

Learning Democracy: Education and the Fall of Authoritarian Regimes

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Scholars have long been interested in the factors that cause a state to democratize, including studies focused on economic, social, and international factors. Woven among much of this work is an argument that higher levels of education should promote democracy. However, few have articulated a clear explanation for how education might impact democratization, and fewer still have attempted to test the supposed link across time and space. The authors seek to fill this gap theoretically by considering how both mass- and elite-levels of education influence democratization, and the conditions under which education is most likely to promote democracy. Analyses of 85 authoritarian spells from 1970 to 2008 find that higher levels of both mass and tertiary education are robustly associated with authoritarian failure, and that education has its strongest impact when repression and ethnic fragmentation are low, when the media is relatively free, and as a state moves from colonialism.

Paper to be presented at the 2012 meeting of the Midwest Political Science Association, April 14, 2012.

“Democracy is a way of personal life controlled not merely by faith in human nature in general but by faith in the capacity of human beings for intelligent judgment and action if proper conditions are furnished. . . I am willing to leave to upholders of totalitarian states of the right and the left the view that faith in the capacities of intelligence is utopian.”
-John Dewey, “Creating Democracy - The Task Before Us” (1939).

INTRODUCTION

Students have long played roles in some of the more momentous uprisings over the course of modern history. Most recently, we count disaffected college students amongst the protesters in the streets calling for democracy in the Arabic countries of Africa and the Middle East (Florida 2011). This is a result, to which academic scholarship can attest, of the nature of schooling and its effects on the development of students. Through socialization, students learn to work together to form more tolerant societies and agitate collectively for change. As they pursue higher levels of education, students become more knowledgeable about the world around them and seek to distinguish themselves with profitable skill sets. Authoritarian regimes may attempt to undermine these developments, particularly when it poses a threat to the stability of their rule. We argue that this is often a fool’s errand. A survey of the literature over the last one hundred years largely supports this claim, providing testament to the power of schools to bring about democratic change.

While this literature provides a solid foundation for continued study on the impact of education on democratization, several puzzles remain. First, education is not a single concept. Substantial variation exists across states and over time in regards to the quality of education, the level of education across populations, and the distribution of these levels. Few have considered these variations either theoretically or empirically, which limits our ability to provide policy-makers with specific proscriptions in regards to the development of education (Glaeser 2007; Barro 1999). Second, the impact of education on democratization is likely influenced by a host of conditional factors, including ethnic fractionalization, repression, colonial history, and the

availability of information. We consider these factors theoretically, and provide empirical tests to better understand the conditions under which education is likely to have its strongest democratizing effect.

In terms of policy, understanding more about the impact of education on democratization cannot be overstated. Today, both states and international organizations currently push education to improve a multitude of factors, including democratization (Spring 2008). While promoting education in general has strong support in the academic literature, policy-makers working under tight budgets need to better understand where to allocate their resource to get the biggest return on their investment. The inability of researchers to provide evidence to guide these decisions has unfortunately led to a universal approach, with policy-makers pushing a converged policies under the unfounded assumption that improved access to education will cure a variety of societal ills (Benavot 2002). Our goal is to shed light on the education-democratization relationship by considering a multitude of ways in which education might promote democratization, and to improve our understanding of the context under which education is apt to have its strongest impact in promoting democracy.

EDUCATION AND DEMOCRATIZATION

Many have noted, from Lipset (1959) and Cutright (1963) on, the variety of factors that impact the transition to democracy. Economic development, communication, and urbanization all help to foment a demand for electoral accountability. This is particularly true as society expands and a middle class emerges (Moore 1966). Industrialization fosters wealth generation and the subsequent creation of a social class that has “something to lose.” Education, too, has long played a role in explaining the sustainability of democracy (e.g., Dewey 1916; Almond and Verba 1963; Dahl 1971). Dewey discussed the importance of individual growth and its relation to a healthy democratic system. Almond and Verba built upon this individual-level focus to

argue that democratic attitudes were most effectively inculcated through education, while Lipset noted the salving effects of education levels on social stability, including increased toleration and greater capacity to comprehend available policy choices.

Not all scholars, however, are as ready to assume that education leads to democratization (Fukuyama 1992:105). An educational system that is only open to the children of wealthy parents reinforces economic cleavages in society may make conflict more likely, for example (Ferranti et al. 2004). In contrast, the widespread provision of education can create a surplus of highly-educated workers. Individuals who graduate from a wide-reaching program may contribute to an excess in supply of workers which can drive down wages and drive up unemployment levels. This is particularly dangerous if the “excess capacity” exists for a long duration, without prospects for remedy (Hoselitz 1965:546). This suggests that the effects of education might have little impact on democratization, might work against democratization, or might be conditional upon a host of factors.

Further, we should not readily assume that education is a monolithic concept, or that its provision across age levels should result in the same outcomes. Hoselitz (1965) explains that families can provide an initial education of basic preferences and social skills. Primary education systems can offer support and reinforcement for literacy and other basic skills, while secondary schools can provide minor managerial and technical skills. And, finally, institutions of higher education can offer students the chance to attain the most marketable skill sets through the pursuit of university degrees.

Both primary and tertiary education systems should contribute to the failure of authoritarian regimes in different ways.¹ This begs the question: Why would authoritarian regimes promote education in the first place? In this next section, we consider the motivations of dictators in providing schooling to the masses (primary) and to elites (tertiary).

Why Educate?

Authoritarian leaders face a conundrum in deciding whether and how much to invest in education. Based on much of the work described above, it would seem that authoritarian rulers have little incentive to invest in education, which is apt to undermine their rule. Indeed, as some have previously argued, education is typically underfunded in authoritarian regimes (Feng 1997). However, authoritarian rulers must weigh the potentially destabilizing impact of education versus a plethora of factors that are apt to enhance their hold on power.

First, we must recognize that democratic revolutions led by the (potentially educated) masses are only one of the many ways a leader can be removed from office. The failure of authoritarian regimes to provide education to children may be a grievance all its own (Peters and Richards 1998), and empirical work has shown that both coups and civil wars are strongly associated with poor education (Campante and Do 2005; Thyne 2006). While democratic transitions enhance the risk of a leader losing his position, leaders facing coups or rebellions also risk losing their life. This gives all authoritarian leaders an incentive to provide education to the population, as it is better to lose one's position via a democratic transition than to lose one's life in a coup or armed rebellion.

Second, the positive impact of education on economic development gives leaders strong incentive to educate the population. A more educated workforce is a more productive one, making it easier for authoritarian rulers to generate revenue (Levi 1988) and returns on their investment (Tilak 1989), including foreign investment. If the regime provides education for the entire population, laborers do not have to spend money and resources on acquiring education and can focus on simply acquiring wealth (Galor and Zeira 1993). In general, increased inequality produces lower growth throughout society (Persson and Tabellini 1994; Zak 2000; Feng 2003), and an increase in the provision of education may serve to address this. Overall, the increased

economic growth allows leaders to both increase their personal riches, and build defenses to ward off attacks from external enemies (Glaeser et al. 2007). Thus, authoritarian rulers attempt to strike a balance, providing the social programs demanded by their constituents while not undermining regime stability. This is no small feat and, as we demonstrate below, can often lead to their downfall.

Basic Education and Democratization

We begin our argument by focusing on how the government provides basic education to the entire population. We first consider how educational systems produce effective citizens who are apt to push for democracy. The foremost scholar of education and democracy, John Dewey, made a long career of arguing for the necessity of creating schools that produced individuals who respected the rights and opinions of others. Dewey recognized that an individual must be placed in situations where he can interact with others on a repeated basis to be a good citizen. Through numerous trials, he learns that his actions have context; his views and opinions are part of a multitude. Other individuals have their opinions, too, and compromise must be reached when the preferences of multiple actors are not aligned. In addition, students learn that disagreements and conflict can be resolved through debate, without the threat of violence and instability (Dewey 1916). Democracy, as seen through this lens, is defined by addressing the concerns of as many individuals as possible (Schoeman 2010) and promoting equality (Wang 2009).

More modern scholars of education and democracy push Dewey's argument a step further by noting the importance of education in not only producing effective democratic citizens, but also contributing to the failure of authoritarian regimes. Feng and Zak (1999) argue for the importance of cultural and economic factors, but find that years of school attended has a positive effect on the onset of democracy (also see Helliwell 1994). School may only be available initially to the wealthy in these developing countries, a symptom of economic

inequality. However, as these regimes make education more widely available, they undermine social order (as described by Calvert 1994) and destabilize the control held by authoritarian governments. In this way, increased education moves more members of the population from their traditional stations in society. A rise in social heterogeneity (and the greater tolerance of this) makes maintaining a repressive or unaccountable regime particularly difficult.

Mass education may provide other benefits beyond developing citizenship skills and respectful challenges to authority. Those students that go to school come into contact with individuals from different groups within society. This makes them better prepared for the representation of various interests that democracy promotes (Heyneman 2003). Individuals, thus, learn the basics of tolerance during their educational adolescence. The more students enrolled in the system, the more adults produced that are conditioned to the requirements of democratic society, such as the peaceful resolution of disputes (Brady, Verba, and Schlozman 1995; Sargent 1996). Teachers are vitally important throughout this process. Through suggestion and reinforcement of values, as well as the monitoring of social interactions, these educators can foster the educated skepticism necessary for an effective and vibrant democracy (White 1999).

Increased enrollment in schools may also work to address a collective action problem that inhibits the establishment and growth of democracy (Glaeser, et al. 2007). Without widespread education, the appeal of democracy is not well known. This makes the coordination of pro-democracy movements problematic; the costs of engagement are high and the benefits provided from agitation are perceived to be small, as well as spread out among a number of individuals. Authoritarian regimes can maintain their hold on power by appealing to a much smaller group of individuals, manipulating the collective action problem that emerges amongst the wider population. Increased education raises the incentives for participation, as students learn how to work together and engage in democratic practices.

In addition, education may be thought of as working in aggregate as a means to empower a growing middle class (Feng and Zak 1999). With the rise of the bourgeoisie, government leaders must respond to a class of citizens that have acquired property and a higher standard of living, yet do not have the independent wealth to secure these assets. As education increases amongst this class, so too does the cohesiveness and cogency of its expectations of the smaller, ruling class, making it a formidable influence on government action.

School systems themselves may serve as the training grounds for stable societies. Africa has often been cited as a case where the lack of political knowledge and democratic values has led to a number of paternalistic and corrupt states. Properly organized educational systems, some argue, could combat these authoritarian regimes and create more prosperous, democratic states (Harber 1992). Primary school education may serve to build socialization skills and tolerance among the population at large. While students gain basic literacy skills, they also learn what it means to be a good citizen. In countries without a uniform drive to indoctrinate, this would seem to lead to a predilection toward democratic regime preference. Prior work has demonstrated a relationship between democracy and mass education (Brown 1999), as well as how forms of general education can produce the civil society needed for a liberal regime. In contrast to systems that reinforce authoritarian order or ethnic strife, as in Zimbabwe or Rwanda, there is evidence that mass education with a focus on individualism and respect for others, such as Uganda's "child for child" policy, can instill and reinforce democratic values (Harber 2002).

Ultimately, it appears that the provision of education leads to more support for democracy. As more and more citizens from across society work their way through the school system, they develop the socialization skills necessary for democratic community. They also gain economically productive abilities and critical-thinking skills vital to the implementation of a freer, liberal system. Increased enrollment in schools helps to erode, or transform, the

inequalities in society by providing a means for achievement, reinforced through the equality of opportunity guaranteed by democratic governance. This discussion leads to our first hypothesis:

H1: As basic education levels improve for the masses, democratization is more likely to occur.

Higher Education and Democratization

In contrast to the focus on primary education above, many scholars have argued that elite education makes democracy more likely to take hold (Benavot 1996). As noted by Dahl (1971), there is an overwhelming consensus in the literature linking higher education with democratic values. Crick and Porter's (1978) program of political education reasoned that the type of knowledge learned in early levels of education (e.g., history, sociology, economics) are preconditions for understanding political issues, which are therefore best addressed in higher levels of education. For example, Costa Rica has often been promoted as a success story of democratic consolidation and institutionalization (Wilson 1998). It may not be surprising to find that Costa Rican society has championed the growth of education since the nineteenth century (Booth 1998), despite issues with bureaucracy and funding throughout the second half of the twentieth century. Much of this support arises specifically from higher education, where university students and faculty prove a formidable constituency.

Higher education provides a means to prepare the future leaders and policy-makers of the state by cultivating them into nuanced, analytical thinkers. Given that university-educated individuals tend to participate at a higher rate than those with much less schooling, or none at all, governments that seek to develop a crop of motivated, self-aware members of the elite do well to develop tertiary systems of schooling. Consistent with our argument regarding mass education, we expect college education to provide more opportunities for socialization efforts. This level of schooling provides an additional benefit in fostering a population with higher-level analytical abilities that allow citizens to analyze the world around them to better assess their own interests.

As noted by Hillygus (2005:27), “Higher education imparts the knowledge, skills, and political familiarity that help in navigating the political world.” When faced with a state allowing few roles for the educated to pursue their post-graduate goals, the highly educated are apt to take to the streets to force the government to make meaningful reforms, as they did in Argentina (1955), Hungary (1956), Japan (1960), China (1989) and elsewhere. Beyond having the foundational characteristics of effective democratic citizens, the highly educated in these countries had the capacity to understand the failures of their government, understand other potential avenues of governance, and understand how to best achieve meaningful change. We expect this type of higher-order thinking to be found in countries where a large percentage of the population has attained university-level education, which leads to our second hypothesis.

H2: As the percentage of the population enrolled in tertiary education increases, democratization is more likely to occur.

Beyond these basic hypotheses, we are interested in the context under which education is apt to have its strongest democratizing effect. We do not expect education to result in democratization under all contexts, and our forthcoming discussion addresses the contextual elements that we expect to play important conditioning roles in the education-democratization relationship. We begin by addressing three ways in which the relationship between basic education and democratization might be qualified, and then focus on how access to information might condition the impact of tertiary education on democratization.

Indoctrination

While the literature above addresses many of the proposed benefits of increased basic education on democratic transition, the argument is largely naive in assuming that governments are unaware of the type of citizens they are producing in their systems of primary education. Instead of gearing primary schools to produce citizens with values to support democracy,

authoritarian states may work to socialize students to unconditionally respect the authority of the state while promoting basic skills, like literacy. In the Soviet Union, it appears that the simultaneous goals of education and conformity could not be achieved. Though indoctrination may have delayed the push for democracy, Soviet-bloc citizens grew to develop the skepticism and distrust necessary for democratic governance (White 1999) despite attempts to impress communist dogma on students. In contrast, the fear of education leading to democratization was realized at an earlier point in China, where officials had begun to adopt Dewey's educational philosophy of individual development while he visited the mainland as a consultant in the 1920s. His subjective idealistic experimentalism was abandoned after the Communists took over in 1949; they viewed his focus on developing individuals in the classroom as an anathema to the implementation of communist philosophy among students during this time (Su 1995).

This phenomenon has not been limited only to Communist countries. The Spanish education system created during Franco's dictatorship was a powerful tool in shaping the anti-democratic ideology of the citizens, for instance, and reforms came only gradually as the post-Franco leadership has moved to educate the citizens for democracy (Olivares and Sanchez 1995). More recently, Dzimbiri (1998) notes that government leaders in Malawi, fearful of an educated citizenry, intimidated teachers of history and civics from espousing any potentially destabilizing views. These instructors were often reminded that any misinterpretation of facts could lead to imprisonment without trial. Not surprisingly, citizens scored quite low on general political knowledge quizzes. Harber (1997) pushes this criticism more generally, noting how schools in Africa have traditionally preferred to promote authoritarianism via rote memorization and corporal punishment, purposefully quashing active participation, debate, and critical inquiry.

The actions of government officials in these several examples suggest that authoritarian regimes can view education as a potential threat to their stability. Those regimes that solely

focused on indoctrination and avoided any semblance of critical thinking could maintain a hold on their population. Education was not solely about acquiring technical skill or personal advancement. Rather, it was a tool to promote social order. Thus, the more regimes focused on repressing their citizens and avoiding student development, the more successful they could be in preventing the call for democracy. This leads to our third hypothesis:

H3: The impact of basic education on democratization should decrease as the state becomes more repressive.

Fractionalization

One of the foremost reasons for heavy-handed approaches in authoritarian regimes is to address divisions in society that threaten stability. Dictators may push to make language and culture more uniform so as to eliminate conflict between groups. This presupposes that multi-ethnic competition undermines the potential for transition to democracy. Education may be a tool to address these divisions (Dewey 1916; Lipset 1959), especially when it comes to language (Biseth 2009). However, states with plural societies, where religious, racial, and ethnic differences are acute or multiple languages are spoken, are susceptible to conflict because of the difficulties of educating so many disparate groups (Rabushka and Shepsle 1972). Additionally, inter-group competition can actually slow down the expansion of schooling, as the modes and language of instruction are impeded by distinctions inherent to a multi-ethnic society (Schofer and Meyer 2005).

Education may also be used as a tool by the ruling elite to maintain the influence of their own group culture, generally, and in terms of employment opportunities, specifically (Collins 1971). This may explain why the predicted economic output of developing countries with meaningful education systems was far less than expected (Pritchett 2001). Government elites from a particular group may direct funds to their home provinces or to their ethnic cohort rather

that distribute education appropriations equally across a given country (as in Vietnam, Holsinger 2009). Leaders may even promote narratives favorable to their own group at the expense of impartiality or sensitivity to other groups (as in Sri Lanka, Heyneman 2003). Education may also be used as a tool for the, “indoctrination of hatred,” as was the case in Rwanda in 1994 (Harber 2002:273). Even in the United States, the influx of immigrants during the late nineteenth century precipitated a decline in public school enrollment and an increase in private school enrollment. Native citizens did not ramp their support for public schooling back up until the demographic composition of immigrant groups included higher levels of northern and western Europeans, with whom they shared cultural values (Ralph and Rubinson 1980).

Instead of the Dewey-an socialization ideal, where individuals respect and appreciate differences, elites may magnify and institutionalize divisions across groups. This not only limits the effects of education, but also reinforces the very group competition that schooling can quell. Instead of democratization, therefore, it is possible that education in ethnically-fractionalized states could promote authoritarianism or even lead to armed conflict. This discussion leads to our fourth hypothesis.

H4: The impact of basic education on democratization should decrease as social divisions increase.

Colonialism

Much has been made of the democratic leanings of former British colonies (e.g., Bollen and Jackman 1985). However, democracy is not the natural outcome of colonial rule. The influence of a dominant, non-indigenous power may install several impediments in the way of educational development. Citizens living in a colonized system may be forced to learn in a second language or adapt to the social structures of a culture dissimilar to their own (Kuenzi 2006).

Colonizing states work, then, to maintain control over their foreign claims. In the case of Hong Kong, universities were only established *after* self-rule was imminent (Bray and Lee 1993). Prior to this point, education was only limited to the children of elites. In fact, this was true in a number of other colonies that were left ill-prepared for democracy (Bude 1983; Harber 1989; Foley 1991). The distinction between the elites and the masses was sharply drawn through the provision of education and was often maintained for years after de-colonization.

Older scholarship notes the two different approaches of colonial powers in implementing educational systems in Africa. France was generally more assimilationist in its colonial educational policy. Officials in Paris administered colonies as, essentially, departments of the central government, while educational reformers implemented systems to reinforce the “metropolitan” values of modern society. This contrasts with the British, who generally took more of a decentralized, adaptive tack (Clignet and Foster 1964; White 1999). While assimilation and centralization may have reflected general beliefs about educational administration at home rather than an overt attempt at societal control (Clignet 1970), this approach limited the autonomy of local actors and ignored the cultural differences on the ground. Of course, this phenomenon was not limited to the French in Africa; we can see similar approaches by Japan (in Taiwan, Tsurumi 1979; Wu, et al. 1989), Portugal (in Mozambique, Cross 1987; Fry 2007), and China (in Tibet, Macpherson and Beckett 2008).

We, thus, propose that the influence of colonialism will retard the effect of education on democracy. Citizens who reside in systems that were recently colonized by a foreign power will be more likely to live within a framework that is assimilationist in character, placed upon their state to maintain order rather than develop democratically-capable citizens. As time moves, this architecture is expected to wear away, though Harber’s (1989) study of Nigeria, Kenya, Tanzania

and Zimbabwe suggests that considerable time must pass from decolonization before we can expect to see states begin to democratize. This discussion leads to our fifth hypothesis.

H5: The impact of basic education on democratization should increase as the state moves further from colonialism.

Globalization and Information

The conditional hypotheses above (H3-H5) focused on factors that might condition the impact of basic education on democratization by focusing on how students may be socialized differently in early levels of education based on repression, fractionalization, and colonialism. We now focus on tertiary education by considering how the availability of information might influences the impact that higher education has in developing critical, analytical thinkers. We posit that foreign influence enhances the effect of increased education on authoritarian regime failure. Put another way, democracy may be more likely to emerge as the effect of education is amplified by globalization. College-educated citizens, in particular, may be better able to process the ramifications of global politics for their everyday lives, especially those that join the political elite (Lane 1996). A study of the Russia Moscow State Institute of International Relations (MGIMO) illustrates the importance that the Russian government places upon education of its elites as geopolitical actors who are knowledgeable about language and world affairs and can, therefore, help engineer the state's re-emergence as a great power (Muller 2011). More generally, college-educated citizens may follow international events more closely and place their own situation within the context of world events; consequently, these citizens may stand to gain the most from more openness under an authoritarian regime. They may be able to travel more and participate in the world economy (Finifter and Mickiewicz 1992). As interconnectedness increases, news about democratic systems and movements may find their way into a state through these avenues and destabilize the regime (McAdam and Rucht 1993;

McAdam, et al. 2001). This development of transnational values is institutionalized through the spread of education across the globe, far and wide. As the world moved on from World War II, interdependence among countries became more prominent, which contributed not only to evaluations of power and security, but also to the growth in the values of democratic politics and knowledge of and about citizens in other places (Jones 2007).

The permeation of this information, however, requires a conduit. We expect the media to play a crucial role in providing the type of information that could provide critically-minded thinkers with ideas on how their government could be improved via education (Teorell 2010). With full governmental control of the media, it is unlikely that relevant alternatives to the status quo can be considered, and even less likely that they will provide motivation to pressure the government for change. Thus, we expect higher levels of education to have their strongest impact when information about alternative governmental systems is readily available.

H6: The impact of tertiary education on democratization should increase as information permeates society.

DATA, METHODS AND MEASUREMENT

Our primary theory predicts that authoritarian regimes are likely to fail as education levels increase. This should happen both as education for the masses increases due to democratic socialization of education (H1), and as higher levels of education produce enhanced cognitive abilities (H2). We also present several expectations for how the impact of education on democratization is likely to be conditioned on other factors, including state repression (H3), social divisions (H4), time since colonialism (H5), and the availability of information (H6). Our unit of analysis to test these hypotheses is country-year for all authoritarian states from 1970 to 2008. We define a state as authoritarian if it is coded below +6 on the Polity IV index. This includes 85 instances of authoritarianism, 60 of which failed prior to the end of our time period.

The remaining cases are censored in 2008. States are permitted to re-enter the sample after democratization if they lapse back into authoritarianism. For example, Haiti initially appears from 1950 to 1990, and then re-enters from 1991 to 1994 and from 2000 to 2008. We control for re-entry in our empirical model with a control variable for “past democratization.” Our dependent variable, democratization, is coded 1 in the year in which the state was coded +6 or greater on the Polity IV index.² We use logistic regression to test our hypotheses, while controlling for authoritarian years and cubic splines for temporal dependence (Beck, Katz and Tucker 1998). Robust standard errors are clustered by subject.³ With this set-up, positive coefficients indicate an increase in the likelihood of democratization, while negative coefficients suggest continuation of authoritarianism.

The unit of analysis and dependent variable provides many advantages over earlier approaches to examine the processes driving democratization. Studies from Bollen and Jackman (1995), Muller (1995), and Barro (1999), for instance, analyzed how a variety of independent variables impact the *level* of democracy for all states. Two concerns make this approach unacceptable for our tests. Most importantly, our theory does not speak to minor changes in democracy or changes within states that are already democracies. We are interested in major shifts towards democratization among states that are already authoritarian regimes. Second, as explained by Papaioannou and Siourounis (2008), analyzing the long-run changes in the level of democracy makes it difficult to assure that democracy is not causing the change in the independent variables instead of the hypothesized relationship. Lagging the covariates helps in this regard, though the slow-changing nature of both the dependent and independent variables leaves the door open to endogeneity concerns. Dropping states from the sample once they democratize essentially eliminates this issue.

Independent Variables

The levels of education in each state are captured using data from the International Institute for Applied Systems Analysis (IIASA) (Lutz et al. 2007). These data come from an ambitious project to capture education levels for 120 states from 1970 to 2000, and forward-projections to 2050. Unlike other datasets, these data are advantageous because they capture education attainment, rather than enrollment rates or expenditures, capture education in developing countries, and include information on education attainment at various levels (no schooling, some primary, completed lower-secondary, completed tertiary) and for both genders. They also correct many deficiencies in previous data-collection efforts. First, the data are complete in the sense that each country/year included has a value, while other datasets (e.g., UNESCO) has significant temporal gaps. This is largely achieved by using data from censuses performed around 2000, and then back-dating the education data based on the state's demographic profile. For instance, because the highest level of education is generally achieved early in life, we can assume that educational attainment for the 60-year old cohort in 2000 come from the same population group in 1990 (the 50-year olds). These back-projections are then refined by differential mortality rates, and updated based on other known historical data. Also, given that education levels can vary in meaning across countries (e.g., the meaning of 'secondary' or 'tertiary'), the dataset also uses standard definitions across the entire time period. Finally, the dataset is fully transparent in coding decisions, methodology, and the coders provide many cross-dataset analyses to assure the robustness of the final product. The IIASA project provides a second effort to project education data from 2000 to 2050 using a similar methodology as described by Lutz et al. (2007) (Samir et al. 2010). Using identical countries and similar demographic measures, this effort provides several projections of education data. We use the global education trend (GET) scenario, which assumes that a country's educational

expansion will converge on an expansion trajectory based on the historical global trend (Samir et al. 2010:407). This allows us to update our data to 2008, which is the final year included in our dependent variable.

Given that these data are provided for many 5-year age groups and for both genders, we made several decisions to make the analyses manageable. First, we ignore gender imbalances, and use the IIASA values for both genders.⁴ Second, we begin by combining age groups into a single category, and then analyze categories for 15-29 (young adults), 30-54 (middle age), and 55+ (aging). Third, we analyze three levels of education. These include percent with some education (mean=47.3, SD=26.2) and percent completing primary education (mean=26.9, SD=15.3), both of which are meant to capture “mass education” (H1). Percent completing tertiary education (mean=3.3, SD=3.4) is the third level, which is meant to capture cognitive development in the population (H2).

Conditional Relationships

We expect the impact of education on democratization to be conditioned upon several factors. Our theory predicts three conditional relationships for our socialization theory (captured with mass education), and one for our cognitive development theory (captured by tertiary education). Brambor, Clark and Golder (2006) explain that interactive terms are the best way to test conditional hypotheses where the effect of one variable X (mass and tertiary education) depends on the value of one or more other variables Z (political rights, ethnic fractionalization, time since colonialism, and information). Following this advice, we test our conditional expectations by interacting the primary independent variables with measures meant to capture each of the four concepts.

Our first measure is meant to capture regimes that are least likely to indoctrinate the people through education. Unfortunately, there exists no measure to capture the quality of

education in terms of its social cohesion functions (Heyneman 2003). Thus, we rely on repression as a proxy for this theoretical concept. Our measure begins with Amnesty International reports (Poe and Tate 1994), which reports human rights on an ordinal scale from 1 (most rights) to 5 (least rights) for 112 states from 1976 to 1993. Second, we include the Physical Integrity Rights Index from Cingranelli and Richards (2010), which is an additive index combining torture, extrajudicial killing, political imprisonment, and disappearance indicators ranging from 0 (no government respect for these rights) to 8 (full government respect). We combine the measures by first reversing the order of the Amnesty International coding, and then standardizing both measures to range from 0 (least rights) to 1 (full rights). We then merged the data by taking the mean where data exists for both measures in each country/year, and then including the individual value for country/years where covered by a single dataset. The final measure, *human rights*, ranges from .1 to 1, including 129 states from 1976 to 2006. We expect the impact of mass education on democratization to intensify as this measure increases.

Our second measure is meant to capture potential fractionalization in a society, where education may be apt to further entrench in- versus out-group biases. Our measure for *ethnic fractionalization* comes from Fearon and Laitin (2003), who provide an index of ethno-linguistic fractionalization from Atlas Narodav Mira 1964. Ranging from .001 to .935, this measure captures the likelihood that two randomly drawn individuals are from different ethnolinguistic groups from 1945 to 1999. Given that the data vary little over time, missing years (2000 to 2008) are assumed take on the 1999 value. We expect the impact of mass education on democratization to decrease as this measure increases.

The third measure is meant to capture the temporal distance from colonization, expecting that education will have the largest democratizing impact as the state moves further from colonization. The simplest option here is to include a measure that simply captures the number of

years since the state became independent. However, we do not expect a perfect linear relationship given that 50 years of independence is equally enough time to reform education as 150 years of independence. Thus, we create an ordinal measure capturing decades since independence, which ranges from 1 (fewer than 11 years of independence) to 5 (50+ years of independence). We expect mass education to have the strongest impact on democratization as states experiences longer durations of independence.

Our final conditional hypothesis focuses on cognitive development, which is captured with tertiary education. We expect tertiary education to be particularly effective in promoting democratization when the people have ample information with which to evaluate their government, and ample information about alternative forms of government. We use two sources to capture freedom of the press, which is expected to be the best source in providing this type of information. We begin with the FreedomHouse (2010) data on Freedom of the Press, which captures both print and broadcast freedom ranging from 1 (not free) to 3 (free) for 123 states from 1980 to 2009. We back-date the measure using Van Belle's (1997) Press Freedom data, which captures 185 states from 1948 to 1995. We recode the Van Belle data to match the FreedomHouse measure, resulting in a measure coded 1 (press non-existent, limited, or strictly censored by the government), 2 (press freedom capable of producing information, but largely controlled by the government), and 3 (press clearly free). As with the human rights measure, we merged the data by taking the mean where data exists for both measures in each country/year, and then including the individual value for country/years where covered by a single dataset. The result is a measure called *information*, which ranges from 1 (least freedom) to 3 (most freedom). We expect tertiary education to have the strongest democratizing impact as this measure increases.

Control Variables

Studying the predictors of democratization is certainly not a new enterprise. Among the dozens of variables that have been found to have a significant impact on democratization in past studies, our final model includes measures that we found to have the most consistent and substantively significant impact on our dependent variable.⁵ Our first set of measures attempt to capture historical conditions that are likely to make a state transition to democracy. The first measure, *Previous democracy*, is coded 1 if the state had any experience with democracy since 1800 (the beginning of the Polity dataset), which includes around 26.1% of the sample. Based on previous work, we expect states with a history of democracy to be more apt to transition to democracy in each time period (e.g., Huntington 1991). Previous work has also suggested that states colonized by the United Kingdom have had an easier path to democratization (Lipset et al. 1993; Lipset 1994; Weiner 1987). Thus, we next include a dummy variable, *Former British colony*, coded 1 if the state was a colony of the United Kingdom (Fearon and Laitin 2003). Around 28.4% of observations were former British colonies. The third variable, *Year of independence*, is the year that the country became independent (or 1800 if earlier than 1800). We expect fledgling states to be less apt to transition to democracy as leaders attempt to consolidate control of the regime. The variable has a mean of 1920.1 (SD=62.4). Our next control variable, *Cold War*, attempts to control for the rivalry between the US and USSR in which many regimes were supported under one or the other's sphere of influence (e.g., support of Leftist-authoritarian like Castro's Cuba from the USSR and Rightist-authoritarian states like Pinochet's Chile from the US). This variable is coded 1 for years prior to 1989 (57.0% of the sample). We expect transitions to democracy to be less likely during the Cold War period. Our final measures attempt to capture the internal characteristics that might push for democratization. Most important among these is wealth, measured as *GDP/capita* (ln) from Gleditsch (2002) with updates from the

World Bank's WDI dataset (2010). Wealth has been found to lead to democratic consolidation (Przeworski and Limongi 1997) and democratic transitions (Burkhart and Lewis-Beck 1994; Feng and Zak 1999). Finally, we control for *Percent urban*, expecting that more urbanized countries are more likely to democratize (mean=20.8%, SD=16.2%).

PRELIMINARY ANALYSES

We present our preliminary analyses in Table 1. The first model tests H1, which predicts that higher levels of mass education should increase the likelihood of authoritarian failure.⁶ This hypothesis receives strong support with a positive and significant coefficient ($p < .009$) when mass education is measured as the percent of the population with at least some education. We find further support for the first hypothesis in Model 2, which focuses specifically on completion of primary levels of education ($p < .010$). Models 3-5 attempt to examine this further by breaking down primary education levels by age cohorts. While each coefficient has the expected positive sign, we see the strongest impact among the 55 and older group. This suggests that most pressures to reform come from a top-heavy society – when the older people in society have at least some education.

[Table 1 here]

We run similar analyses to test our cognitive development argument, replacing primary education with tertiary education in Models 6-9. The insignificant coefficient in Model 6 provides initial doubt for H2. While the coefficient is in the expected positive direction, it fails to achieve statistical significance ($p < .071$). We see similar results in Model 7 when looking at the 15-29 age group. However, we find the expected positive and significant signs for the 30-54 age group in Model 8 ($p < .048$) and for the 55+ age group in Model 9 ($p < .045$). As with mass education, it seems that having more education among the older age levels is likely to provide the strongest push towards democratization. This stands somewhat in contrast to the media's

account of recent pro-democratization movements. While the focus has largely been on the young and education segments of society, these results suggest that the older class of educated people have traditionally provided the strongest push towards democratization.

Beyond statistical significance, we can gauge the impact of the independent variables by calculating each variable's marginal effect on the dependent variable. The *Clarify* program was used to estimated predicted values for the significant variables in Table 1 (King, Tomz and Wittenberg, 2000; Tomz, Wittenberg and King, 2003). The results for these calculations are presented in Figure 1. This figure displays how we should expect the likelihood of authoritarian failure to vary when each independent variable is allowed to vary from one standard deviation (SD) below the mean to one SD above for continuous variables, and from 0 to 1 for dichotomous variables while holding all other variables constant (means and modes).

[Figure 1 here]

We first see that the measure for mass education from Model 1, measured as the percent of the population with at least some education, has a strong impact on democratization. The likelihood of democratization increases by 128.9% (from .004 to .010) when this value ranges from 1 SD below the mean (21.2%) to one SD above (73.4%), which is the strongest impact of any of the education variables.⁷ Focusing specifically on primary education, we see a slightly weaker impact when looking at all age groups from Model 2. The likelihood of democratization increases by 81.5% percent (from .005 to .009) when the percent of the population having completed primary education varies from 11.5% to 42.2%. While the results for lower age groups (15-29 and 30-54) are insignificant, we see that having a high level of mass education amongst the older age groups (55+) is largely driving the finding behind primary education. The likelihood of democratization increases by 105.4% (.004 to .009) on average as the percent among this group having completed primary education ranges from 6.7% to 41.3%.

Focusing on tertiary education reveals similar conclusions in support of the second hypothesis. While tertiary education for the combined age groups (Model 6) and the youngest age group (Model 7) show an insignificant impact on democratization, we see fairly strong substantive effects for both the 30-54 age group (Model 8) and the 55+ age group (Model 9). For the former, we can expect an 80.3% (.005 to .010) increase in the likelihood of democratization as the percent of the middle age population completing tertiary education varies from .1% to 11.2%. The impact is slightly weaker for the 55+ age group, which shows a 63.9% increase in democratization as the measure ranges from 0 to 4.5% completing tertiary education. Taken together, these results provide strong support for both the first and second hypotheses, and point towards the importance of education particularly among the older age groups as the strongest factors driving democratization.

Regarding the control variables, we see results that are generally consistent with previous work and our theoretical expectations. Having a previous experience with democracy increases the likelihood of democratization by around 190.8 percent (.006 to .018), while states are around 75.2% (.026 to .006) less likely to democratize during the Cold War. The measure capturing the youthfulness of a state likewise behaves as expected, showing the difficulties fledgling states have in making transitions to democracy. States are around 75.3% (.013 to .003) less likely to democratize as our measure varies from 1958 to 1982. We find insignificant results for both GDP/capita and British colony, though both give the expected positive sign and are intermittently significant. In contrast to our expectations, we find a 41.3% (.008 to .005) decrease in the likelihood of democratization on average as urban population varies from 4.5% to 36.9%.

CONDITIONAL RELATIONSHIPS

The final set of expectations predicts that the impact of education on democratization should be conditioned upon many factors, including rights provided by the government (H3), ethnic

fractionalization (H4), distance from colonization (H5), and free flow of information (H6). These expectations are tested by interacting mass education (H3-H5) and tertiary education (H6) with the measures previously described. Brambor, Clark and Golder (2006) explain that interactive effects are best analyzed by plotting the marginal effect of the primary independent variables versus the conditional variables while holding control variables constant (means and modes). Following this advice, we enter both constitutive and interactive terms sequentially into the baseline model (omitting education variables) from Table 1, and present the findings in Figure 2 using Boehmke's (2006) *grinter* data utility.⁸ Figure 2a presents the impact of mass education on democratization across the range of the human rights measure. Consistent with our expectation, we see that education indeed has an insignificant impact on democratization at low levels of human rights. However, the marginal effect increases and becomes significant as human rights approach .35, which represents around 83 percent of the data. Thus, we conclude that education has little impact on democratization when little rights are provided to the people, which we theorize is due to government indoctrination in repressive regimes, and increases as rights permeate society.

[Figure 2 here]

We next expect education to have its largest impact on democratization in ethnically homogenous societies, and to perhaps decrease the likelihood of democratization in heavily fractionalized societies. This is tested by interacting mass education with our measure for ethnic fractionalization. Looking at Figure 2b, we see that the confidence intervals are above zero only when ethnic fractionalization is less than .5, which represents around 45 percent of all observations, and the confidence intervals never drop below zero. This yields the conclusion that mass education is strongest in promoting democratization among ethnically-homogenous

societies, and should never decrease the likelihood of democratization regardless of fractionalization.

The third conditional expectation predicts that mass education should be most important in pushing democratization as the state moves further in time from colonialism. This is tested by interacting the measure for mass education with the measure capturing decades of independence. Figure 2c shows that mass education has an insignificant impact on democratization during the first three decades of independence. However, after around 35 years, mass education begins to have a significantly increasing positive impact on democratization, which represents around 62 percent of the sample. While somewhat depressing, this result demonstrates the struggles states have overcoming colonial institutions, and provides support for the fifth hypothesis.

Our final conditional expectation focuses on the cognitive development argument, predicting that the impact of tertiary education on democratization should depend on the flow of free information via the media. This is tested by interacting tertiary education for the entire population with our measure for media freedom. Figure 4d shows a positive and significant impact of tertiary education on democratization only when the government's control of information is below 1.4, which represents around 59 percent of the sample. As the government controls information beyond this level, however, tertiary education has little impact on the likelihood of democratization. This provides support for our final hypothesis, and further stresses the need for a free media to provide information to the population.

SUMMARY, CONCLUSION, AND IMPLICATIONS

We began this paper with an overview of how both primary education, which instills democratic social values, and tertiary education, with its emphasis on analysis and higher-order thinking, promote democracy. Our preliminary analyses of authoritarian failure from 1970 to 2008 provided strong support for both concepts, with the impact of mass education being

somewhat stronger than that for higher education, and education having its strongest impact among older populations. We then extended the discussion to further understand develop the multitude of contexts under which education is most likely to have a democratizing impact. Mass education is most likely to promote democratization when repression and ethnic fractionalization are relatively low, and as the state moves further in time since colonization. Tertiary education has its strongest effect on producing democratic government when citizens are provided with ample information from a free media.

This paper provides important information for researchers and policy-makers. For the former, this work confirms findings of similar processes, such as the positive impact of education on political participation (e.g., Kamens 1988), attitudes towards democracy (e.g., Krishna 2006), and political efficacy (e.g., Bowler and Donovan 2002). We extend this work by considering the impact of education on democratization both theoretically and empirically, which helps researchers better understand the causal mechanisms behind the education-democratization relationship. While we examine a handful of conditional relationships, plenty of work remains for future scholarship. To this point, we can say very little about the types of authoritarian regimes that are most likely to democratize given their education system. Military-led dictatorships, monarchies, and theocracies might be less amenable to pressures from the well-educated, for example, while education might have a stronger impact in single- and multi-party authoritarian regimes. We also know little about the cultural make-up of regimes that might impact the education-democratization relationship. Western-leaning regimes might be more susceptible to democratization, for example, while more education in more traditional cultures might work to further solidify the regime in power. Finally, we have only touched upon the role that the international community might play in pushing education for democratization. While

international organizations like the World Bank place huge resources towards education (Thyne and Moreno 2008), we know little about whether these resources impact regime transitions.

For policy-makers, we recognize a number of ramifications of our research. First, we should not expect an immediate impact when improving educational access for the masses. While the efforts will eventually bear fruit, it may take decades to see a significant change in how people make demands of their government. Second, improving access to education will make little difference in promoting democracy under repression, where authoritarian governments are likely to use education as a tool of indoctrination. Thus, those promoting education must look beyond access and literacy by paying attention to the quality of education that is provided to the masses. Curriculum must be designed to socialize democratic values, not indoctrinate. Third, education can be used by the leadership as a tool to solidify support among their ethnic affiliates, which means that access to education under ethnic heterogeneity should be closely monitored to assure that curriculum is not geared towards promoting discrimination of “out groups” in society. Fourth, particular attention should be paid to states only decades from colonialism, as these states are likely to need major support in reforming their educational systems to work for the people, rather than the former colonial power. Finally, increased access to tertiary education is unlikely to produce the type of critical thinkers necessary to speak for political liberalization when they lack access to unbiased information about their system and alternative forms of governance. Thus, pressing for more access to tertiary education should be coupled with promotion of a free press and/or improvement in information technologies.

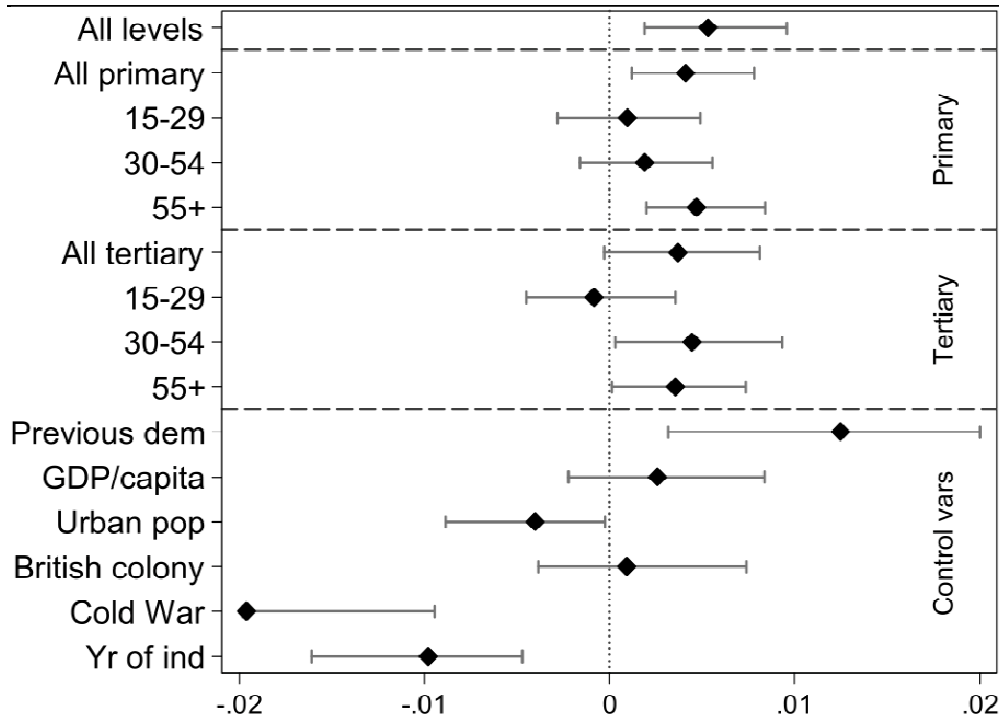
Ultimately, leaders and policy-makers attempting to promote democracy have many tools at their disposal to pressure regime change, ranging from full invasions to diplomatic pressure. This article provides support for the effectiveness of education as an additional tool to promote democratic support among the masses and elites.

Table 1: The Impact of Education on Authoritarian Failure, 1970-2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% with some ed	1.640** (0.696)								
Primary, whole pop		2.044** (0.876)							
Ages 15-29			0.413 (0.928)						
Ages 30-54				0.720 (0.758)					
Ages 55+					2.148** (0.773)				
Tertiary, whole pop						7.431 (5.067)			
Ages 15-29							-1.033 (2.696)		
Ages 30-54								5.519* (3.313)	
Ages 55+									10.587* (6.247)
Previous democ	1.037** (0.361)	0.933** (0.389)	1.101** (0.414)	1.038** (0.418)	0.953** (0.370)	1.119** (0.389)	1.177** (0.419)	1.159** (0.395)	1.143** (0.380)
GDP/capita	0.162 (0.200)	0.328* (0.174)	0.405* (0.180)	0.374* (0.176)	0.262 (0.183)	0.227 (0.210)	0.417* (0.215)	0.212 (0.199)	0.227 (0.202)
Percent urban	-1.704* (0.938)	-1.424 (0.967)	-1.480 (0.987)	-1.433 (0.970)	-1.505 (0.977)	-1.939* (1.012)	-1.435 (0.966)	-2.039* (1.016)	-1.912* (1.001)
UK colony	0.082 (0.476)	0.056 (0.473)	0.048 (0.488)	0.018 (0.475)	0.062 (0.477)	0.064 (0.483)	0.048 (0.483)	0.052 (0.486)	0.126 (0.483)
Cold War	-1.423*** (0.343)	-1.473*** (0.334)	-1.361*** (0.322)	-1.410*** (0.328)	-1.486*** (0.342)	-1.285*** (0.345)	-1.369*** (0.323)	-1.257*** (0.348)	-1.294*** (0.345)
Yr of indep	-0.012*** (0.003)	-0.011** (0.004)	-0.011** (0.004)	-0.010** (0.004)	-0.011*** (0.003)	-0.012*** (0.003)	-0.011** (0.004)	-0.012*** (0.003)	-0.012*** (0.003)
Constant	16.905** (6.812)	13.585* (7.153)	13.645* (7.225)	13.519* (7.293)	14.576* (7.002)	16.644** (7.150)	13.691* (7.391)	16.906** (7.020)	16.817** (7.124)
Observations	2,184	2,184	2,184	2,184	2,184	2,184	2,184	2,184	2,184
Wald Chi2	92.06***	95.11***	91.11***	91.73***	100.9***	94.17***	90.29***	93.06***	91.60***
LL	-240.2	-240.6	-243.0	-242.7	-239.4	-242.1	-243.0	-241.8	-241.7

Note: Robust standard errors in parentheses. Authoritarian years and splines not shown. ***p<.001; **p<.01; *p<.05 (one-tailed).

Figure 1. The Impact of Education on Democratization, 1970-2008:
Substantive Effects



Note: Values reveal first difference (FD) estimations (◆) with 95% confidence intervals (|—|). Estimations for control variables come from Table 1, Model 1.

Figure 2. The Effect of Education on Democratization: Conditional Relationships

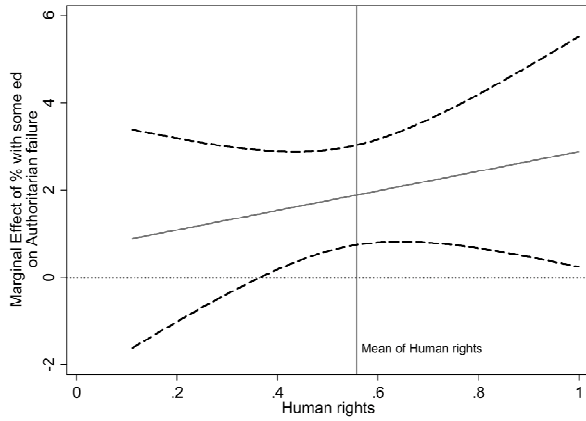


Figure 2a.

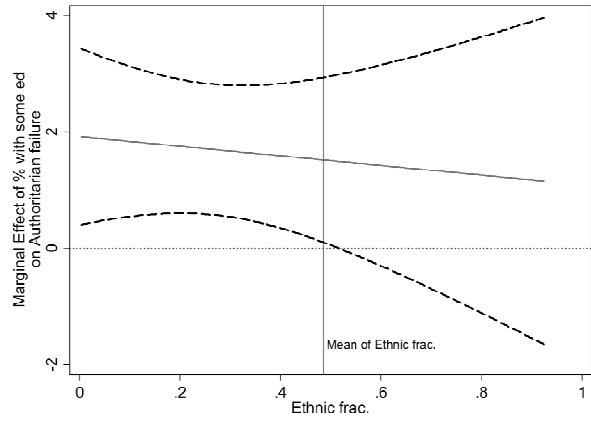


Figure 2b.

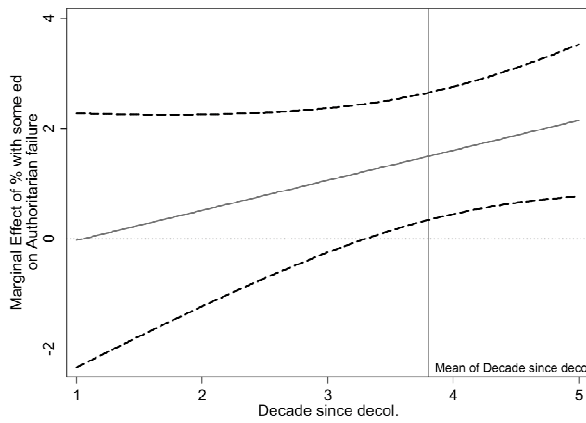


Figure 2c.

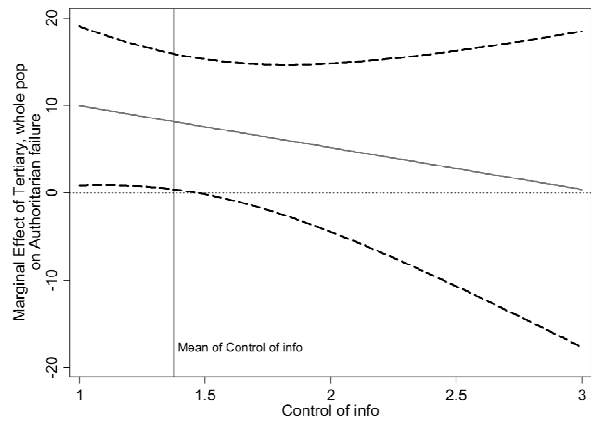


Figure 2d.

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NOTES

¹ Our theoretical discussion focuses on the clear differences between the goals, processes and expected outcomes of primary and tertiary education. We lack the same clarity in a discussion of secondary education, which is expected to provide a bridge between the socializing aspects of primary education and the analytical focus of tertiary education. While undoubtedly important, the blending of goals and processes makes it difficult to draw predictions for secondary education, which is why we largely set secondary education aside in our discussion.

² While defining democracies as $\geq +6$ is conventional in the literature and recommended by the Polity coders (Marshall and Jaggers 2000), we ran several analyses to assure that the results are insensitive to this coding decision. This included testing various cut-off points using the Polity index (0 through +7) and using the “Free” category from Freedomhouse (2010). Results are robust and frequently stronger across each specification. We chose to present the most conventional approach.

³ This approach is akin to time-varying duration analyses, where the unit of analysis is time and the dependent variable is the probability of observing some event (democratization in this case) at time t , given covariates at time t and the fact that the observation has survived to time t . We also ran the analyses using Cox and Weibull duration analyses, which yielded substantively identical results. We present the results using logistic regression due to ease in interpretation.

⁴ We ran analyses separating education levels by gender and age groups. Results provided no information beyond what is presented here.

⁵ In addition to the control variables that appear in the analyses, we also experimented with a number of additional control variables to assure the robustness of our results, including measures for ethno-linguistic fractionalization, religion, trade, regime type, and regional dummies. The

inclusion of none of these variables makes any meaningful impact on our hypotheses tests. Thus, we present the most parsimonious model possible.

⁶ The individual levels of education are not included in the same model due to high collinearity. Though we should be cautious in comparing the impact of variables across models, we can get some sense of the relative impact of the various education measure on the likelihood of democratization by considering the substantive results in Figure 1.

⁷ We should note that while the substantive effects seem large, the rareness of the dependent variable produces small predicted probabilities in general. This is similar to other analyses of rare dependent variables (e.g., dyadic conflict).

⁸ Full tables used to generate Figure 2 are presented in the Appendix.

APPENDIX

The Impact of Education on Authoritarian Failure, 1970-2008:
Conditional Relationships (Results used to generate Figure 2)

	(1)	(2)	(3)	(4)
% with some ed	0.637 (1.814)	1.919* (0.913)	-0.573 (1.753)	
Human rights	0.879 (2.315)			
% w/ ed*HR	2.242 (3.106)			
Ethnic frac.		0.332 (1.284)		
% w/ ed*Ethnic frac.		-0.825 (2.335)		
Decade since decol.			-0.348 (0.416)	
% w/ ed*Decade since decol.			0.544 (0.413)	
"Tertiary, whole pop"				14.745 (10.332)
Information				1.577*** (0.432)
Tertiary*Information				-4.781 (6.345)
Previous democ	1.159*** (0.373)	1.026** (0.357)	0.985* (0.515)	1.201*** (0.374)
GDP/capita	-0.078 (0.206)	0.173 (0.208)	0.179 (0.200)	0.275 (0.222)
Percent urban	-1.856* (1.088)	-1.763* (0.952)	-1.735* (0.970)	-2.006* (1.097)
UK colony	0.212 (0.466)	0.120 (0.471)	0.009 (0.481)	-0.273 (0.479)
Cold War	-1.288*** (0.331)	-1.444*** (0.360)	-1.532*** (0.353)	-1.289*** (0.385)
Yr of indep	-0.014*** (0.004)	-0.012*** (0.003)	-0.012** (0.004)	-0.008* (0.004)
Constant	23.053*** (7.250)	16.653** (6.906)	18.469* (8.629)	6.409 (8.163)
Observations	1,740	2,184	2,184	2,166
Wald Chi2	73.88***	97.94***	119.7***	108.1***
LL	-218.7	-240.2	-239.4	-230.4

Note: Robust standard errors in parentheses. Authoritarian years and splines not shown. ***p<.001; **p<.01; *p<.05 (one-tailed).