internet was more balanced, including both positive and negative reports, as opposed to the newspaper, which favored “good news” and contained more “hypocritical” (*xuwei*) reports. The information on the television was “limited” (*xinxi taishao*), which was partly the reason why many villagers did not watch it for news. Being exposed to the Internet provided villagers a new perspective to evaluate society, the government, and political development in the country. This perspective, in the long term, may show that the participants’ tremendous trust in the central government will decline when they realize that the corruption is not exclusively occurring in their villages (such as the previously mentioned villager who felt that village committees elsewhere also suppress villagers).

The loss of trust in the central government would be consequential for the government’s legitimacy. At the time of the study, villagers still firmly believed that the central government was unaware of the corruption at the local level and they brought their grievances to petition the higher-level officials. However, if they were convinced that the central government was corrupt and no longer deemed it as the last resort to solve their problems, they might stop bringing complaints to the state – the result of which would show the state losing its legitimacy (Dimitrov 2008). That is a dangerous signal for any state and could lead to the collapse of the regime (Dimitrov 2008). This partly explained the Chinese government’s resolute reaction to the New York Times detailed

report on the wealth of the family of the former prime minister, Wen Jiabao. The government blocked the news organization's websites and banned searches for "New York Times" on microblogs to prevent citizens from becoming aware of the scale of assets that senior leaders' families accumulated (Jones et al. 2012).

An additional effect of long-term exposure to the political discussion online would yield a deepened understand of liberal democracy and citizenship for the villagers. King et al. (2013) find that the purpose of the Chinese government's censorship program for the Internet is to curtail collective action rather than suppress criticism of the state, the officials, or the communist party. Their study revealed that the Chinese government believes suppressing social media posts with collective action potential is more crucial to maintaining power than suppressing criticism (King et al. 2013). Therefore, it is easy for villagers to read scathing criticism of the government and the one party state. This differs from the communist party's promotion of its traditional ideology that fosters the concepts of the party's benign role, the glorious creation of a strong socialist China, and the importance of respecting authority (Eckholm 1999). For example, during the experiment, a vice governor of Guizhou province generated a strong online reaction after calling critics "human scumbags" in his microblog. This news drew the attention of participants as the governor was from their province. The governor wrote: "Some people don't love their own country, and feel upset about being a Chinese. So just let them go to the U.S., the faster the better! Human scumbags!" Netizens nationwide wrote various comments to express their anger regarding the governor's words. For example:

“People are the master, you are the servant. The master has the right to compare your services with other servants, but you cannot ask masters to get out, shameless!”; “I am first a human, then a Chinese. Do not confuse the government with the nation. Immigrants do not love the government, that does not mean they do not love the country!”; “People can vote with their feet,”; “Talking about patriotism after you give up your state car (*zhuanche*) and your luxury house”; “I think (we can) have an investigation into the vice-governor’s family and wealth, which are probably in the US.”⁴⁴

Today, it is common to read similar comments online. They are the opposite of the government’s indoctrination of ‘loving the party’ as being patriotic. As mentioned earlier, over half of the villagers in our study agreed that government leaders are like the head of a family; people should follow their decisions. Exposure to the Internet for a longer period of time might arguably alter their attitudes regarding the relationship between them and the government (such as from parents to servants) while developing a sense of modern citizenship.

In general, villagers were not concerned about democracy or the democratization of the country. However, they *do* care about corruption, especially when it affects them at the local level. Most villagers were satisfied with the status quo in terms of the country’s economy and improved living conditions, but were discontented with the local officials whom they deem as corrupt and untrustworthy. While exposure to the Internet for a while will not turn them into democracy advocates who fight against the authoritarian rule, the Internet may gradually change their political attitudes and is likely to increase their support for democratic values as they begin to make the connection between a democratic

⁴⁴ “Naked officials” (*luoguan*): cadres who gain their wealth through corruption then move their family overseas (Zhou 2013).

society, the notion that officials should be held accountable for corruption, and that ordinary citizens have a right to fair treatment.

Finally, the Internet helps promote a new political culture – especially among the younger generations. Inglehart (1990) has conducted research on the cultural changes that occur in developed societies as the younger generations gradually replace older ones in the adult population. China’s younger generation, unlike their parents, did not experience an intense regime mobilization movement, and as a result, the younger generation holds different political attitudes and values. “Influenced by ideas of liberty and democracy, the younger generation of China grants a higher priority to self-expression and independence” (Shi 1997, 251). This is especially embodied by the so-called “post-80s” and “post-90s” generation who were socialized and grew up during the Internet’s popularization. One report in The New York Times states, “Most Chinese today are cynical about Communist ideology and many young people are simply indifferent” (Eckholm 1999). Although years of education and indoctrination may have lasting effects on their attitudes toward the government and issues like national unity, the post-80s and -90s generations are less likely to accept traditional social norms because of the alternative perspective provided by the Internet and their own experiences of encountering social injustice. Inglehart’s theory argues for a shift between materialist to post-materialist values. Younger generations of Chinese, because they have experienced economic security, are more inclined to emphasize post-materialist values.

In our study, the younger participants were different from their fellow villagers. Many of them went to townships for high school, most of them already knew how to use

the Internet though they did not use it regularly. They all had online chatting accounts, Tencent QQ, and always used it at the Centers. The political attitudes of these young participants, still in their impressionable young adult years, have a greater susceptibility to change (Krosnick and Alwin 1989). Indeed, discussion with some Chinese that were born in the 80s and converted from supporters of the communist regime to skeptics of the single party rule revealed that they had changed their attitudes during their college years when they were first exposed to the Internet. Therefore, it is plausible that the Internet will create a shift toward more democratic values among younger generations of rural villagers.

Villagers and the Internet

Most participants believed that the Internet was useful to them. They could research information regarding farming and health online, as well as contact their relatives who had migrated to cities. However, villagers also pointed out the negative impact of the Internet, such as “some people use online chatting tools to develop extramarital affairs.” One villager claimed his friend bought a computer online, but it was soon broken, so he concluded, “nothing is real online.” One villager mentioned that her nephew used to be a top student at school but indulged too frequently in online games, and his grades began to suffer as a result.

Despite these negative impressions, villagers used the Internet to explore various topics when they visited the Centers to learn and use the Internet. One participant searched videos on hair cutting as she wanted to open a barbershop in the village. One villager searched for photos of furniture and took pictures using her cell phone as she

planned to show them to the carpenters who were making bar counters for her newly opened restaurant. A parent came to the Center to learn the Internet because she wanted to view her child's grades at the county school, which were posted online. Several villagers searched for specific farming related questions, such as how to cure rice blast and how to plant kiwi fruit. A few villagers took sample written tests online so that they may apply for a driving license. A retailer wanted to learn how to purchase cigarettes online as his peers did. One villager who owned a small store selling infant products joined an online group of similar owners to facilitate sharing information and experiences. She acknowledged, "It would be too hard if you fight alone (*danda dudou*)."

There were also villagers who came to search for certain government policies, such as birth control policies and the fine for a violation.

Beyond searching for useful information, two of the news group senior villagers mentioned that learning to use the Internet boosted their courage and put them in a good mood. They were happy that they were able to learn how to use the computer at their age. Now they are no longer afraid to touch a computer when they see one at a friend's house (in the past, they had worried that they would break it). Both of them revealed that they had issues at home, and it was delightful to visit the Center to use the Internet. They also showed more confidence when answering the questions on the posttest. We read the questionnaire to a few participants who were less literate, including these two seniors. Not only did they answer more questions correctly in the political knowledge section, but they understood the attitude questions better and became more opinionated in answering

them. When compared to the pretest, they chose fewer “don’t know” or “neutral” answers. They would ask for time to think about each question and then carefully chose an answer.

Despite the disinterest among many villagers who declined to participate in the study and visit the Centers for the Internet, some participants showed enthusiasm in learning the technology, usually staying in the Centers until closing time. A couple of participants who worked at the local tourism attraction came after work whenever the Center in their village was open. Occasionally, they would come in the early morning after the roll call and return to work when someone reported that tourists had arrived. In sum, the Internet penetrated people’s daily lives and expanded into the rural villages. Even the most indifferent villagers have to use the Internet at a certain point for public services or personal business (for example, the mother who wanted to check her son’s transcript online). The impact of the Internet on participants’ political knowledge and attitudes found in the present experiment can be expanded to additional villagers who are not in the studies as they started the same process of learning to use the Internet.

CONCLUSION

This study assessed the Internet’s political implication in the world’s most populous non-democratic country through testing assumptions about the Internet’s political impact on Chinese rural villagers. The investigation provided some initial causal evidence for the long unsettled debate of the Internet’s role in China’s democratization. The result of the four-month experiment revealed that exposure to the Internet affected participants’ political knowledge, but not their attitudes. The findings have significant implications as the villagers had restricted sources for news and political information, as

well as very limited knowledge regarding political factors and current events. The prominent improvement in political knowledge through accessing the Internet will have profound consequences; villagers will become better-informed citizens, which may potentially influence their political advocacies and involvement in the future. Although the short-term exposure to the Internet failed to change the participants' political beliefs, the long-term effect of accessing the Internet remains uncertain. Through the observations and interviews conducted with the participants, the more balanced news reports and diverse online comments already created attitude shifts in some of their opinions toward the government and the society. Many posted comments online for the first time and interacted with online contributors of different socioeconomic backgrounds during the experiment. Because the current experiment does not account for long-term effects of these online engagements, future experiments need to employ a longer timespan in order to better understand the implications of the Internet upon participants' political attitudes.

Based on the limitations of the present study, we propose a scaled-up version of the field experiment in an effort to enhance the experiment's internal and external validity. The method to apply the treatment could be modified by using tablets with cellular data plans; research staff could then bring the tablets to different villages, at or near participants' homes, to enable them to use the Internet at or near their homes. This modification would increase the number of participants as well as their treatment compliance. Further, because of the flexibility brought by tablets, the length of the experiment could be extended to six-to-twelve months. This would greatly aid in

assessing if longer treatment periods can affect the compliers'⁴⁵ political attitudes. Finally, the experiments could be expanded into other regions in rural China to test if the Internet has the potential to redress the imbalance of information for underprivileged populations in the less developed areas.

Furthermore, this study provides causal evidence for the Internet's role in China's political development in several ways. First, the experiment is capable of not only identifying the characteristics of Internet users as previous studies have but also the processes that politicizes them. With random assignments to create treatment and control groups, the experiment examined the real world media interventions in a natural setting. Second, this study contributes to the diversity of methodologies used in the field of Chinese studies as little research on China to date has employed experiments. Moreover, this study can be added to the increasing list of studies that adopted experiments in researching political topics in developing countries (Blattman 2009; Wantchekon 2003; Paluck 2007; Dunning and Harrison 2010; Dunning and Nilekani 2013). It tested the feasibility of using a field experiment for political science research and provided another template for future studies in a different context with different interventions (Paluck and Green 2009). Third, in order to isolate competing explanatory variables and give an accurate assessment of the treatment effect (the Internet), recruited subjects are expected to have had either minimal or no access to the Internet. Qualified subjects can still be found in rural China, but they will become less available as Internet usage is widely spreading to the countryside with the use of smartphones. In order to track people's

⁴⁵ Participants who are willing to show up and comply with their treatment assignments.

transformation from uninformed citizens to digital netizens, this experiment must be conducted before such transformations become untestable. Finally, beyond the consideration of the research design, Chinese rural areas are worth studying for their own sake. A significant amount of the Chinese population still resides in the countryside, and as such, Chinese peasantry is usually regarded as a significant obstacle to democracy (Zhong 2005). It is crucial to see whether the Internet can help rural populations become more informed, democratically-minded citizens. The study provides firsthand information on the Internet's usage by villagers, and would be among the first to empirically address the Internet's political causal impact in rural China.

In a more general sense, the study can contribute to the literature on the Internet in countries with authoritarian regimes, which fits broader democratization theories as well as the topic on media and politics. (Moore 1993) points out that a common factor for a successful transition is a need for social change to accompany technological change. The Internet could be the technological factor in the Chinese context; however, researchers must be cautious as to how far the Internet argument can extend and exactly what changes the Internet both can and cannot bring.

APPENDIX A Feedback Sheet

Name: _____

Date: _____

How many times did you come here and use the Internet this week: _____

Have you used the Internet in any other places this week?

1. Yes, where? _____ 2. No

1. How long did you use the Internet today?

1. Half an hour
2. One hour
3. Two hours
4. Three hours
5. More than three hours

2. What did you mainly do online?

1. Read news (for how long?): _____
2. Search for farming information
3. Searching for information about family tourism businesses
4. Searching for other useful information, i.e. _____
5. Online shopping
6. Researching policies/government information
7. Online entertainment (listen to music, watch TV, watch sports, and play online game) (for how long?) _____
8. Use the email, chat on QQ
9. Other (please specify): _____

3. What websites did you visit today (please give three examples)?

1. _____
2. _____
3. _____

4. Did you read or leave comments online today?

1. Read comments (on which website?) _____
2. Left comments (on which website?) _____
3. No

5. Did you use/write wechat, webo, QQ space, or other blogs today?

1. Yes: what content?
 - A. About daily life/personal life
 - B. Forward/retweet/repost or comment on news
 - C. Other (please specify) _____
2. No

APPENDIX B
Political Knowledge and Entertainment Questions (Multiple Choice)

Political Knowledge Questions on the Pretest

1. Do you know what office Li Keqiang holds now?
2. According to the Constitution of the People's Republic of China, which entity is the highest state body in China?
3. Who is the current first lady in China (the wife of the president)?
4. It was reported that nearly 10,000 dead pigs were found in ___ river in March 2013, a source of drinking water for local residents.
5. In May 2013, in which country did a Chinese visitor engrave "been here" in a temple?
6. According to the Ministry of Health of the People's Republic of China, what healthcare delivery system will cover serious diseases like lung cancer and gastric cancer by 2013, with a reimbursement rate that will be higher than 90%?
7. Which of the following conferences were held in Guiyang, Guizhou this May?
8. Who is the current president of the United States?
9. In which country is the headquarters of the United Nations located?
10. Which of the following Middle Eastern countries is currently engaged in civil war?
11. Which of the following countries has sent representatives to China to discuss its nuclear weapon issue?

Political Knowledge Questions on the Posttest:

1. Which country launched a manned spaceflight in June this year?
2. Which province had earthquakes rating up to 6.6 in the Richter scale in July?
3. Who was beaten to death by the municipal police (*chengguan*), using a weight from a hand-held scale in Linwu, Hunan province?
4. Do you know what office Li Keqiang holds now?
5. What was the case Li, Tianyi, the son of a famous singer, general Li Shuangjiang, involved in?
6. Who is the current first lady in China (the wife of the president)?
7. Where did Ji Zhongxing, a man in a wheelchair from the Shandong province, detonate a small device that injured himself?
8. Where did a man slam a 2-year-old girl to death on the street on July 23?
9. Which of the following provinces suffered from drought that impacted more than 80 counties?
10. Who is the current president of the United States?
11. Which country is Duchess Kate, who gave birth to a baby boy in July, originally from?
12. Which of the following countries was involved in dispute of the Diaoyu islands with China?

Entertainment Questions on the Pretest:

1. What kind of sports team is the Maotai Renhe of Guizhou?
2. Which of the following film directors won the best director for this year's Academy Award?

Entertainment Questions on the Posttest:

1. Who was the Chinese athlete that won Gold in the 400m freestyle in 2013 World Aquatics Championship?
2. Who was the self-proclaimed qigong master whose pictures with celebrities and VIPs were exposed recently?

APPENDIX C

Political Attitude Questions (Multiple Choice)

The following questions were developed to measure each of four core components of democratic values:

Democratic elections.

- 1) "National leaders should be selected by open and fair elections." (The response categories were: "Strongly disagree," "Disagree," "Neutral," "Agree," and "Strongly agree.")
- 2) "Which of the following two aspects is more important for democracy? Allowing more than two competing political organizations exist," or "The government listening to other political organizations' suggestions."
- 3) "We should preserve a democratic election even though some problems exist."

Rule of law.

- 1) "In order to create faster economic growth, the government could ignore laws and regulations."
- 2) "On important cases, judges should heed the opinion of local government (especially when the plaintiff or the defendant is the local government)."

Liberties and civil/political rights.

- 1) "Which opinion do you agree with more? The news media should keep reporting on official corruption and government's wrongdoings," or "Too many negative reports will harm the country."
- 2) "Which opinion do you agree with more? Protecting freedom of speech should be among the top aims of our country," or "Government should decide which topics are allowed to discuss by the public."
- 3) "If you have to choose between two goals: protection of civil liberties and developing state's economy, which one do you think is more important? Protection of civil liberties is absolutely more important, protection of civil liberties is more important, economic development is more important, and economic development is absolutely more important."
- 4) "Please select three rights that you consider as the most important, second most important, and third most important: right to life, right to work, right of privacy, right to vote, right to express/freedom of speech, right to participate in politics, freedom of religion, freedom of assembly." Respondents who chose either the "right to life" or "right to work" as most important received a score of 0, and received a score of 3 for selecting any of the other options. Similar for the second, and third most important rights, respondents scored 0 if they chose the "right to life" and "right to work," but received 2 points if they chose other options they considered to be the second most important rights, and 1 point for options they considered third most important. The answers were first summed together for

each subject; six was the highest potential score (three subjects scored zero as they did not choose their second and/or third important rights). The sums were then rescaled as 1 (least), 1.67, 2.33, 3, 3.67, 4.33 and 5 (most) to measure the prioritization of civil liberties.

Tolerance and political efficacy.

- 1) "Assemblies and demonstrations should be prohibited.
- 2) "Government leaders are like the head of a family; we should all follow their decisions."
- 3) "It would be best if ordinary people were involved in the decision-making process regardless of their knowledge of politics."

The questionnaire also directly asked questions about participant's understanding of democracy and their perception of its importance.

Perception of democracy.

- 1) "People often differ in their views of what is essential to democracy. If you have to choose from the following list, which one would be the most essential characteristic to a democracy? Opportunity to change government officials through elections (coded as 5 points), freedom to criticize those in power (4 points), a small income gap between the rich and poor (2 points), basic necessities like food, clothes and shelter for everyone (1 point), can't choose (3 points)."
- 2) "Societies are democratic only when officials listen to the public opinion."
- 3) "In a developed democracy, there will be less corruption."
- 4) "Democracy harms economic development."
- 5) "Democracy enables people to freely express themselves and their opinions."
- 6) "How important is it for you to live in a country that is governed democratically? Very important (coded as 5 points/coded with value one), somewhat important (3.67 points), not very important (2.33 points), not at all important (1 point)."

APPENDIX D Questions on Independent Variables

Political satisfaction

Political satisfaction measures respondents' satisfaction with their government's performance and the political environment (Zhong 2005, 196). The following five questions were used to test respondents' political satisfaction; all were coded on a five-point scale and summed to a political satisfaction index varying from 5 to 25. Therefore, the average score for each individual subject was between 1 to 5; (the sum of the provided answers were divided by the number of questions each person answered):

- 1) "In general, how do you feel about democracy development in China?" "Very good (coded as 5 points)," "good (4 points)," "not good not bad (3 points)," "not very good (2 points)," and "very bad (1 points)."
- 2) "Do you agree that our courts always penalize criminals even when the criminals are higher officials?"
- 3) "To your knowledge, do you feel the government and official media frequently hide important information from people/the public?" "Never (5 points)," "occasionally (3.67 points)," "most of the time (2.33 points)," "always (1 points)."
- 4) "Do you trust the following institutions?" "The courts," "the central government," "the local government," "the police," "the news media," and "the Internet?" "Very trustworthy (coded as 5 points)," "trustworthy (4 points)," "untrustworthy (2 points)," "very untrustworthy (1 points)," and "don't know (3 points)."
- 5) "Although there are various problems, the current political system fits best for China's current situation."

Socioeconomic satisfaction

Socioeconomic satisfaction estimates individuals' contentment with their own life in terms of social and economic status (Zhong 2005, 198). The following two questions were used to test respondents' political satisfaction; both were coded on a five point scale and the sum of the socioeconomic satisfaction index varied from 2 to 10; resulting in the average ranged from 1 to 5:

- 1) "As for your own family, how do you rate your economic situation today?" "Very good (coded as 5 points)," "good (4 points)," "not good not bad (3 points)," "bad (2 points)," and "very bad (1 points)."
- 2) "Many people think that every family's social status is different. How do you rate your family's social status?" "Very high (coded as 5 points)," "high (4 points)," "medium (3 points)," "low (2 points)," and "very low (1 points)."

The assumption was that people who were satisfied with their current personal situation or political environment tended to prefer the *status quo* and were less supportive of democratic values; this might have had the potential to bring fundamental change to Chinese society and personal lives (Zhong 2005). Therefore, political and socioeconomic satisfactions were used as control variables while detecting the Internet's impact on participants' political orientation.

Politics Interests and political efficacy.

Political interest measures the respondent's interests in government and politics while political efficacy is the "feeling that individual political action does have, or can have, an impact upon the political process" (Campbell et al. 1954, 187). Individuals who have higher degrees of political efficacy are more confident in their capacity to influence the public decision, so they tend to be more supportive of democratic values, which emphasizes public participation (Zhong 2005).

- 1) "How interested would you say you are in political social matters? (ie. the affairs of state, current news, and public affairs)." "Very interested (coded as 5 points)," "somewhat interested (3.67 points)," "not very interested (2.33 points)," "not at all interested (1 points)."
- 2) "Rate how well you agree or disagree with the following ideas: The general public has no influence on the government."
- 3) "Politics are too complex to understand."
- 4) "I am capable of participating in politics."
- 5) "The State Council's nutrition program has allocated funds for poor village students for three Yuan per student lunch; however, the Xinhuanet reported that in Fenghuang County, Hunan Province, the lunch for students only has a value of two-Yuan. What is your reaction to this news?" "Strongly against the school's action (coded as 5 points)," "disagree with the school's action (4 points)," "neutral (3 points)," "understand and agree with the school's action (2 points)," and "understand and strongly agree with school's action (1 point)."
- 6) "If you were a villager from Fenghuang County, what would you do in such a situation? (You may choose more than one answer)." "Complain to the school authority," "complain/petition to the local authority," "contact the news media to report the issue," "organize fellow villagers to address this issue together," "sign a petition," "protest," "other," "take no action." The answers were summed up as follows: Respondents scored one if they chose any one of the actions, two if they chose any two actions, and so on. If the respondent chose "take no action," their response was scored as zero.
- 7) "When having questions/problems about the public issues in your village, have you ever expressed your ideas through the following ways?" "Attend villager-meeting," "express your view to higher levels of government leadership."

Demographics.

The questionnaire included items collecting basic demographic information: age, education, gender, income, occupation, and ethnicity. I also inserted questions regarding a participant's political orientation such as party membership (whether a member of the Communist Party), whether self or a family member was an officeholder, and whether self or a family member was a migrant worker.

APPENDIX E
Additional Estimation of the CACE in the Conventional Design:
Political Knowledge

CACE in the news and control/partial news groups

The estimated coefficient of the ITT is .638 between the treatment group (news group) and the control group (see the section of Estimation of Intent-to-Treat effect). In order to estimate the ITT_D , actual treatment (Treated) was regressed on treatment assignment. Treatment is scored 1 if the subject visited the Centers at least once and 0 otherwise. Treatment assignment (Assigned news group) is scored 1 if the subject is assigned to the treatment group and 0 otherwise.

Table 6.14. Estimation of the ITT_D (the news and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.508	0.065		
Assigned news group	0.088	0.093	0.948	0.345

Dependent Variable: treated

The coefficient 0.088 indicates that assignment to the treatment group caused 8.8% of the targeted subjects to be treated. The estimated share of Compliers in the subject pool is 8.8%⁴⁶.

The CACE between the news and the control groups is estimated using a two-stage least squares (2SLS) regression. The results showed that visiting the Center to read some online news increased political knowledge scores by 7.247 points among Compliers (see Table 6.15).

Table 6.15. Estimation of the CACE (the news and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.993	5.374		
Treated	7.247	9.71	0.746	0.457

Finally, we present the calculation of the ITT, the ITT_D , and the CACE by hand, which matches the results of the regression analysis.

⁴⁶ The number of compliers in both the treatment and the control groups affected the calculation of the compliance rate. As mentioned in Chapter 4 the control/partial news group had a large number of one-time visitors who were recruited at the Center and used the Internet after they filled out the pretest questionnaires. They were counted as treated and were non-compliers, which partly contributed to the low compliance rate among subjects.

Table 6.16. Post knowledge scores by experimental group

	Treatment group	Control group
Post knowledge score (N treated)	5.91(34)	4.47 (30)
Post knowledge score (N untreated)	4.43(23)	4.90 (29)
Overall post knowledge score (total N)	5.32(57)	4.68 (59)

The ITT is the difference in means between the treatment (5.32) and the control groups (4.68), which equals 0.64. Participants assigned to the treatment group have a political knowledge score 0.64 higher than those assigned to the control group. The ITT_D is the proportion of treated subjects in the news group (0.596) minus the proportion of treated subjects in the control group (0.508), which equals 0.088. In other words, the rate of Compliers equals the proportion of Always-Takers and Compliers in the treatment group subtracted by the Always-Takers in the control group (Gerber and Green 2012, 178). Therefore, the estimate of CACE is formed by the ratio of the two estimates – ITT/ITT_D – which equals 7.25, thereby confirming the results obtained through the regression analysis.

CACE in the entertainment and control/partial groups

As mentioned in Chapter 4, we will compare the entertainment and control groups to estimate the effect of entertainment usage and test the hypothesis that accessing the Internet for entertainment purposes would not increase participants' political knowledge. The treatment group thus becomes the entertainment group in this comparison and the control/partial news group still serves as the control group. Adopting the conventional approach, we scaled the ITT effect of assigned to treatment by the proportion of Compliers to estimate the CACE.

The ITT is minus .428, which implies that being assigned to the entertainment group caused a .428 point decrease in the outcome; however, the result is not statistically significant (see Table 6.17).

Table 6.17. Estimate of ITT (the entertainment and control/partial groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	4.678	0.399		
Assigned entertainment group	-0.428	0.572	-0.748	0.456

Dependent Variable: Post knowledge

The ITT_D equals 0.081, which indicates that assigned to the entertainment group caused 8.1% of the targeted subjects to be treated (see Table 6.18).

Table 6.18. Estimation of the ITT_D (the entertainment and control/partial groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.508	0.065		
Assigned entertainment group	0.081	0.093	0.866	0.389

Dependent Variable: Treated

The CACE of minus 5.296 indicates that using the Internet for entertainment purposes at the Centers decreased political knowledge by 5.296 points among Compliers. However, the result is not statistically significant at the 0.05 level (see Table 6.19).

Table 6.19. Estimation of the CACE (the entertainment and control/partial groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	7.371	4.751		
Treated	-5.296	8.649	-0.612	0.542

APPENDIX F
Additional Estimation of the CACE in the Conventional Design:
Political Attitudes

CACE in the news and control/partial news groups

We switched the reference group from entertainment group to the control/partial news group and ran the same regression as was presented in the first section of this chapter. The estimated coefficient of the ITT was -.116 between the treatment group (news) and the control group (partial news) (refer to Table 7.11). In order to estimate the ITT_D , actual treatment (Treated) was regressed on treatment assignment. Treatment received a score of 1 if the subject visited the Centers at least once and 0 otherwise. Treatment assignment (Assigned news group) received a score of 1 if the subject was assigned to the treatment group and 0 otherwise.

Table 7.11. Estimated ITT (news and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.459	0.047		
Assigned news group	-0.116	0.067	-1.728	0.044

Dependent Variable: Political Attitudes

Table 7.12. Estimation of the ITT_D (news and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.508	0.065		
Assigned news group	0.088	0.093	0.948	0.345

Dependent Variable: Treated

The coefficient 0.088 indicates that assignment to the treatment group caused 8.8% of the targeted subjects to be treated. The estimated share of Compliers in the subject pool was 8.8%.

The CACE, between the news and control/partial news groups, was estimated using a two-stage least squares (2SLS) regression. The results showed that visiting the Center to read some online news decreased participants' support for democratic values by 2.334 points among Compliers, though not significantly (refer to Table 7.13).

Table 7.13. Estimation of the CACE (news and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	4.735	2.629		
Treated	-2.334	4.632	-0.504	0.615

CACE in the entertainment and control/partial news groups

We compared the entertainment and control groups to estimate the effect of entertainment usage and test whether accessing the Internet for entertainment purposes

would or would not change the participant's political attitudes. The treatment group now became the entertainment group in this comparison, and the control/partial news group served as the control group. Adopting the conventional approach, we scaled the ITT effect of Groups assigned to treatment by the proportion of Compliers to estimate the CACE.

The ITT is -.029, which implies that subjects assigned to the entertainment group caused a .029 decrease in support for democratic values; however, the result was not statistically significant (refer to Table 7.14).

Table 7.14. Estimate of ITT (the entertainment and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	3.459	0.047		
Assigned entertainment group	-0.029	0.068	-0.425	0.672

Dependent Variable: Political Attitudes

The ITT_D equaled 0.081, identical to the estimation in chapter 6 for the political knowledge section. Subjects that were assigned to the entertainment group caused 8.1% of the targeted subjects to be treated (refer to Table 7.15).

Table 7.15. Estimation of the ITT_D (the entertainment and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>Sig.</i>
(Constant)	0.508	0.065		
Assigned entertainment group	0.081	0.093	0.866	0.389

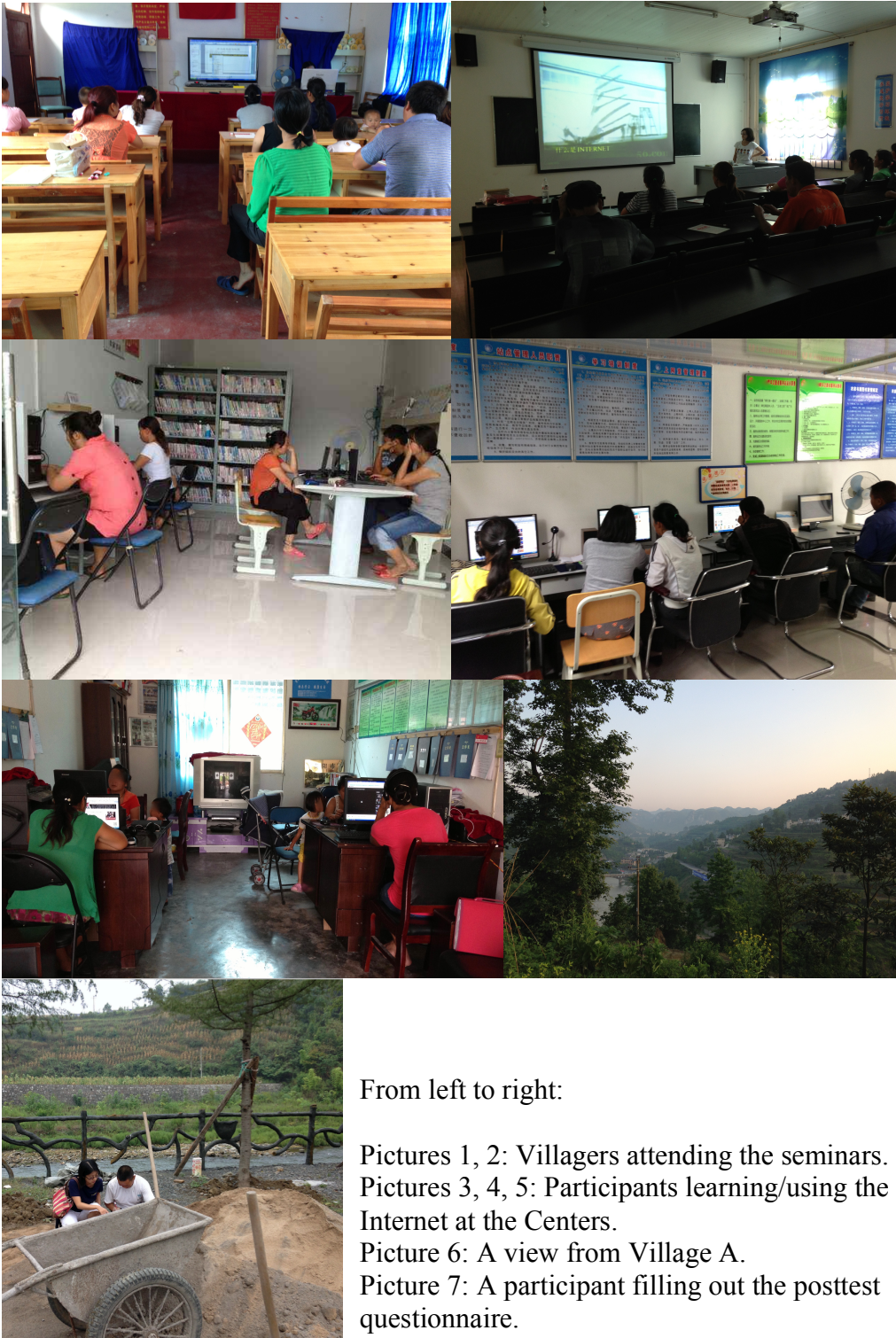
Dependent Variable: Treated

The CACE is obtained by the 2SLS regression; the value of -0.317 indicates that using the Internet for entertainment purposes at the Centers decreased support for democratic values by 0.317 points among compliers. However, the result is not statistically significant (refer to Table 7.16).

Table 7.16. Estimation of the CACE (the entertainment and control/partial news groups)

	<i>B</i>	<i>SE</i>	<i>T</i>	<i>Sig.</i>
(Constant)	3.621	0.469		
Treated	-0.317	0.846	-0.375	0.708

APPENDIX G Pictures Taken in the Field



From left to right:

Pictures 1, 2: Villagers attending the seminars.
 Pictures 3, 4, 5: Participants learning/using the Internet at the Centers.
 Picture 6: A view from Village A.
 Picture 7: A participant filling out the posttest questionnaire.

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ABSTRACT**HOW DOES EXPOSURE TO THE INTERNET AFFECT POLITICAL
KNOWLEDGE AND ATTITUDES AMONG RURAL CHINESE?:
A FIELD EXPERIMENT**

by

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The Internet's political implications reach far beyond an advanced communication device in authoritarian regimes. The heated debate on the Internet's political potential in China is complicated by a lack of causal evidence demonstrated in the literature. Thus far, studies have only examined consequences of the rise of the Internet and the characteristics of netizens (*wangmin*), but they have failed to account for the possible transformative effect the Internet has on individual citizens. This study attempts to fill this gap by testing the impact of the Internet on rural Chinese villagers' political knowledge and political attitudes through a field experiment over a period of four months. Three computer centers in three villages of two different townships were set up for the experiment. The participants were randomly assigned to three groups. The treatment group was asked to read news for at least 15 minutes every time they visited the research sites. The placebo group used the Internet for entertainment purposes. The

control group was not invited to use the Internet during the experiment but was informed about delayed treatment. Data analysis suggests that participants in the news group exhibited better political knowledge on the posttest, which has significant implications for their future political advocacies and engagement. However, the effect of the Internet on participants' political attitudes is less certain. Although the experiment results suggest that the short-term exposure to the Internet did not change participants' political attitudes, the long-term effect of reading online news is not yet known. Indeed, during their interviews, participants revealed that reading online news and comments was an eye-opening experience for them. Participants also became more opinionated in discussing politics during interviews after receiving the treatment and interacting with various online contributors.

AUTOBIOGRAPHICAL STATEMENT

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