Linguistic Barriers to State Capacity and Ideology: Evidence from Communist China

PRELIMINARY AND INCOMPLETE

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Abstract

We study the role of media in the origins of state capacity and as an instrument to achieve policy objectives. In particular, we explore its negative implications during two episodes of Maoist China: the Great Leap Forward and the Cultural Revolution. During the 1950s, the government developed a network of wired broadcasting to disseminate state rhetoric. To combat localism, media content was largely delivered in the national standardized language: Mandarin. This allows us to construct a measure of exposure based on the interaction of radio density and intelligibility of local dialects with Mandarin. While the presence of radio increased the local intensity of both campaigns, the effect was especially pronounced where Mandarin was more widely understood. Individuals more exposed to propaganda were also more likely to join the Communist Party later in life, highlighting ideology as a key mechanism of governance.

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1 Introduction

Nations and governments differ in the ability to adopt policy positions they intend to achieve. This "capability to take action", broadly conceived as state capacity, is increasingly invoked as a foundation for economic development. But the historical reality of centralized "infrastructural power" is more caustic and nuanced. We explore the determinants and constraints of state capacity, as well as its perverse consequences, over two historical episodes in the setting of Maoist China.

The Great Leap Forward and the Cultural Revolution were central policy agendas which required local implementation. They encompassed large scale political campaigns requiring participation at many levels of government. This leads to the question central to our inquiry: how did a young and relatively poor government coordinate such transformative public programs across a massive geographic space? We provide empirical evidence that Communist state leveraged state-sponsored media as a nation-building strategy to instill ideology and to ensure cooperation. Persuasion became a key instrument of administrative and bureaucratic power.

Specifically, we examine the role of radio propaganda on the local enforcement of policies desired by the central government. We establish that radios played a key role in the extent to which local governments carried out Maoist policies. Though the consequences we examine are similar, we show that the mechanism to this end goal is different but complementary. During the Great Leap Forward, propaganda mobilized bureaucrats and local officials toward increased procurement and collectivization. On the other hand, during the Cultural Revolution, popular participation was encouraged, as propaganda and indoctrination were aimed at the masses. In both scenarios, the central government effectively used the media to achieve its goals of mobilizing the agents necessary to the implementation of its policies.

First, we develop a way to measure the intensity of exposure to radio broadcasting on a county level. From the 1950s onward, the Communist Party began developing a wired broadcasting network to disseminate politicized state rhetoric. The Communist Party invested heavily in radio infrastructure, creating a way in which it could quickly and easily reach all its constituents, even peasants living in the remote countryside. These broadcasts became a ubiquitous and an unavoidable feature of daily life.

While the presence of the propaganda was pervasive, the comprehension and reception of the message was not uniform. China was undergoing a process of language standardization during this time. As an attempt to combat localism and foster integration, there was severe restriction on the use of minority dialects in radio broadcasts. Media content was largely delivered in the national standardized language: Mandarin. As a result, the propaganda effort was muted in areas whose people did not comprehend Standard Mandarin. We exploit this institutional detail to create a novel measure of the intensity of treatment. This enables us to determine the contemporaneous

effect of media on the intensity of the Great Leap Forward as well as Cultural Revolution at a fine geographic level, as well as how differences in individual exposure to state ideology affect later life outcomes.

Leveraging prior work in experimental linguistics and linguistic genealogy, we quantify a local dialect's intelligibility with Standard Mandarin. This measure of linguistic distance in conjunction with the provincial radio density allows us to construct a proxy for the intensity of propaganda that reflects both the passive access to radio broadcasts as well as the active salience of the broadcasts. Ultimately we examine the relationship between this interaction term and compliance with the Great Leap Forward as well as the intensity of the Cultural Revolution in each county.

We use a similar outcome measure to define compliance with the Great Leap Forward and intensity of the Cultural Revolution. Utilizing previous literature which has shown that more zealous counties experienced a higher mortality rate during the Great Leap Forward (Meng et al., 2015), we use mortality rate as a proxy for the compliance with the Great Leap Forward policies. For the Cultural Revolution, we use a direct measure of the number of killings directly associated with Cultural Revolution activities as reported in local gazetteers. We establish that counties which had *both* a higher level of comprehension of Mandarin and more robust radio infrastructure experienced greater level violence, and *only* in counties where Mandarin was readily understood, was radio particularly effective in mobilizing popular participation.

Thus, the success of indoctrination hinged not only on the availability of broadcast infrastructure but also on the linguistic compatibility of the listening public. This joint requirement of access and reception suggests that state capacity was constrained by linguistic differences. This result highlights a persistent tension faced by the state, between effective administration and centralization of policy. The Communist Party in China preferentially privileged the usage of Mandarin in media in order to combat localism and as a tactic of nation building. However, this policy was at odds with the simultaneous goal of spreading ideology among a linguistically heterogeneous state. Ironically, the language barrier to state capacity during the Great Leap Forward and Cultural Revolution constrained the excess of deaths. Normative implications aside, our results provide a context for why linguistic homogenization is often an implicit or explicit policy in the state building strategy of governments.

China is a well suited quasi-experimental setting in which to study the linguistic constraints on state capacity. China is composed of hundreds of mutually unintelligible dialects, with the degree of intelligibility sometimes decreasing gradually with distance, sometimes sharply. Unlike other modern nation states with the same level of linguistic diversity, most of China's linguistic variation does not stem from ethnic differences. Whereas other linguistically fragmented states such as former Yugoslavia are recent inventions of international diplomacy, China is an organically consolidated nation state with a long history of unified identity. Linguistic differences in China reflect historical

migration patterns and language diffusion of cultural groups that were no longer salient by the eve of the events studied. There is no sense that an individual from Shanghai or Guangzhou who does not speak Mandarin is any less Chinese than an individual from Beijing who does. The unique intersection of linguistic heterogeneity and ethnic homogeneity lends itself to plausibly exogenous variation for causal identification.

In addition to examining the contemporaneous effects of propaganda, we also investigate its persistent effects to further pinpoint the ideological mechanism which incited individuals to action during Maoist China. We draw our evidence from the China Family Panel Studies (CFPS) survey. We investigate if the effect of propaganda is especially persistent for those belonging to certain impressionable age groups, particularly youth, at the start of the Cultural Revolution. We find that individuals between the age of 10 and 21 at the start of the Cultural Revolution who understood Mandarin are more likely to join the Communist Party later in life. This result coincides with both the psychological and historical literature regarding the susceptibility of adolescents to media indoctrination and the age of the offenders in the Cultural Revolution. The fact that we find cohort effects only among Mandarin speakers is further evidence that ideology is the primary channel of significance.

This paper contributes to the literature on state capacity and linguistic diversity. Fractionalization is a barrier to state capacity, hindering the government's ability to rule over its people. Outcomes due to this limitation on state capacity are found to have an unfavorable impact on the country. Numerous studies have attributed this diversity to political instability, poor political and economic institutions and low economic growth. Easterly and Levine (1997) find that GDP growth is inversely related to fractionalization across a large sample of countries. La Porta et al. (1999) find that ethnolinguistic fractionalization is important in determining the quality of government. We provide a clear mechanism of the limits to centralization when there is fractionalization. During the Cultural Revolution in China, linguistic fractionalization prevented the state from carrying out its goals by constraining the audience of state sponsored media, limiting the scope of persuasion. This provides evidence that linguistic standardization augments state capacity and linguistic differences constrain the transmission of state ideology.

Our work also complements recent work exploring the effect of state propaganda on violence. Voigtländer and Voth (2014) find that highway building during the Nazi regime was a form of propaganda which garnered support for the Nazi party. Media in the form of radio specifically has also been the subject of recent literature. Yanagizawa-Drott (2014) finds that radio broadcasts encouraging violence during the Rwandan genocide increased militia violence. Adena et al. (2014) attributes the rise of Nazi support partially to the influence of radio propaganda. Our paper explores the effect of propaganda in novel setting – the Cultural Revolution, in addition to exploring a broader set of outcomes and long term consequences of propaganda (Alesina and Fuchs-Schündeln (2007)).

Many papers have also explored the long run outcomes of living through the Cultural Revolution, both on an individual level and geographic level. Meng and Gregory (2007) find that those whose education was disrupted during this time period faced a decrease in lifetime earnings. Zhou (2013) explores the long term effects of the send down movement on individuals, finding that those who were sent down in fact have better economic outcomes. Gong et al. (2015) explores the persistent effect of China's "send-down" movement during the Cultural Revolution, finding that those individuals who were sent down to work in the countryside are less likely to believe that external circumstances such as luck, control their lives. Gong et al. (2014) also find that these sent-down youth are more likely to experience mental health problems and chronic diseases. Bai (2014) investigates the economic legacies of violence during the Cultural Revolution, finding that more revolutionary regions were slower to industrialize and have a lower GDP. To our knowledge, we are the first to explore the causes of violence.

The rest of the paper proceeds as follows: Section 2 provides a brief history of the Cultural Revolution, and Section 3 describes our data. Then Section 4 explains the county level analysis, Section 5 describes the individual level analysis, and Section 5 discusses competing hypotheses. Concluding remarks are offered in Section 6.

2 Background

Mao era China began with the conclusion of the Chinese Civil War and the establishment of the People's Republic of China in October 1949, and ended with Mao's death in 1979. It was a period of severe sociopolitical upheaval with lasting political and cultural consequences. During the 1950s, Mao began a series of 5-year plans, intended to transform the country into a collectivized state. These plans were modeled after the Soviet Union's model of collectivization. Privately owned enterprises were transferred over to the state, industry was nationalized, and landowners were punished.

2.1 Great Leap Forward (1958-1961)

The Great Leap Forward was the second of Mao's 5-year plans (it was originally intended to run until 1963). It was a social and political movement to rapidly move China toward collectivized agriculture and rapid industrialization. However, these policies were a colossal failure, leading to the Great Famine.

The government relied on party officials as implementing agents of their policies. Private farming was banned in favor of communal farms. Grain was procured and stored collectively. The traditional way of life of peasants was destroyed, as their land was collectivized and they were forced to work

inhumane hours. Local cadres tortured and killed those who failed to keep up with the grain quota. Those who disobeyed were publicly humiliated or sent to labor camps. Struggle sessions took place, where individuals accused of disloyalty to the state were forced to confess their crimes.

Backyard steel furnaces were created. Efforts were made to collect scrap metal from households, including from pots, pans and spoons. Millions were diverted from their jobs in agriculture, schools, and hospitals to this steel production process. However, the steel produced from these backyard furnaces were very low quality and worthless.

The agricultural policies were a colossal failure, and this along with the diversion of agricultural workers to steel production led to the Great Famine. Local officials were under pressure to exaggerate their grain procurement. These reports were the basis of how much to allocate for export, resulting in very little grain left for local areas.

Thus, mortality rates, both from famine and killings from struggle sessions, were actually higher in areas which saw higher compliance with Great Leap Forward policies (Meng et al., 2015).

The failure of Mao's policies during the Great Leap Forward led directly to the Cultural Revolution.

2.2 Cultural Revolution

The Cultural Revolution began in the wake of the disastrous famine and economic consequences of government policies implemented during the Great Leap Forward, and ended as China began its steps toward economic liberalization. It began as a campaign to solidify Communist principles, but devolved into a historical tragedy that claimed the lives of millions.

The Cultural Revolution began with the ostensible purpose of consolidating the progress made in the Communist Revolution and to preclude the re-emergence of inequitable and capitalist tendencies. In reality, Cultural Revolution was borne out of factional in fighting between Mao and other senior party leaders within the Chinese Communist Party (CCP) leadership. Following the failure of the Great Leap Forward, Mao found himself increasingly marginalized and isolated from the political process in the central committee. In his absence, party leadership endorsed more conservative policies which partially restored limited free market practices. As a result, in 1966 Mao launched the Great Proletarian Cultural Revolution with an intent to regain effective decision making and "cleansing the class ranks" of "bourgeois elements".

The first two years of the Cultural Revolution, from 1966 to 1968, were characterized by violence and breakdown in social order. Individuals deemed incompatible with the socialist system were persecuted, including intellectuals, senior party officials, rich peasants, teachers and elites. These "class enemies" were subject to public denunciations, forced self criticisms, and beatings if not outright death. School and universities were shut down so that youths could devote their time to

revolutionary activity. Mao mobilized the Red Guard, a revolutionary youth organization which targeted the easily molded minds of the youth. The Red Guards terrorized class enemies, which included teachers and even own family members. Since there were no official rules about how to identify anti-Revolutionaries, even ordinary citizens began to incite violence as a way to prove loyalty to the revolutionary cause. While the Great Leap Forward relied on the compliance of implementing agents, the Cultural Revolution was a bottoms up campaign aimed at the masses.

State apparatuses such as the police and the military were largely paralyzed. Legitimacy during the Cultural Revolution grew from association with Mao and active suppression of revolutionaries was politically problematic. Hitherto, Red Guards acted with impunity and chaos ensued. In addition to attacking people, historical culture and art were also attacked. The "Destroy the Four Olds" movement encouraged the destruction of old customs, habits, culture, and ideas. This led to the ransacking and desecration of cultural relics, temples, literature, artwork, and religious items reminiscent of "old culture" (Spence (1991), MacFarquhar and Schoenhals (2009)). According to varying sources, between 200,000 and 8 million were killed, and many more were victims of persecution (Walder and Su (2003)).

In mid 1968, with the violence escalating, Mao ordered the Red Guard movement to be disbanded. He feared that further disorder might prove to be detrimental, if those inciting violence became uncontrollable. In response to the revolution's excesses, Mao began the "Up to the Mountains, Down to the Countryside" Movement, also known as the *sent down movement*, during which 17 million youth from the cities were sent to the countryside to learn from farmers and villagers. Although rural rustication was framed as a necessary reeducation, it served a dual purpose to defuse violence and lower unemployment in the cities. With schools shut down, youth had nowhere to go. Mao depicted this movement as a patriotic event, so former Red Guards and youth volunteered to be rusticated. Red Guards were disproportionately likely to have been sent down either out of their own volition or ideological manipulation, although many were also forcibly sent down to the countryside as part of compulsory policy.

During this time period, the goal was to stabilize and consolidate Mao's party. Ironically the very individuals that responded to Mao's call for revolution were politically suppressed and relocated in this period of the Cultural Revolution. It was a much calmer phase than the preceding period. The focus was on pragmatism of policies, but party dissidents were also purged. The Cultural Revolution effectively ended with the death of Mao in 1976.

2.3 Propaganda and Program Participation

The successful implementation of the Great Leap Forward and the Cultural Revolution hinged on participation at different levels of the government. A central topic of inquiry in the study of these

programs centers around the question of why individuals chose to participate.

In initiating the Cultural Revolution, Mao bypassed traditional party infrastructure and reached out directly to millions of youths who readily responded. Beginning in Beijing, grassroots Red Guard organizations formed within the first months of the Cultural Revolution and at its peak, there were an estimated 11 million Red Guards across the country. The overwhelming mass response became the instrument of Mao's de facto power and featured integrally in his ability to remove his opponents.

Both scholars writing contemporaneously during the midst of the Cultural Revolution and researchers writing retrospectively have noted the pervasiveness of propaganda during this time period and have contemplated its role in facilitating the events (Jan (1967), Howse (1960), Markham and Liu (1969)). The Communist party itself was keenly aware of media as source of indoctrination and social control. The amazing alacrity with which Chinese government developed its network of state sponsored media following its establishment in 1949 was described by Western sources as the "most extensive propaganda effort" in history (Howse (1960)).

While premeditating the Cultural Revolution, Mao deliberately took control of propaganda during the Socialist Education Movement of 1962-1965. During this time period, political propaganda actively promoted the demagoguery of Mao and emphasized *Maoist* thought over any semblance of orthodox Marxism. The worship of Mao intensified to a unprecedented level and this cult of personality laid the foundation for the subsequent mass mobilization. Mao's collected quotes were published "Quotations from Chairman Mao Zedong", which became one of the most printed books in history, with more than 1 billion copies in circulation between 1964 to 1976.

Mao's direct channel of communication with the people enabled him to subvert party leadership when his power within the party diminished. Instead of instructing the people to follow authority, Mao now sanctioned attacks on figures of authority and those with whom he disagreed with in the Communist Party. The masses had already been indoctrinated to recognize the authority of Mao over the party, so he was easily able to persuade the people to follow his word to turn against authority.

Propaganda was delivered through a variety of mediums: books, posters, newspapers, magazines, and radio. Because of the largely rural and illiterate populace, radio became a particularly effective channel of persuasion and state communication.

2.4 Radio Content and Scope

Radio broadcasts were a unavoidable part of everyday life in China from mid 1950s onward. Because personal receiver sets were costly to manufacture and private ownership were scarce, radio broadcasts were typically transmitted through wired loudspeakers. Wired loudspeakers were cheaper to

build en mass, and also allowed the Communist government complete control over listening content.

Most villages were equipped with central listening stations, typically in public spaces such as town squares or production center, where people gathered to listen to radio broadcasts (see Figure 10). Listening was largely compulsory as the loudspeakers broadcasted for set hours each day.

Propaganda constituted a significant portion of the content over the airwaves. On average, radio broadcasts on the eve of the Cultural Revolution would last 435 minutes per day, consisting of program announcements (5%), educational programs (16%), newscasts (29%), weather (20%), agricultural programs (7%), and entertainment (41%). In addition to newscasts, even educational and agricultural programs would include propaganda. Newscasts would consist of broadcasts from the Central People's Broadcasting Station, the official party station, including programs such as "Quotations from Chairman Mao," "Selected Reading of Chairman Mao's Works," and leaders' speeches (Jan (1967)). Entertainment included revolutionary songs and dances. All Western influences, including music, were purged, leaving only party propaganda. Agricultural programming consisted of half technical advice and half propaganda, which included speeches of model farmers. Propaganda and indoctrination totaled 85% of broadcast time.

Plans to extend the radio broadcast system were implemented beginning in the 1950s. The Communist Party built up extensive radio infrastructure across the country, and by the start of the Cultural Revolution, radio broadcasting had reached over 95% of counties, with 11.5 million radio receiving sets across the country, amounting to 1.6 radios per 100 people (Latham (2007)) and at least 6 million loudspeakers. The number of loudspeakers increased dramatically to more than 100 million by the 1970s. The integration of radio programs with political agenda forced the people to focus on the goals of the nation. Political indoctrination created a mass political awakening and nationalized public attention. The unified content of the coercive listening system fostered a sense of unity that was especially apparent and effective among poorly educated peasants in rural areas and among the youth. The radio network across China thus helped to shape the image of national authority (Liu (1971a)).

The ubiquity of radio infrastructure and unavoidable nature of radio broadcasts allowed the Communist Party to regularly communicate with the masses. However, even though nearly everyone was exposed to this propaganda, comprehension varied across the country. In an attempt to combat localism and to facilitate integration, it was mandated that all official party propaganda transmitted through the wired rural broadcast network be conducted in Standard Mandarin. As a result, in provincial counties where the native dialect was not Mandarin only an estimated 15% of audience members could actually comprehend the centrally relayed broadcasts from Beijing (Liu (1971a)). Zhou Enlai himself remarked in 1958:

> Radio and the cinema are powerful publicity instruments. But as our common speech has not yet been made universal, their effectiveness in the districts where only local

dialects are spoken is inevitably limited. (Liu (1971a))

We exploit this important historical detail in our paper.

2.5 Language Standardization and Policy

China is a linguistically diverse nation, within which the predominant language is Chinese, or *Hanyu*.[1] Chinese itself refers to a collection of related but often mutually unintelligible dialects. The varieties of Chinese resemble distinct spoken languages united by a single written script and shared cognates.[2] The varieties of Chinese differ mainly in their phonology and to a lesser degree, syntax and vocabulary. Linguists have categorized the varieties in several different ways, but most agree that there are between seven and ten groups, only one of which is the Mandarin family.[3] There is a general consensus of a North and South division with more pronounced variation in the rugged South.[4]

Before the ascendance of the Communist party in 1949, there was no national standard language. A common governmental language existed in the form of *Guanhua* during the dynastic periods but it was used only by upper echelons of bureaucrats and magistrates (Ramsey (1987)). In the incipient years of Communist rule, the regime was quite tolerant of minority dialects as the Communist revolution had drawn its support from the largely dialect-speaking rural peasant population. But by 1955, the government had become highly cognizant of linguistic barriers to national construction and in a little publicized Conference on Standardization of Chinese Language in 1956, a simplified version of Standard Mandarin was devised and promoted as the common tongue.

This language policy was implemented into language practices through different mechanisms including laws, regulations, language education policies, language exams, and restriction of minority language use in public spaces (Barnes (1982)). In 1956, primary school teachers were trained in the standard language and use of minority dialects in schools or over the airwaves was rebuked. Even the primacy of propaganda had to be subjugated under the directory of language standardization. Thus the use of Mandarin in propaganda in counties where it was not understood should not be considered an oblivious oversight by a non optimizing bureaucrat. Rather, it was a calculated choice

[1] There are also at least nine groups of non Chinese languages spoken by ethnic minorities within the present PRC borders. These are excluded from consideration.

[2] To fix ideas, a helpful analogy can be drawn to variations within the Western Romance languages. But unlike the Romance languages, the differences in Chinese dialects reflect only the spoken form. There is only one written form of Chinese, which would be used for anyone writing or reading Chinese. Henceforth we will refer to the varieties of Chinese as dialects for simplicity.

[3] The common agreed upon groups include: Mandarin, Hakka, Cantonese, Wu, Gan, Min, and Hui. This level of categorization subsumes a great deal of underlying differences as there is local variation even within these broad groups.

[4] Northern China is composed of flat central plains whereas the South is riddled with mountains and rivers.

under constraints and a careful trade off between the static efficiency of persuasion and dynamic efficiency of linguistic standardization.

3 Data, Variable Definitions and Summary Statistics

3.1 Intensity of Cultural Revolution

The main outcome of interest is the intensity of the Cultural Revolution. On the county level, the proxy for intensity is the number of killings due to Cultural Revolution violence. The data was collected by Walder and Su (2003) from county annals published in the late 1980s, and the violence data was digitized by Bai (2014). The geographic distribution of county level deaths from this data is shown in Figure 4b. China's tradition of compiling gazetteers dates back to the Qin dynasty, when they consisted of basic maps. These gazetteers were mostly compiled from local instead of national directives. Over time, the annals became more detailed and contained information about a county's boundaries, population, geographic features, customs, and ethnographic information.

The annals from where our data comes from included narratives and personal anecdotes of the violence that occurred during the Cultural Revolution compiled from local archives and official investigations in the 1970s and 1980s. Because of the details of the Cultural Revolution, compilers faced a dilemma of how to precisely record this history. In 1985, national standards were established, to record the history of the Cultural Revolution in "broad strokes, not in detail." Each county was at liberty to interpret this phrase however it wanted to. Some of the annals were very lengthy and detailed, including details on the method of killing, while others were brief and conservative. Although these annals contained varying degrees of details, they all included specifics on the number of deaths. The reason for this investigation into the number of deaths due to the Cultural Revolution came from a directive to compensate wrongfully persecuted victims and their families as well as to punish perpetrators Su (2011). The data that Walder and Su (2003) compile come specifically from violence that occurred between June 1966 and December 1971.

Walder and Su (2003) estimate between 750,000 to 1.5 million killed due to violence from the Cultural Revolution, after accounting for under reporting. In addition to the violence dataset, we also use several rounds of country-wide census data from 1964, 1982, and 2000. This data comes from the University of Michigan's China Data Center. Table 9 shows the county level histogram of percentage killed by county, and Figures 4 show the geographic distribution of deaths, by count and percent of county population, respectively.

3.2 Radio Network Data

Important to our analysis is the geographic distribution of the rural broadcasting network which transmitted content from the broadcasting nuclei to its periphery. Radio programs were broadcast via loudspeakers to the listening public, but we do not have precise information on either the placement or number of the installed loudspeakers. Instead, we construct a proxy for the variation in radio coverage based on the locations of radio stations.

Radio signals from the central government in Beijing were not relayed directly to loudspeaker systems in each county; instead, they had to be relayed to provincial or provincial radio stations first, before being transmitted to local radio speakers, and then to loudspeakers. Wired radio speakers were gathered into nets, called radio diffusion exchanges. Each exchange received programs from both central and provincial radio stations through aerial receivers or through telephone lines, which it then distributed over a system of wires to loudspeakers in public places: factory shops, dormitories, and other areas were large groups of people could hear the broadcasts. This wired system enabled complete control over listening content, with all loudspeakers within the same net receiving the same message (Houn (1957)).[5]

Because of the engineering requisite to these radio diffusion exchanges, the density of radio stations had a first order effect on local loudspeaker coverage. The growth in local loudspeaker networks was in proportion to the development of the central radio broadcasting stations Liu (1971b). Using historical archival data on the locations of radio stations, we compute the number of radio stations in each province as a measure of local loudspeaker density. Figure 5 shows the geographic distribution of these radio stations across China in 1962 on the eve of the Cultural Revolution.

While the Communist government pursued an ambitious plan to expand radio infrastructure nationwide, the reality of development was uneven. There is surprising amount of variation in the aggregate number of radio stations provincially, even after normalizing for province size. The number ranges from one to ten stations per province. The differential scope in radio infrastructure can be largely attributed to the main constraint to its construction: electricity.

Sustained radio operation required a consistent source of electrical power. By the mid 1960s, widespread electrification still eluded significant portions of China. Large power plants were concentrated only in coastal locations and former Japanese occupied regions of Manchuria. This was despite the call for installation of large hydro and thermal plants in Beijing's first Five Year Plan, initiated in 1956. The actuality electrification campaign consisted of crude generating plants of every conceivable method; for example, small hydro motors, hand generators, gas motors, and wind motors.

As a result, radio development was confined to areas areas where the power supply was relatively

[5]This system of radio diffusion exchanges was modeled after a very similar system in Soviet Union.

sufficient. This pattern of radio stations is confirmed in the data as radio station presence is most prevalent along the two main railroad routes at the time: from Beijing to Hangzhou, and from Guandong to Hangzhou, as well as near tributaries of major waterways. In some parts of the country radio infrastructure was bootstrapped from older telephone lines.

As should be expected, the distribution of radio station was not random. However a central determinant, electricity, reflects technological limitations rather than considerations immediately pertinent to the political climate. Thus, the distribution of radio stations is tangential to the incidences of the Culture Revolution.

3.3 Linguistic Data

Our identifying variation is generated by differences in regional vernacular dialects and heterogeneity in their compatibility with Mandarin. We assemble this data in two steps. First, we identify the spatial variation in dialects across China from *The Language Atlas of China*. The Language Atlas is a compilation of local linguistic studies documenting Chinese dialects and their genealogical relationships. The digitized data is organized at the county level. It records the primary dialect spoken in each county, other minor dialects present if available, and the dialect families they belong to. We restrict our attention to linguistic diversity within ethnically Han population and exclude observations, primarily in autonomous regions, where non Chinese languages, such as Turkic, Altaic, or Mongolian languages are observed. This mitigates possible confounding bias of ethnicity.

Second, to assess the strength of each dialect's linguistic distance to Mandarin, we appeal to experimental data collected by linguists in the field. Tang and Van Heuven (2009) studies the strength of pairwise mutual intelligibility between Chinese dialects. They relate functional intelligibility between dialects to proximity in lexical structural and phonological regularity.

The authors conducted an extensive experiment in order to find the mutual intelligibility between pairs of Chinese dialects. 150 native speakers of each of 15 different Chinese dialects were subjected to a listening exam where they were asked to identify words and sentences read by speakers of another dialect, including their own. The listening exam was administered via a recording of 288 standard Chinese core words read by a native speaker of each dialect. The participants resided in rural areas and were around the age of 50 in 2009, and thus, were youths at the time of the Cultural Revolution.[6] From this experiment a measure of bilateral intelligibility between dialects was compiled. The findings are shown in Figure 7. From this chart, we focus on the row "Beijing," which represents the ability of listeners of each dialect to correctly identify words from the Mandarin dialect. Since only 15 dialects were studied instead of the entirety of Chinese dialects, we use each

[6]Therefore, their intelligibility scores would closely reflect intelligibility of youths during the time period we are interested in.

of these dialects to be the representative of the family of dialects that they originate from.

We construct our analytical dataset by combining the geographical data on variation in the dialects spoken by county and the proximity of each of these dialects to Mandarin.

3.4 Individual-level Data

Individual-level microdata comes from the China Family Panel Studies (CFPS), a cross sectional and contemporary survey. The CFPS is a longitudinal survey conducted by the Institute of Social Science Survey of Peking University in China, consisting of data relating to respondents' educational outcomes, family dynamics, migration and health. Demographic information include date of birth, province of birth, province of residence at various points throughout one's childhood, send down movement experience, gender, ethnicity, parents' occupation, hukou status and language spoken at home. The CFPS dataset consists of 33,000 individual observations.

The specific individual level outcomes that we study in our paper are revolutionary activity, occupational choice, and attitudes on wealth and inequality.

To measure revolutionary activity, we examine the responses to the following questions:

- "Are you a member of the Communist Party of China?" We refer to joining the Communist party within 45 years of birth as *communist*
- "Have you had any of the following life experiences?" Choices include the "Send-Down" experience, referred to as *sent-down*.

We measure attitudes on wealth and inequality by examining the following questions:

- "How much do you agree with the following statement? The income gap has to increase for economic prosperity?" Answers on a 1-5 scale, where 1 means strongly disagree, are referred to as *tolerance of inequality*.
- "How much do you agree with the following statement? Wealth reflect an individual's achievement," Answers on a 1-5 scale, where 1 means strongly disagree, are referred to as *materialism*.

In addition to these outcome variables, we also proxy for comprehension of Mandarin during the respondent's youth with a dummy variable indicating if the primary language used in daily communication with the respondent's family is Mandarin Chinese, as opposed to a Chinese local dialect or Minority ethnic dialect. This variable is referred to as *mandarin*. Summary statistics are shown in Table 1.

4 Empirical Strategy & Results

In this section, we study the consequences of radio propaganda in mediating the intensity of the Cultural Revolution. Our empirical strategy is motivated by the institutional features of the historical episode, where both the penetration of the broadcast network and the local people's ability to comprehend Mandarin influenced the strength of exposure.

To preview our results, we find that only counties with both a higher concentration of radio infrastructure and whose main dialect is highly intelligible with Mandarin experienced a greater degree of violence during the Cultural Revolution. Neither speaking Mandarin nor having a high radio network concentration alone are able to explain Cultural Revolution intensity; rather, it is the interaction of comprehension and availability of the messages that result in a higher observed number of killings per county during this time period.

We begin by documenting patterns of descriptive associations central to our research design. We relate the strength of the radio network provincially and the intelligibility of a county's main dialect with Mandarin to the local intensity of the Cultural Revolution in two separate regressions. Specifically the two estimating equations are:

$$CR_{c,p} = \alpha_r radio\ density_p + \boldsymbol{\gamma}\mathbf{X_{c,p}} + u_c \tag{1}$$

$$CR_{c,p} = \alpha_l Mandarin_c + \boldsymbol{\gamma}\mathbf{X_{c,p}} + \delta_p + u_c \tag{2}$$

We regress the number of casualties attributed to Cultural Revolution violence in county c of province p, $CR_{c,p}$, first on the number of radio stations in province p, and second on an indicator variable for whether the local dialect in county c is Mandarin.

$\mathbf{X_{c,p}}$ is a vector of the following controls on the county level: 1964 population, area, number of households, administrative classification, number of historical Buddhist temples, gender ratio, ethnolinguistic fragmentation, distance to Beijing, fraction of non agricultural population, and geographic characteristics, and the following variables on the province level: 1964 population, area, and controls on the intensity of the Great Leap Forward as proxied by dining hall participation, steel production, and collectivization.

In the second specification, using a dummy for speaking Mandarin as the independent variable, we include a province fixed effect. δ_p, to capture residual unobserved variation across provinces. Columns 1 and 2 of Table 4 report the regression results. Counties located in provinces with a higher concentration of radio stations experienced a greater level of violence after controlling for observables. In addition, Mandarin speaking areas had significantly more deaths than their non

Mandarin counterparts within the same province. The effect is sizable and corresponds to a near 25% increase in overall death toll if the entire country was Mandarin-speaking. Overall the findings confirm that the degree of violence varied systematically with the density of radio stations and the local dialect spoken.

4.1 Baseline Specification & Robustness

To delve further into detail, we turn to our main empirical analysis. We test a hypothesized implication of the institutional detail that broadcasts were conducted primarily in Mandarin: if the effect of radio was particularly salient in areas of Mandarin compatibility and tempered elsewhere. In order to do this, we investigate the interaction between radio coverage and linguistic comprehension. Equation 3 describes the baseline specification:

$$CR_{c,p} = \alpha_r radio\ density_p + \alpha_l Mandarin_c + \beta Mandarin_c * radio\ density_p + \boldsymbol{\gamma}\mathbf{X_{c,p}} + u_c \quad (3)$$

where all variables are defined as above ($\mathbf{X_{c,p}}$ is a vector of covariates including the following variables on the county level: 1964 population, area, number of households, administrative classification, number of historical Buddhist temples, gender ratio, ethnolinguistic fragmentation, distance to Beijing, fraction of non agricultural population, and geographic characteristics, and the following variables on the province level: 1964 population, area, and controls on the intensity of the Great Leap Forward as proxied by dining hall participation, steel production, and collectivization), and the coefficient of interest is β. Our econometric framework relies on the interaction between the two sources of variation, *radio density* and $Mandarin$, and only the interaction is to be interpreted as plausibly exogenous. The key identifying assumption is that the interaction term between $Mandarin_c$ and $radio\ density_p$ is orthogonal to other determinants of violence. We address the concern of the potentially endogenous selection of radio station locations with our specification.

Because β captures the relative difference in the degree of violence between Mandarin and non Mandarin speaking counties in provinces of high radio coverage versus low radio coverage, our strategy is similar in spirit to a traditional differences in differences framework, only exploiting comparisons across space rather than time. Analogously, identification requires that the unobserved differences between Mandarin and non Mandarin counties in high radio density provinces to be comparable to the unobserved differences between Mandarin and non Mandarin counties in low radio density provinces in a counterfactual world in the absence of radio stations. This assumption would be violated if radio stations were installed more heavily in places where the Mandarin speaking counties were expected to be more violent. We argue this is implausible, given that this would be a peculiar criteria for selection of radio station placement on the part of Communist regime, and because radio station construction were largely governed by technological constraints.

Nevertheless, we make progress towards addressing selection and examining the validity of our research design by performing extensive robustness checks where we include full interactions of the $Mandarin_c$ dummy with reasonable control variables as well as controlling for potential omitted variables explicitly. Drawing on the growing and emerging literature on determinants of violence, we add controls to dissuade potential competing stories. Specifically, we add 1968-1969 monthly precipitation given the various findings documenting the relationship between climate and violence (Miguel et al. (2004)), geographic controls based on agricultural suitability and ruggedness of terrain to account for the links between geography and institutions (Nunn and Puga (2012), Jia (2014)), historical development to accommodate for unobserved difference in economic opportunities across locations, and historical conflict to address potential persistence in violent behavior (Bai and Jia (2016), Dube and Vargas (2013)).

The estimates from our main estimation equation are presented in the last three columns of Table 4. The raw relationship without controls is reported in column (3). Whereas the coefficients on just *radio density* and $Mandarin_c$ are negative or small, we detect a meaningful and significant positive coefficient of 0.011 on the interaction term.

In our preferred specification in column (4), we include the same set of controls as in our preliminary regressions above which included crude measures for pre-revolutionary economic conditions, Communist party strength measured by Great Leap Forward intensity, and population demographic characteristics. The estimated effect is largely comparable. In counties that speak Mandarin, an extra radio per province leads to about a 0.01 percentage point increase in the number killed per county, relative to non Mandarin speaking areas in the same province. This is a meaningful effect, as the average percent killed per county is 0.042 percent. The response to propaganda is amplified by the interaction between ubiquity of propaganda along with ability to comprehend the propaganda. With the inclusion of the interaction term, the coefficient on $Radio\ Network$ alone becomes economically small and statistically insignificant, and the coefficient on $Mandarin$ alone is negative, as compared to columns (1) and (2). This is evidence that the unique intersection between comprehension of radio broadcasts as well as access to radio broadcasts was a mechanism in driving Cultural Revolution violence. Access without comprehension, or vice versa, was not sufficient.

In the last specification, column (5), we include controls from the 1982 Chinese census which offers a more extensive set of pertinent variables: employment, GDP, percent industrial population, sex ratio, total population, population density, birth rate, death rate, infant mortality, college attending rate, junior high school attending rate, percent agricultural population, and percent illiterate, and 1990 controls: ethnic fractionalization. We include these controls which were measured after the historical period of interest (and thus might be thought of as "bad" controls) because these variables were not available in earlier censuses. However, we check if these extra controls would affect our estimates, as it might be problematic if they did. If conditions in 1982 were reflective of conditions from 1964, then a large change in our estimate would indicate omitted variables bias. We detect

that the coefficient remains very stable.

To further assess robustness, we successively include more controls to our baseline specification that correspond to the various literature on determinants of violence as described above. These results are shown in Table 5. Column (1) refers to our baseline specification. In the subsequent columns we successively add more controls; in column (2), we interact $Mandarin_c$ with other control variables and include additional geographical variables such as coastal status, river, ruggedness of terrain, etc; in column (3), we control for crop suitability of the local soil; in columns (4) and (5), we add controls for incidents of historical conflict such as Taiping rebellion as well as proxy for historical development such as number of civil service entrants; lastly in column (6), we include 1968 and 1969 monthly precipitation. The coefficient stays remarkably consistent and significant across all specifications. This alleviates concerns regarding our empirical strategy.

4.2 Alternative Specifications

One might think that results are driven by Mandarin speakers being somehow different – that they more educated, or more "Communist" than Non-Mandarin speakers. However, in the early days of the Cultural Revolution and during the rise of the Communist Party, language standardization had nothing to do with Communism. The National Language Unification Commission established the Beijing dialect of Mandarin as the standard language of the country in 1932, and the People's Republic retained this standard when they took power in 1949. In addition, in the early days of the Republic, there was no sense in which Mandarin speakers were more educated (although this may be the case today, as Mandarin is the official language taught in schools). Since language standardization was still beginning to take effect at the start of the Cultural Revolution, language comprehension was a matter of location, not of education. In the individual level regressions, the "Mandarin" dummy refers to the language that the individual speaks at home, which is more reflective the respondent's native language and language spoken during the time of the Cultural Revolution, even if he currently comprehends Mandarin.

In a similar vein, one might question whether Mandarin speakers and non Mandarin speakers have a different sense of identity. If this were true, Mandarin speakers might have more motivation to act upon messages they hear from radio broadcasts, while non Mandarin speakers may ignore these messages, even if they do understand them. However, we emphasize that the linguistic divisions we explore are variations within the Han Chinese ethnicity. There is no "Mandarin" identity that Mandarin speakers feel a loyalty to. Thus, theories from literature on identity and conflict do not apply in this context. Speakers of different dialects are not hostile toward one another, and there has been no history of conflict among Han ethnic groups. The Han Chinese do not see Mandarin as the language of an outsider, but rather, just another dialect of China. These institutional details are evidence that non Mandarin speakers were less receptive to the messages of propaganda not

because of identity, but because they were less able to understand these messages. A balance test between Mandarin speaking and non-Mandarin speaking counties is shown in Table 3.

To further dissuade concerns that our results are driven by fundamental differences between Mandarin and Non Mandarin locations, we also use a more continuous measure of language, *experimental intelligibility* The *experimental intelligibility* measure is created from data collected in Tang and Van Heuven (2009). Since they only focus on 15 dialects, we use each dialect they study as the representative dialect for that group or supergroup of languages, depending on the granularity of the dialects in the Tang and Van Heuven (2009) study. This measure is constructed using the percentage of the 266 core Mandarin words understood by the sample of 150 speakers of each representative dialect. We standardize these comprehension measures by subtracting the percent understood by native speakers of each dialect.

Because there are differences in mutual intelligibility with Standard Mandarin between dialects within the Mandarin supergroup as well as variation across other language groups, this continuous measure utilizes more variation that is arguably more exogenous. The main regression we run is the same as Equations 2 and 3, but instead using the *experimental intelligibility* specification for *language*.

In Table 6, we present the analogous results from Table 4, but using the *experimental intelligibility* as a measure of *language*. In the first column, we find that a higher intelligibility with Mandarin leads to a higher percent killed due to Cultural Revolution violence in that county. This is suggestive evidence that radio propaganda contributed to a greater intensity of the Cultural Revolution in counties which spoke Mandarin, through the channel of language comprehension. In the second column, we present results from Equation 3, and find that a higher percent intelligibility of Mandarin interacted with number of radio networks per province also leads to a higher percent dead in a county. In the last column, we restrict the analysis to non-Mandarin speaking counties, exploring the variation in language only among this group.

Next, we consider an alternative measure of broadcast infrastructure. Additional to simply the number of radio stations provincially, we also observe the location of these stations. Under the assumption that wired broadcast network expanded concentrically from these stations, we calculate the distance to the nearest station from the centroid of each county as a proxy for the density of broadcast network of that county.

We find that the shift in violence varied systematically with proximity to the nearest radio station *only* for Mandarin speaking counties. Areas located near radio stations but with low mutual intelligibility with Mandarin dialect showed no differential increase in intensity of conflict while Mandarin speaking counties do. This stark contrast illustrates radio coverage mattered only in Mandarin speaking locations.

The result is robust across several different definition of distance, using ln(Distance to Nearest Station) as well as dummy variable for being located within 120 km (mean distance) of radio station.

Altogether the findings illustrate linguistic barriers to the state capacity for unilateral persuasion.

5 Individual Level

In addition to examining the effects of a linguistic barrier to state propaganda on the county level, we also explore these consequences on an individual level. This allows us to augment the cross sectional analysis of the previous section by exploring time variation across birth cohorts and within county variation in languages understood, to address concerns of omitted variables in the county level regressions. Here, instead of using violence as the outcome, we use several other contemporaneous measures of revolutionary behavior, including joining the Communist Party and participating in the send down movement. We then examine the long term implications of these consequences. The identification strategy will involve a difference-in-differences strategy in which we focus on those who lived through the Cultural Revolution during their youth, or the *impressionable years*, and compare the difference for Mandarin versus non-Mandarin native speakers during this time period.

5.1 Empirical Strategy: Effects of Propaganda on Revolutionary Activity

First, we investigate the effect of propaganda on revolutionary activity, for age cohorts who are most likely to be swayed by ideology. Using a difference-in-differences approach, we use comprehension of Mandarin as a channel for the influence of propaganda, and study if youth at the start of the Cultural Revolution who comprehend Mandarin are more likely to be revolutionary. This would be evidence language is a channel through which propaganda propagates.

We focus on teenage cohorts due to evidence from the *impressionable years hypothesis*, which states that the historical environment to which one is exposed to during the transition between adolescence and adulthood has a profound impact on one's attitudes and world views. After this time of plasticity, beliefs become set and become permanent afterwards. Young adults are especially vulnerable to shifts in attitudes in political beliefs (Alwin and Krosnick (1991), Flanagan and Sherrod (1998)). There is no consensus for which ages exactly are the impressionable ages. Some see the age of 18 as the end point, but others see the process of socialization lasting until the age of 25. In addition to the psychology literature, the history of the Cultural Revolution itself also suggests that adolescents might be the most influenced by propaganda during this time period. The Red Guard movement specifically targeted youth to join the revolutionary cause, and most Red Guards were between 12 and 17 years old (Jing (1991)). For this reason, we will define the age

group of 10-21 as the impressionable years, and explore robustness to these age categories later in the paper. Using the 10-21 age group incorporates both the historical details of the Red Guards during the Cultural Revolution as well as evidence from psychology literature outlining the most impressionable years.

The Cultural Revolution was not the first instance in history during which youth were the targets of propaganda. During the Nazi regime in Germany, youth were similarly targeted due to their naivete (Hoffmann (1996)). Giuliano and Spilimbergo (2014) examines outcomes on beliefs among those who lived through recessions during their impressionable years. Medical literature has also found strong associations between adolescents and risky behavior (Escobar-Chaves and Anderson (2008), Klein et al. (1993)).

We thus explore the effects of understanding Mandarin among the cohorts for whom propaganda was the most salient. Since the outcome variable, revolutionary activity, is not directly recorded in the data, we use proxies for this: joining the Communist Party within 45 years of birth (*Communist*) and participation in the send down movement (*send down*). Joining the Communist Party was a rigorous process in which decisions were made on the basis of applicants' ideological criteria. The send down movement targeted the most revolutionary youth, in order to diffuse violence in the cities. The difference-in-differences regression we estimate is as follows:

$$activity_{ijc} = \alpha mandarin_i + \gamma CR\ cohort_j + \delta CR\ cohort_j * mandarin_i + \omega_c + X_i\beta + \epsilon_{ijc} \quad (4)$$

In the equation above, $activity_{ijc}$ denotes the revolutionary intensity of individual i born in county c. The independent variable, $CR\ cohort$ is a dummy variable for belonging to the 10-21 age cohort at the start of the Cultural Revolution, $mandarin_i$ is a dummy for speaking Mandarin at home, ω_c is a county fixed effect, and X_i is a vector of individual level controls, including gender, education, age, age squared, father's education, mother's education, father's political party, mother's political party, father's occupation, mother's occupation, birth county, urban area of residence dummy, father's birth year, mother's birth year, own birth year, ethnicity, and parents' hukou status. The coefficient of interest is δ, the coefficient on the interaction term, which measures the effect of speaking Mandarin for the Cultural Revolution cohort.

We also explore robustness to this specification, by using 5-year birth cohort dummies instead of specifying the Cultural Revolution Cohort. The regression specification is as follows:

$$activity_{ijc} = \alpha mandarin_i + \sum_j \gamma_j birth\ cohort_j + \sum_j \delta_j birth\ cohort_j * mandarin_i + \omega_c + X_i\beta + \epsilon_i \quad (5)$$

In the equation above, $activity_{ijc}$ denotes the revolutionary activity, as proxied by *communist, send down*, and *send down duration*, of individual i born in county c of birth cohort j. The independent variables, $birth\ cohort_j$ are a set of dummies for the age category that an individual belongs to at

the start of the Cultural Revolution. The birth cohort categories are 30 and older, 25 to 30, 20 to 25, 15 to 20, 10 to 5, and 5 to 0 at the start of the Cultural Revolution in 1966. We explore robustness to these age categories as well. The coefficient of interest is δ_j, the set of coefficients on the interaction term between $birth\ cohort_j$ and $mandarin_i$. The controls are the same as Equation 4. This coefficient gives the effect of propaganda on being revolutionary, measured through the channel of speaking Mandarin at home, on those individuals belonging to a particular birth cohort.

5.2 Results: Effects of Propaganda on Revolutionary Activity

Table 10 displays the results for estimating Equation 4, the individual level analysis of the effects of propaganda on revolutionary activity, measured through a linguistic channel. In this specification, we find that belonging to the Cultural Revolution Cohort (those aged 10-21 at the start of the Cultural Revolution) and speaking Mandarin at home has a significant effect on revolutionary activity. The first column shows the results using joining the Communist Party within 45 years of birth as the dependent variable, and the second column shows the results using participation in the send down movement as the dependent variable. The coefficients of interest are the coefficients of *CR Cohort x Mandarin*. In the first column, we find that individuals who speak Mandarin and belong to the Cultural Revolution Cohort are 5.6 percentage points more likely to have joined the Communist Party. The table shows evidence that those who spoke Mandarin at home were significantly more likely to join the Communist Party, but only among those who were aged 10-21 at the start of the Cultural Revolution.

As a robustness check, instead of focusing on the Cultural Revolution Cohort, we use 5-year evenly spaced birth cohorts. This would determine if living through the Cultural Revolution during one's impressionable years has more of an impact than living through this time period during other years. We display the set of coefficients δ_j from Equation 5 in Figure 3. This figure plots out the coefficients on the interaction term, *Mandarin x Birth Cohort*, for each 5 year interval of age cohort. In this figure, it is evident that a jump in the coefficient of *Mandarin x Birth Cohort* occurs among those who were teenagers at the start of the Cultural Revolution (highlighted by the red circles). In Figure 1, we demonstrate evidence for the parallel trends assumption: controlling for covariates, Mandarin speakers and non-Mandarin speakers join the Communist Party at approximately the same rate, except for the Cultural Revolution Cohort (the estimates for the 1951 and 1956 cohorts between the two vertical red lines). This indicates that Mandarin speakers were no different from non Mandarin speakers, except during the time period of the Cultural Revolution. The points plotted here are the level effects for Mandarin speakers and non-Mandarin speakers joining the Communist Party. Reinforcing our county level analysis, we find that comprehension of Mandarin has a significant effect on revolutionary activity, suggesting that language was indeed a barrier to transmission of state ideology.

In Column 2 of Table 10, we present the analogous results to Column 1, using a dummy for participating in the send down movement as the dependent variable [7]. We find that like the results in Column 1, the effects on participating in this movement are most pronounced for youths aged 10-21 at the start of the Cultural Revolution. Analogously to Figure 1, Figure 2 plots out the trends for participating in the send down movement for Mandarin speakers and non Mandarin speakers over time. Again, Mandarin speakers of the Cultural Revolution cohort were significantly more likely to participate in the send down movement than non Mandarin speakers. In the case of the send down movement, we see a differential effect between Mandarin and non Mandarin speakers for youth aged 5-10, in addition to the Cultural Revolution Cohort. Due to the historical circumstances of the Cultural Revolution, this still aligns with our hypothesis that propaganda during the Cultural Revolution was more salient for Mandarin speakers. It is plausible that youth aged 5-10 were influenced by the propaganda during this time period.

Table 11 also shows results for a falsification test, where instead of using the Cultural Revolution Cohort as the treated cohort, we examine other cohorts to see if the effect of speaking Mandarin for these cohorts is significantly different from zero for these cohorts. We use the baseline specification, Equation 4. The birth cohorts are 0-9, 10-21 (Cultural Revolution Cohort), 22-32, 33+, and born after the Cultural Revolution. These birth cohorts are used to roughly be the same length of time as the Cultural Revolution Cohort. We find that for cohorts other than the Cultural Revolution cohort, there is no significant difference in revolutionary activity between Mandarin speakers and non Mandarin speakers.

The fact that we find cohort effects only among Mandarin speakers also lends credence to our identification strategy of using linguistic variation as a channel for revolutionary activity. At a county as well as individual level, we find that speaking Mandarin has significant effects on participation in the Cultural Revolution.

5.3 Empirical Strategy: Effects of Propaganda on Beliefs

In addition to examining the effects of propaganda on revolutionary behavior, we also explore the effects of propaganda on the persistence of revolutionary beliefs (*tolerance of inequality* and *materialism*). Using the same difference-in-differences framework as before, the regression specification for these regressions is as follows:

$$outcome_{ijc} = \alpha mandarin_i + \gamma CR\ cohort_j + \delta CR\ cohort_j * mandarin_i + \omega_c + X_i\beta + \epsilon_{ijc} \quad (6)$$

[7] As discussed in the historical background section, while the send down movement was a generalized policy administered to middle school students at large it was specifically aimed at dispersing Red Guards from concentrated urban areas and many former Red Guards had volunteered to participate out of ideological zealotry. Hence sent down participation can be considered a proxy for revolutionary behavior.

The dependent variable, $outcome_{ijc}$, denotes the revolutionary behavior of individual i of birth cohort j born in county c. This is the same specification as equation (4). The control variables are also the same as previous controls with additional income controls. The coefficient of interest is again δ, which gives the effect of speaking Mandarin on the outcome variable, among the birth cohorts who were most exposed to propaganda. This proxies the effect of propaganda on the outcome variable. We also explore robustness by using different *birth cohorts*, other than the Cultural Revolution Cohort.

5.4 Results: Persistent Effects of the Cultural Revolution on Beliefs

Table 12 shows the effects of propaganda on beliefs, where the outcome variables are *tolerance of inequality and materialism*. The first column presents results to answers to the question, "Income gap must increase for economic prosperity." On a 5-point scale, cohorts most exposed to propaganda, proxied by speaking Mandarin among the Cultural Revolution Cohort, show a lower tolerance for inequality. The second column presents answers to the question, "Wealth reflects an individual's achievement." Exposure to propaganda in this scenario also decreases the likelihood of agreeing with this statement. Those who were more exposed to propaganda are less tolerant of inequality and are less likely to believe that wealth reflects an individuals' achievement. These beliefs are consistent with the values of Communism.

We also falsification test results using treatment birth cohorts other than the Cultural Revolution Cohort in Table 13 to compare the effects of living through the Cultural Revolution during *impressionable years* versus other years, and find that Mandarin does not have a significant impact on beliefs among these other cohorts. Each panel shows a different regression, and the estimates are for the coefficients of the interaction between birth cohort and Mandarin. The birth cohorts are 0-9, 10-21 (Cultural Revolution Cohort), 22-32, 33+, and born after the Cultural Revolution. These birth cohorts are used to roughly be the same length of time as the Cultural Revolution Cohort. As the table shows, the only statistically significant coefficients are for the Cultural Revolution Cohort, indicating that only for this cohort did speaking Mandarin differentially affect one's beliefs later in life.

5.5 Coordination versus Indoctrination

In this section, we examine the channel through which propaganda operates. Propaganda can either operate through the mechanism of coordination, where messages are more salient among groups of people who act upon propaganda as well as spread the message to others, or through the mechanism of indoctrination, if propaganda is more of an individualistic experience. Previously, we found that individuals are more likely to join the Communist Party if they speak Mandarin at home.

In order to examine coordination effects, we see if revolutionary intensity is amplified by living in a predominantly Mandarin-speaking county. If there is amplification, this would be evidence of a coordination effect. Revolutionary intensity would have increased because more people were able to understand and spread revolutionary messages. On the other hand, if living in a Mandarin speaking area makes an individual no likelier to be revolutionary, then propaganda works only through the channel of indoctrination. The regression specification we run is as follows:

$$activity_{ijc} = \alpha mandarin_{home} + \gamma mandarin_{county} + \delta mandarin_{home} * mandarin_{county} + X_i\beta + \epsilon_i \tag{7}$$

The coefficient δ of the interaction term between $mandarin_{home}$ and $mandarin_{county}$ shows how living in a Mandarin speaking county and speaking Mandarin at home interact to affect revolutionary intensity, as measured by joining the Communist Party. The control variables, X_i, is a vector of individual level controls, which is the same as before. The controls are gender, education, age, age squared, father's education, mother's education, father's political party, mother's political party, father's occupation, mother's occupation, birth county, urban area of residence dummy, father's birth year, mother's birth year, own birth year, ethnicity, and parents' hukou status.

The results are shown in Table XX. We find that there is no amplification effect for those who both live in a Mandarin speaking area and speak Mandarin at home. In fact, we find that speaking Mandarin at home is only channel through which propaganda manifests itself. Living in a Mandarin speaking county itself does not seem to have an effect on joining the Communist Party. This is evidence the mechanism through which propaganda operates is not through coordination, but rather through individual indoctrination. Living in a place where others are more likely to comprehend the messages of the Communist Party does not make an individual any more likely to join the Communist Party, unless he is able to understand the messages himself.

6 Conclusion

In this paper we utilize a previously unexplored institutional detail of a widely studied historical phenomenon, the Chinese Cultural Revolution, to study the causal impact of state sponsored propaganda on collective conflict and long term individual outcomes. Our identification strategy illuminates the linguistic constraints to state capacity and contextualizes the effect of ethnolinguistic fractionalization.

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7 Tables

Table 1: Summary statistics

Variable	Mean	Std. Dev.	N
Dependent Variables			
Mandarin	0.188	0.391	28746
Communist	0.08	0.272	28746
Tolerance of Inequality	2.914	1.082	28030
Materialism	3.426	0.969	29782
Independent Variables			
Age	54.628	13.834	28746
Gender	0.486	0.5	28746
Urban	0.469	0.499	28746
Education	2.402	1.317	28736
Father's Education	1.779	1.052	22999
Mother's Education	1.364	0.763	24458
Member of a democratic Party (Mother)	0.0005	0.022	22636
Member of communist youth league (Mother)	0.014	0.116	22636
General public (Mother)	0.964	0.184	22636
Member of a democratic Party (Father)	0.002	0.049	22203
Member of communist youth league (Father)	0.014	0.118	22203
General public (Father)	0.838	0.369	22203

Note: Tolerance of Inequality and Materialism range from 1 to 5. Sent Down Duration is truncated at 40 years. Education values range from 1 to 8, in increasing level of education. All other variables are binary.

Table 2: Individual Level: Mandarin Speakers vs. Non Mandarin Speakers

	Non Mandarin Speaking			Mandarin Speaking		
Variable	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**
Percent Female	0.487	0.5	27399	0.473	0.499	6201
Education	4.734	3.623	27391	6.009	3.833	6199
Urban	0.429	0.495	27399	0.619	0.486	6201
Father's Education	1.865	1.075	22537	2.186	1.225	5132
Mother's Education	1.431	0.816	23805	1.779	1.085	5369
Age	50.573	16.506	27399	50.15	15.956	6201

Note: Education values range from 1 to 8, in increasing level of education. Urban is a binary variable.

Table 3: County Level: Mandarin Speakers vs. Non Mandarin Speakers

	Non Mandarin Speaking			Mandarin Speaking			
Variable	**Mean**	**Std. Dev.**	**N**	**Mean**	**Std. Dev.**	**N**	**p-value**
Non Agricultural Population	0.1	0.107	516	0.101	0.212	984	0.461
Male/Female Ratio 1964	1.082	0.166	516	1.056	0.086	984	1.000
Number of Households 1964	6.535	7.696	516	7.142	5.553	984	0.040
Township 1964	0.022	0.148	893	0.066	0.248	1529	0.000
Total Population 1964	2.779	3.467	516	3.139	2.400	984	0.0095
Industrial Population 1982	11.96	10.774	601	9.59	11.626	1102	1.000
Employed 1982	50.008	6.177	601	51.043	5.203	1102	0.0003
GDP 1982	558.612	597.683	601	527.858	611.255	1102	0.8413
Male/Female Ratio 1982	1.062	.0687	601	1.052	.0484	1102	0.9998
Illiterate 1982	36.131	16.316	601	36.464	13.201	1102	0.3239

Note: Non Agricultural Population, Industrial Population, Employed, and Illiterate are percents of total population. Number of Households is measured in 10,000 and Total Population is measured in 100,000.

Table 4: Media and Intensity of Conflict: Mandarin Indicator

	Percent of Population Killed				
	(1)	(2)	(3)	(4)	(5)
	Radio Network Density	Mandarin Indicator	Interaction	Interaction	Interaction
Radio Network (Number of Radio Stations Within the Province)	0.012***	–	-0.007**	0.001	-0.010
	(0.002)		(0.003)	(0.004)	(0.007)
Mandarin	–	0.022**	-0.058***	-0.043	-0.092**
		(0.010)	(0.017)	(0.027)	(0.045)
Radio Network x Mandarin Dummy	–	–	0.011***	0.010**	0.021**
			(0.003)	(0.005)	(0.008)
ln(Distance from Beijing)	-0.010*	0.013	–	-0.034***	-0.039***
	(0.006)	(0.009)		(0.006)	(0.008)
Linguistic Fragmentation	0.049	-0.033	–	0.057*	0.061**
	(0.031)	(0.031)		(0.029)	(0.029)
Control variables					
Geographic controls	X	X	–	X	X
Historical Buddhist Temples	X	X	–	X	X
Great Leap Forward Intensity	–	X	–	X	X
Census variables: 1964	X	X	–	X	X
Census variables: 1982	–	–	–	–	X
Observations	1882	1953	1953	1882	1497
R^2	0.130	0.223	0.024	0.114	0.103

Note: The dependent variable in each column is the percent of the population killed in each county attributed to the Cultural Revolution. In addition to the displayed covariates, each column also include a set of geographic controls which include a polynomial function of latitude and longitude of the county centers as well as classification of the size of cities. The first column presents selected coefficients from the estimation of 1. The coefficient of interest is the *Radio Density* variable which is the number of radio stations provincially. The second column provides the estimation result of 2. The independent variable of interest is *Mandarin Dummy* which is an indicator dummy that is one if the primary dialect spoken in a county belongs to the Mandarin family. Column 3 is the regression of violence on Radio Network, Mandarin dummy, and their interaction. Column 4 presents our main empirical specification, 3. The coefficient of interest is the interaction of *Mandarin Dummy* and *Radio Density*. Fifth column adds additional control variables that are available in the 1982 census, which includes *Employment, GDP, Birth Rate, Death Rate, Infant Mortality, Education, Industrialization, Literacy,* and *Ethnic Fractionalization*. The controls added in the third column can be considered bad controls but the coefficient of interest is remarkably consistent across specifications, regardless of controls. Standard Errors clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 5: Robustness

	Percent of Population Killed					
	Baseline Spec	(2)	(3)	(4)	(5)	(6)
Radio Network x Mandarin Dummy	0.010**	0.010**	0.014***	0.013***	0.012***	0.015**
	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.006)
Control variables						
Linguistic Fragmentation	X	X	X	X	X	X
Geographic controls	X	X	X	X	X	X
Historical Buddhist Temples	X	X	X	X	X	X
Great Leap Forward Intensity	X	X	X	X	X	X
Census data: 1964	X	X	X	X	X	X
Additional Geography (Rivers, Treaty Port Status, Coastal, etc):	–	X	X	X	X	X
Mandarin Interacted with (Buddhist Temple, Fragmentation, Population, Gender ratio):	–	X	X	X	X	X
Agricultural Suitability (Potato, Rice, Millet):	–	–	X	X	X	X
Historical Development (1820 Population, Jinshi, Officials):	–	–	–	X	X	X
Historical Conflict (Boxers, Taiping, Xinhai Rebellions):	–	–	–	–	X	X
Precipitation (Monthly Rainfall 1966):	–	–	–	–	–	X
Observations	1882	1378	1378	1378	1378	349
R^2	0.114	0.111	0.119	0.125	0.128	0.300

Note: This table examines the stability of the result with different sets of control variables. In the first column, we present the baseline specification which corresponds to column 4 in Table 4. Then in the remaining specifications we successively include more robust set of controls. Standard Errors clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 6: Media and Intensity of Conflict: Functional Comprehension

	Percent of Population Killed				
	(1)	(2)	(3)	(4)	(5)
	Functional Comprehension	Interaction	Interaction	Interaction	Interaction
Radio Network (Number of Radio Stations Within the Province)	–	-0.040	-0.030*	-0.025	-0.056**
		(0.024)	(0.016)	(0.016)	(0.023)
Experimental Intelligibility (% of Mandarin Words Comprehended)	0.080*	-0.255	-0.152	-0.138	-0.095
	(0.039)	(0.169)	(0.113)	(0.117)	(0.162)
Radio Network x Experimental Intelligibility	–	0.053*	0.052**	0.044**	0.100***
		(0.029)	(0.020)	(0.020)	(0.036)
ln(Distance from Beijing)	0.017**	–	-0.031*	-0.021	-0.053**
	(0.007)		(0.015)	(0.020)	(0.024)
Linguistic Fragmentation	-0.032	–	0.058*	0.047	-0.040
	(0.031)		(0.033)	(0.032)	(0.046)
Control variables					
Geographic controls	X	–	X	X	X
Historical Buddhist Temples	X	–	X	X	X
Great Leap Forward Intensity	–	–	X	X	X
Census data: 1964	X	–	X	X	X
Census data: 1982	–	–	–	X	–
Counties in Sample	all	all	all	all	non-Mandarin counties
Observations	1936	1937	1866	1673	567
R^2	0.219	0.026	0.114	0.112	0.115

Note: The dependent variable in each column is the percent of the population killed in each county because of the Cultural Revolution. In addition to the covariates that are displayed in the table, each column also include a set of geographic controls which include a polynomial function of latitude and longitude of the county centers as well as classification of the size of cities. The first column provides the estimation result of 2 but now with a continuous measure of intelligibility. The independent variable of interest is *Experimental Intelligibility* is a number between 0 and 1 indicating the % of Mandarin words correctly identified by the sample of 160 respondents for each dialect group in the linguistic experiment described in the paper. Column two presents our main empirical specification, 3, but now interacted with *Experimental Intelligibility* The coefficient of interest is the interaction of *Experimental Intelligibility*and *Radio Density*. Third column adds additional control variables that are available in the 1982 and 1990 census, which includes *Employment, GDP, Birth Rate, Death Rate, Infant Mortality, Education, Industrialization, Literacy,* and *Ethnic Fractionalization*. The controls added in the third column can be considered bad controls but the coefficient of interest is remarkably consistent across specifications, regardless of controls. The last column is the regression of second column but restricted only to sample of Non Mandarin counties. Standard Errors clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 7: Propaganda and Intensity of Conflict: Distance from Radio Stations

	Percent of Population Killed					
	(1)	(2)	(3)	(4)	(5)	(6)
	distance in km	log(distance)	within 120km	distance in km	log(distance)	within 120km
distance in *km*	-0.008**	–	–	-0.002	–	–
	(0.004)			(0.018)		
log(distance)	–	-0.008*	–	–	0.009	–
		(0.004)			(0.012)	
$\mathbb{1}\{\text{distance} < 120\text{km}\}$	–	–	0.013*	–	–	-0.018
			(0.007)			(0.019)
Control variables						
Linguistics controls	X	X	X	X	X	X
Geographic controls	X	X	X	X	X	X
Historical Buddhist Temples	X	X	X	X	X	X
Great Leap Forward Intensity	X	X	X	X	X	X
Census data: 1964	X	X	X	X	X	X
Counties in Sample	Mandarin only	Mandarin only	Mandarin only	non-Mandarin only	non-Mandarin only	non-Mandarin only
Observations	1371	1371	1371	582	582	582
R^2	0.121	0.106	0.105	0.098	0.100	0.100

* $p < .10$, ** $p < .05$, *** $p < .01$

Note: This table provides results from alternative specification where we examine the relationship between distance to radio stations and degree of violence. Regressions are run for set of Mandarin speaking counties and the complementary set of non-Mandarin speaking counties. Dependent variable in each specification is percent of population killed. "distance in *km*" is the distance in kilometers to nearest radio station. '"log(distance" is the log of distance in *km*. $\mathbb{1}\{\text{distance} < 120\text{km}\}$ is an indicator variable for if the nearest radio station is within 120km which is the median distance. The same set of control variables as Table 4 is included. Standard Errors clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 8: Propaganda and Intensity of Conflict: Distance from Radio Stations

	(1) distance in km	(2) log(distance)	(3) within 120km
Non-Mandarin Speakers × distance in km	-0.000	–	–
	(0.001)		
Mandarin × distance in km	-0.001***	–	–
	(0.000)		
Non-Mandarin Speakers × log(distance)	–	0.003	–
		(0.008)	
Mandarin × log(distance)	–	-0.006	–
		(0.005)	
Non-Mandarin Speakers × $\mathbb{1}${distance < 120km}	–	–	-0.019
			(0.022)
Mandarin × $\mathbb{1}${distance < 120km}	–	–	0.015*
			(0.008)
Control variables			
Linguistics controls	X	X	X
Geographic controls	X	X	X
Historical Buddhist Temples	X	X	X
Great Leap Forward Intensity	X	X	X
Census data: 1964	X	X	X
Observations	1953	1953	1953
R^2	0.082	0.079	0.081

* $p < .10$, ** $p < .05$, *** $p < .01$

Note: This table provides results from alternative specification where we examine the relationship between distance to radio stations and degree of violence. The dependent variable in each specification is percent of population killed. "distance in km" is the distance in kilometers to nearest radio station. "log(distance" is the log of distance in km. $\mathbb{1}${distance < 120km} is an indicator variable for if the nearest radio station is within 120km which is the median distance. The same set of control variables as Table 4 is included. Standard errors are clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 9: Linguistic Distance IV and Intensity of Conflict

	IV Linguistic Categories		
	(1)	(2)	(3)
Experimental Intelligibility (% of Mandarin Words Comprehended)	0.211***	0.203**	0.217**
	(0.069)	(0.093)	(0.095)
Distance from Beijing	-0.000***	0.000*	0.000**
	(0.000)	(0.000)	(0.000)
ln(Area in $Miles^2$)	0.003	-0.001	-0.004
	(0.003)	(0.004)	(0.006)
Non Agricultural Population	0.052***	0.036***	0.049***
	(0.010)	(0.011)	(0.006)
Gender Ratio	0.078	0.061	0.084
	(0.049)	(0.049)	(0.075)
ln(Households)	0.024	0.054**	0.054**
	(0.021)	(0.025)	(0.023)
ln(Population)	-0.043*	-0.074***	-0.076***
	(0.023)	(0.028)	(0.026)
Ethnic Fractionalization	–	–	-0.014
			(0.023)
1982 Census Covariates	No	No	Yes
Province Fixed Effects	No	Yes	Yes
Additional Geographic Controls	Yes	Yes	Yes
County Administrative Classification	Yes	Yes	Yes
Observations	1380	1396	1371
R^2	0.113	0.036	0.047
F	235.30	1096.813	996.639

Note: Each column presents the coefficients of 2SLS estimation of equation **??**, with different set of control variables instrumenting for *Experimental Intelligibility* with *Linguistic Structure*. The dependent variable in each column is the percent of population killed in each county during the Cultural Revolution. The endogenous variable is *Experimental Intelligibility*. The exogenous IV is *Linguistic Structure* which is a category variable that divides all dialects into eight categories of structural/morphological proximity to Mandarin, category 1 is the closest to Mandarin and includes Mandarin, while category 8 is the most dissimilar. The first stage indicates that *Linguistic Structure* predicts functional comprehension very well. In addition to the covariates that are displayed in the table, each column also include a set of geographic controls which include a polynomial function of latitude and longitude of the county centers as well as classification of the size of cities. The second column include province fixed effects. Third column adds additional control variables that are available in the 1982 and 1990 census, which includes *Employment, GDP, Birth Rate, Death Rate, Infant Mortality, Education, Industrialization, Literacy,* and *Ethnic Fractionalization*. The controls added in the third column can be considered bad controls but the coefficient on *Experimental Intelligibility* is remarkably consistent across specifications, regardless of controls. Standard Errors clustered on the province level * $p < .10$, ** $p < .05$, *** $p < .01$

Table 10: Revolutionary Activity of Mandarin Speakers of the Cultural Revolution Cohort

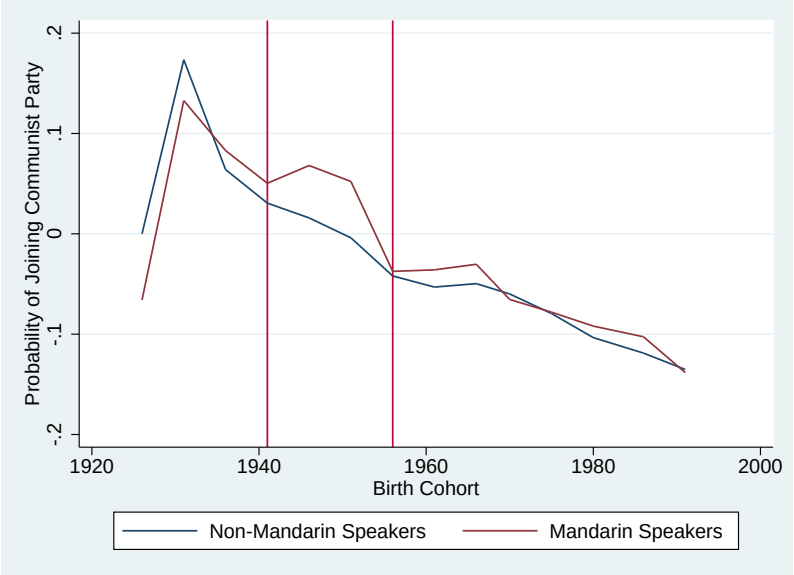
	(1) Communist Party	(2) Sent Down
Mandarin x CR Cohort	0.056***	0.043**
	(0.019)	(0.019)
Mandarin	0.012	-0.005
	(0.018)	(0.009)
CR Cohort	0.012*	0.013**
	(0.007)	(0.005)
Age	-0.002	0.002***
	(0.002)	(0.001)
Age^2	0.000***	-0.000
	(0.000)	(0.000)
Female	0.059***	0.002
	(0.005)	(0.002)
Level of education (crude)	0.064***	0.004***
	(0.003)	(0.001)
Urban area (Census Bureau's definition)	0.015*	0.006***
	(0.009)	(0.002)
Father's level of education (detailed)	-0.005*	0.000
	(0.003)	(0.002)
Mother's level of education (detailed)	0.004	-0.007***
	(0.005)	(0.002)
Observations	13350	13350
R^2	0.231	0.296

* $p < .10$, ** $p < .05$, *** $p < .01$

Note: Each column presents the estimated OLS coefficients of equation 4 with a different outcome variable measuring Cultural Revolution intensity. These outcomes are: joining the Communist Party within 45 years of birth (1) and participating in the send down movement (2). *CR Cohort* equals 1 for individuals born in the Cultural Revolution Cohort, i.e. those aged 10 to 21 at the start of the Cultural Revolution. *Mandarin* is dummy variable imputed from self reported language spoken at home. The coefficient of interest is the interaction of *mandarin* and *CR Cohort*, which is interpreted as the differences in differences estimate. All regressions include full set of province and county fixed effects (not reported). Additional controls include parental occupation, parental income, migration history, hukou status, parental hukou status, ethnicity, and parent political party affiliations. Coefficients on parental political status are with respect to parental membership in the Communist party as baseline. Standard errors are clustered on the last known county of residence before the Cultural Revolution, and county of birth if born after the Cultural Revolution.

* $p < .10$, ** $p < .05$, *** $p < .01$

Figure 1: Communist Party Membership: Coefficients of Mandarin x Age Cohort



Note: This figure plots the regression coefficient of the birth cohort dummy for Mandarin and Non Mandarin speakers from the regression of Communist Party participation on birth cohorts and individual control variables. The birth cohorts within the red vertical lines indicate the cohorts the Cultural Revolution cohorts who are between 10 and 20 at the start of the Cultural Revolution. We see that Mandarin and Non Mandarin likelihood of joining Communist Party diverge only among these birth cohorts.

Table 11: Falsification Test Revolutionary Activity

	(1) Communist	(2) Sent Down
Panel A: Born After CR		
Mandarin x Birth Cohort Born After CR	-0.027	-0.034
	(0.071)	(0.023)
Observations	13350	13350
R^2	0.217	0.292
Panel B: Age 0 to 9 at Start of CR		
Mandarin x Birth Cohort 0-9	0.005	-0.004
	(0.013)	(0.008)
Observations	13350	13350
R^2	0.218	0.293
Panel B: Age 10 to 21 at Start of CR		
Mandarin x Birth Cohort 10-21	0.058***	0.043**
	(0.019)	(0.019)
Observations	13350	13350
R^2	0.218	0.296
Panel C: Age 22 to 32 at Start of CR		
Mandarin x Birth Cohort 22-32	-0.005	-0.000
	(0.037)	(0.014)
Observations	13350	13350
R^2	0.217	0.293
Panel D: Age 33+ at Start of CR		
Mandarin x Birth Cohort 33+	-0.027	-0.034
	(0.071)	(0.023)
Observations	13350	13350
R^2	0.217	0.292

*Note:*Each column presents the estimated OLS coefficients of equation 4 using dependent variables *communist* and *sent down*. Each row represents a different regression estimation of 6 using different age cohorts at the start of the Cultural Revolution, including the 10-21 year old Cultural Revolution Age Cohort. All regressions include full set of province and county fixed effects (not reported). Additional controls include hukou status, and ethnicity. Standard errors are clustered on the last known county of residence before the Cultural Revolution, and county of birth if born after the Cultural Revolution. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 12: Persistence of Revolutionary Beliefs

	(1)	(2)
	Tolerance of Inequality	Materialism
Mandarin x CR Cohort	-0.108*	-0.079**
	(0.061)	(0.039)
CR Cohort	-1.969***	-5.298***
	(0.229)	(0.283)
Mandarin	0.056	0.009
	(0.045)	(0.036)
age	0.224***	0.454***
	(0.018)	(0.020)
Age^2	-0.002***	-0.004***
	(0.000)	(0.000)
Urban area (Census Bureau's definition)	-0.065**	-0.006
	(0.025)	(0.022)
Gender	-0.008	0.022
	(0.015)	(0.016)
Father's level of education (detailed)	-0.018**	-0.018**
	(0.008)	(0.008)
Mother's level of education (detailed)	-0.005	-0.008
	(0.011)	(0.011)
Member of Communist Party	0.000	0.000
	(.)	(.)
Member of a democratic Party	0.377	0.210
	(0.251)	(0.343)
Member of communist youth league	-0.003	0.109
	(0.072)	(0.079)
General public	0.005	0.096*
	(0.054)	(0.054)
Member of Communist Party	0.000	0.000
	(.)	(.)
Member of a democratic Party	-0.081	-0.171
	(0.193)	(0.187)
Member of communist youth league	-0.016	-0.051
	(0.038)	(0.040)
General public	0.014	-0.004
	(0.031)	(0.020)
Observations	19008	20099
R^2	0.191	0.142

* $p < .10$, ** $p < .05$, *** $p < .01$

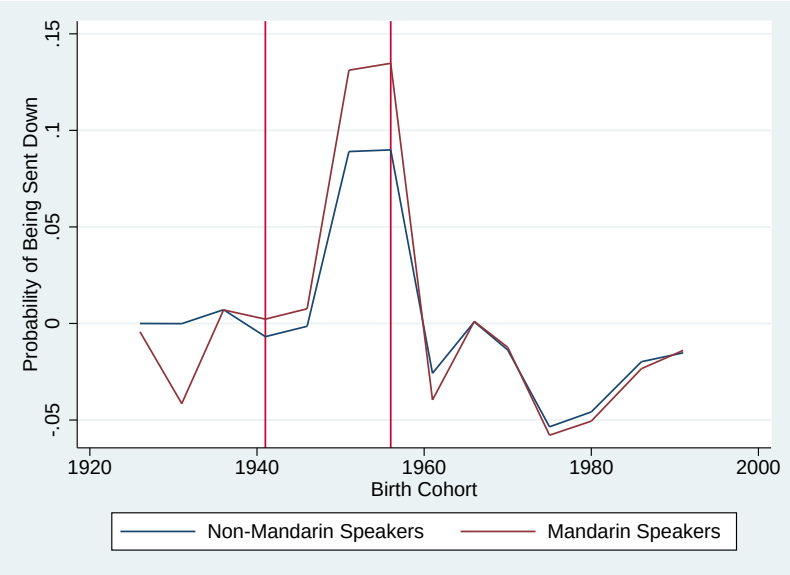
*Note:*Each column presents the estimated OLS coefficients of equation 6 using the Cultural Revolution birth cohort (those who were ages 10-21 at the start of the Cultural Revolution). The dependent variables are ranked on a 5-point scale. All regressions include full set of province and county fixed effects (not reported). Additional controls include education, parental occupation, parental income, ethnicity, and income. Coefficients on parental political status are with respect to parental membership in the Communist party as baseline. Standard errors are clustered on birth year. * $p < .10$, ** $p < .05$, *** $p < .01$

Table 13: Falsification Test

	(1) Tolerance of Inequality	(2) Materialism
Panel A: Born After CR		
Mandarin x Birth Cohort Born After CR	0.072	0.046
	(0.050)	(0.049)
Observations	19008	20099
R^2	0.191	0.142
Panel B: Age 0 to 9 at Start of CR		
Mandarin x Birth Cohort 0-9	-0.042	0.018
	(0.054)	(0.047)
Observations	19008	20099
R^2	0.191	0.142
Panel B: Age 10 to 22 at Start of CR		
Mandarin x Birth Cohort 10-22	-0.108*	-0.079**
	(0.061)	(0.039)
Observations	19008	20099
R^2	0.191	0.142
Panel C: Age 22 to 32 at Start of CR		
Mandarin x Birth Cohort 22-32	-0.079	-0.099
	(0.115)	(0.081)
Observations	19008	20099
R^2	0.191	0.142
Panel D: Age 33+ at Start of CR		
Mandarin x Birth Cohort 33+	0.231	-0.058
	(0.158)	(0.141)
Observations	19008	20099
R^2	0.191	0.142

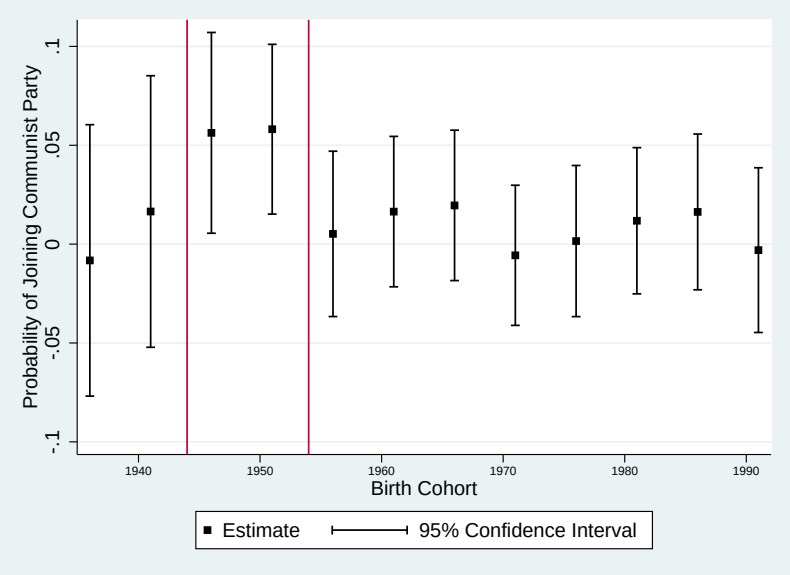
*Note:*Each column presents the estimated OLS coefficients of equation 6 using dependent variables *inequality* and *materialism*. Each row represents a different regression estimation of 6 using different age cohorts at the start of the Cultural Revolution, including the 10-21 year old Cultural Revolution Age Cohort. All regressions include full set of province and county fixed effects (not reported). Additional controls include hukou status, ethnicity, and income. Standard errors are clustered on birth year. * $p < .10$, ** $p < .05$, *** $p < .01$

Figure 2: Participation in the Send Down Movement: Coefficients of Mandarin x Age Cohort



Note: This figure plots the regression coefficient of the birth cohort dummy for Mandarin and Non Mandarin speakers in the regression of send down movement participation on birth cohorts and individual control variables. The red vertical lines indicate the cohorts that are widely considered to be Cultural Revolution cohorts. We see that Mandarin and Non Mandarin likelihood of participation in the send down movement diverge most among these birth cohorts.

Figure 3: Joining the Communist Party: Coefficients of Mandarin x Age Cohort

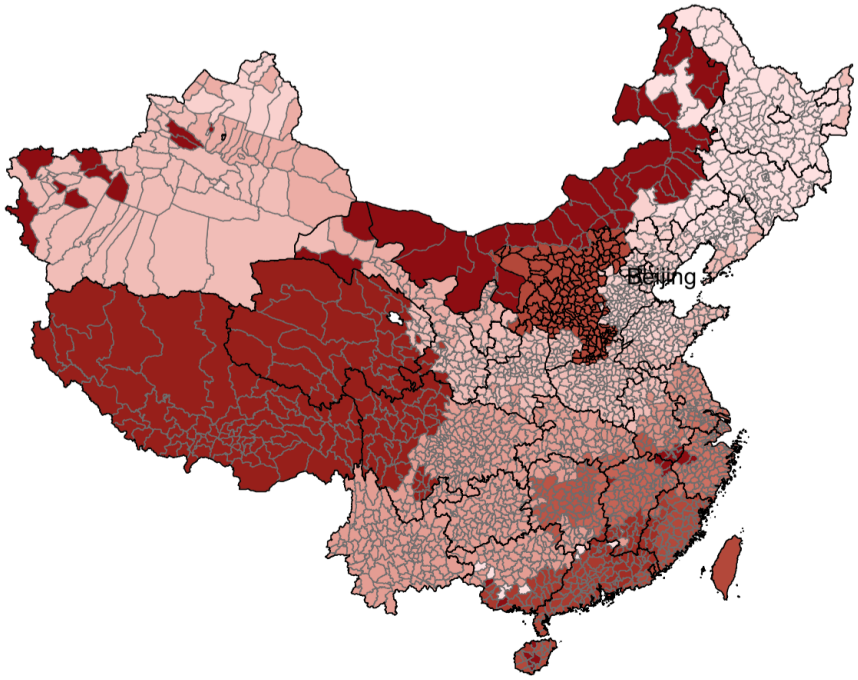


Note: This figure plots the regression coefficients of the birth cohort dummies defined on 5 year intervals interacted with Mandarin speaking dummy from the regression of Communist Party participation on birth cohorts and individual control variables. The point estimate is represented by the square and the interval correspond to the 95 % confidence interval. We see that the coefficient on the interaction of Mandarin and birth cohort dummy is only statistically significant for the Cultural Revolution birth cohorts, confirming that Mandarin and Non Mandarin political behavior is only different for those birth cohorts.

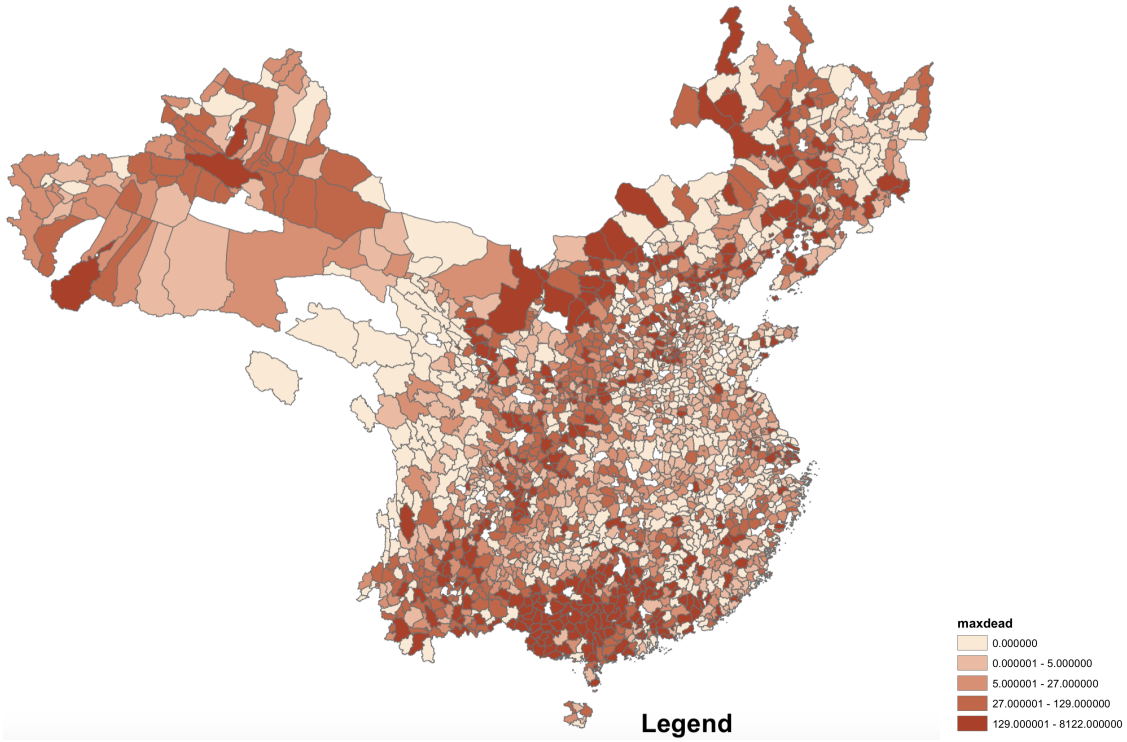
8 Figures

Figure 4: Language and Violence

(a) Vernacular Dialects in China



(b) Cultural Revolution Violence



Note:

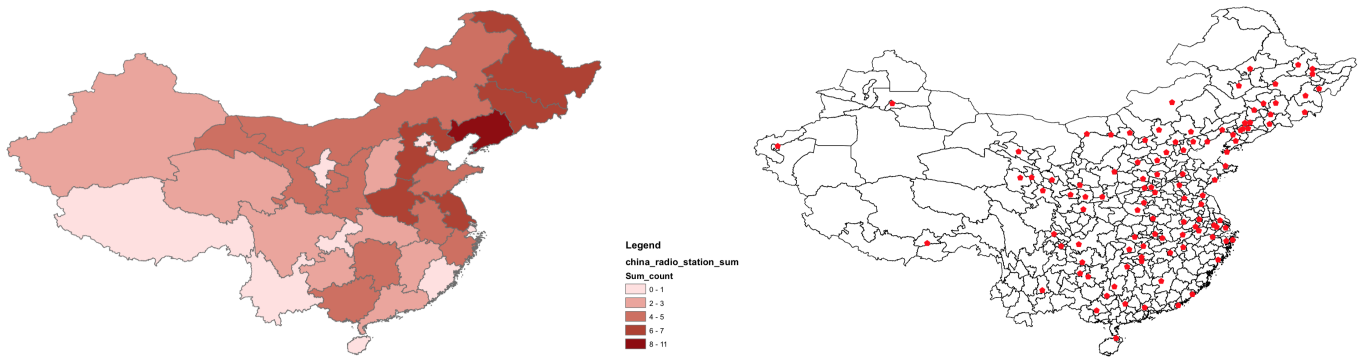
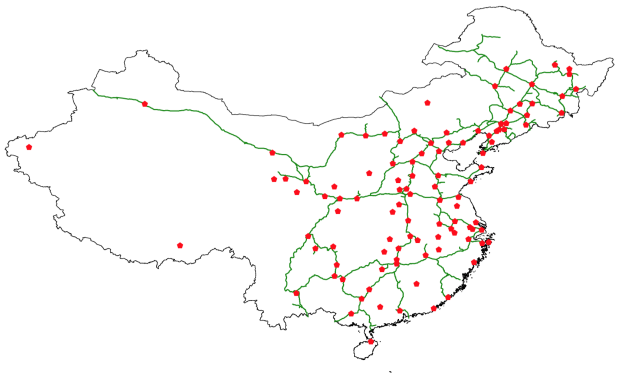


Figure 5: Distribution of Radio Stations

Figure 6: Determinants of Radio Stations

(a) Railroad and Radio Stations



(b) Rivers, Railroads, and Radio Stations



Note:

Figure 7: Mandarin Comprehension

Speaker dialect	Listener dialect															
	Suzhou	Wenzhou	Guangzhou	Xiamen	Fuzhou	Chaozhou	Meixian	Nanchang	Changsha	Taiyuan	Beijing	Jinan	Hankou	Chengdu	Xi'an	Mean
Suzhou	**77**	7	5	18	13	5	7	13	13	20	5	18	15	15	7	16
Wenzhou	5	**93**	5	12	3	2	7	10	2	7	2	10	8	7	2	10
Guangzhou	5	7	**92**	10	20	25	55	22	13	7	3	22	8	17	7	21
Xiamen	13	5	8	**97**	23	28	13	18	13	3	5	15	7	17	8	18
Fuzhou	3	3	2	17	**92**	7	3	8	5	0	0	7	2	0	3	10
Chaozhou	7	0	3	52	13	**98**	3	12	3	7	2	13	10	3	5	15
Meixian	13	2	12	28	17	20	**70**	25	18	10	3	25	15	25	8	19
Nanchang	28	13	20	25	27	17	33	**50**	32	35	18	53	43	37	23	30
Changsha	12	3	8	23	17	3	17	25	**93**	13	13	38	53	28	2	23
Taiyuan	63	35	45	63	57	25	55	68	68	**73**	77	92	92	85	73	65
Beijing	87	62	90	90	93	60	80	78	92	90	**98**	98	97	98	93	87
Jinan	52	27	32	48	48	15	40	60	70	75	77	**97**	83	82	67	58
Hankou	48	32	32	52	53	27	45	53	62	58	67	95	**100**	73	65	57
Chengdu	47	22	40	48	72	27	48	58	62	65	62	98	95	**95**	68	60
Xi'an	53	33	50	58	57	30	57	58	63	68	58	82	78	70	**67**	59
Mean	34	22	30	43	40	26	36	37	41	35	33	51	47	43	33	

Figure 8: Effect of Radio on Great Famine Mortality

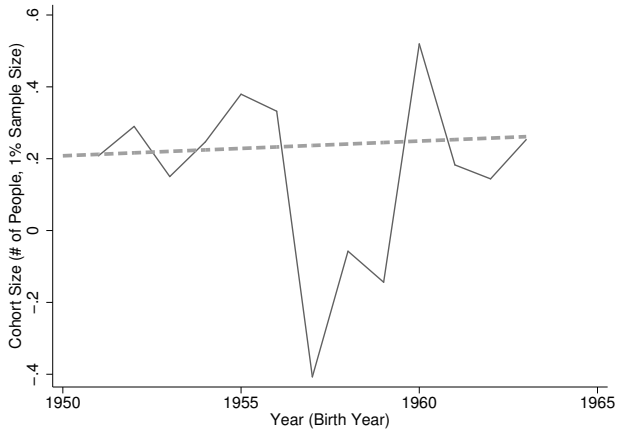


Figure 9: Percent dead by county Histogram

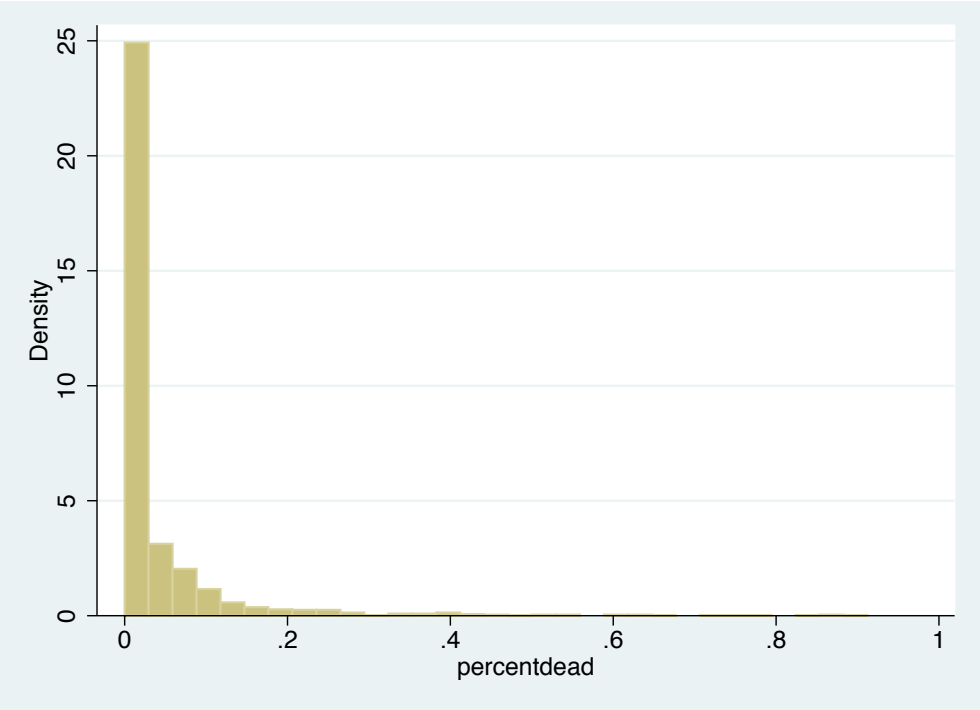


Figure 10: Loudspeaker Photo



Figure 11: Language Dendrogram

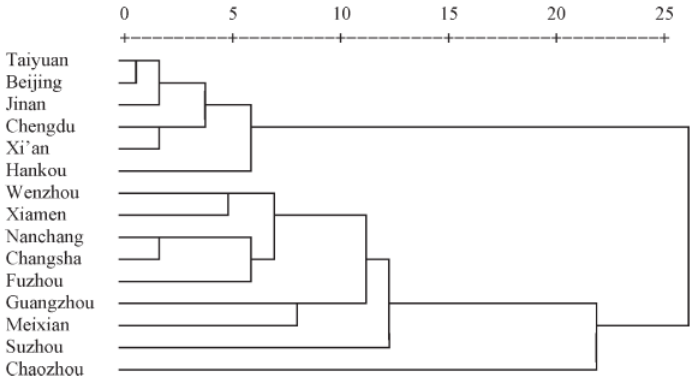


Figure 12: Chinese Dialects

Colloquial Spoken Cantonese

我係挪威人

ngo5 hai6 no1 wai1 jan4
I am Norwegian.

Spoken Mandarin

我是挪威人

wo3 shi4 nuo2 wei1 ren2
I am Norwegian.

Source: Omniglot.com