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Literacy and State–Society Interactions in Nineteenth-Century France

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Abstract: *Modern states are distinguished by the breadth and depth of public regulation over private affairs. This aspect of state capacity and state power is predicated on frequent and dense encounters between the state and the population it seeks to control. We argue that literacy in the language of state administration facilitates state–society interaction by lowering the transaction costs of those encounters. We support this claim with evidence drawing upon detailed historical data from nineteenth-century France during a crucial period of state and nation building. Focusing on the specific domain of French marriage regulations, we find that increasing literacy predicts greater popular involvement with local authorities across French regions over time. These results demonstrate that literacy plays an important role in political development not solely by enhancing loyalty to the state, as the literature has recognized, but also by lowering linguistic and human capital barriers to state–society interaction.*

Verification Materials: The data and materials required to verify the computational reproducibility of the results, procedures, and analyses in this article are available on the *American Journal of Political Science* Dataverse within the Harvard Dataverse Network, at https://doi.org/10.7910/DVN/YQSBOA.

Modern states are distinguished by the breadth and depth of public regulation over private affairs. Indeed, a defining axiom of the contemporary international state system is that state institutions should provide the predominant (if not exclusive) rules and regulations governing social and economic behavior over a given territory (Migdal 1988, 14). Many scholars therefore consider the ability to make and enforce binding rules to be central to conceptions of stateness and state capacity (Fukuyama 2013; Lindvall and Teorell 2016; Migdal 1988; Scott 1998; Soifer and Vom Hau 2008). Importantly, the everyday practice of this rule-making authority is predicated upon frequent and dense encounters between the state's administrative institutions and the population it seeks to control (Bramber et al. 2020; Lee and Zhang 2017; Mann 1984; Scott 1998; Soifer 2008; Soifer and Vom Hau 2008). Historically, however, the extent to which states were able to penetrate society and interpose themselves in the individual lives of citizens varied widely within national territorial boundaries. How can we explain variation in this key aspect of state power and political development?

We argue that interactions between state and society depend upon the degree of literacy in the language of state administration. Literacy facilitates state–society interaction by lowering linguistic and human capital barriers in encounters between citizens and public officials. These encounters proceed more smoothly when citizens can understand and comfortably "communicate" with the state through the medium of official written documents. By contrast, in areas where literacy is confined to an elite minority, ordinary citizens face increased transaction costs

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in dealing with state institutions.[1] At the margin, these costs may deter citizens from interacting with the state altogether, thereby weakening a crucial component of state power.

In advancing this argument, we offer a new spin on the oft-cited role of literacy in mediating the relationship between states and their citizens. Historical accounts have commonly linked the rise of mass literacy to the institution of state-provided primary education (Darden and Grzymala-Busse 2006, 94, 98; de Swaan 1988, 81; Wimmer 2016, 1415). A central outcome of state-sponsored schooling was to inculcate a sense of shared national identify and loyalty to the state that ultimately served to elicit greater compliance with centralized "rules of the game."[2] But whereas extant studies privilege the identity-defining and loyalty-enhancing dimensions of education, our article focuses instead on the role of literacy in reducing the costs of communication between states and their citizens. Though mundane, the everyday communicative aspect of literacy nonetheless serves as an important factor supporting the effective implementation of official rules and regulations. This channel is especially important in domains of state–society interaction where loyalty is unlikely to affect society's acceptance of the state as a monopoly regulator of social relations.

We test these arguments using richly detailed historical data from French departments collected during the course of the nineteenth century. The French case is foundational in the scholarship on state and nation building and provides an excellent opportunity to study the process through which the state imposed itself directly in the lives of its citizens. It also offers rich subnational and temporal variation in literacy and state–society interactions during our period of study. Indeed, in his classic study, Eugen Weber documented the explicit attention paid by state authorities to *regional* problems of illiteracy and highlighted the role of educational policies in turning recalcitrant "peasants into Frenchmen" (Weber 1976). Drawing inspiration from Weber's work, we explore the implications of these same processes for the state's ability to penetrate society and interact directly with individual citizens.

To capture citizens' engagement with public officials, we examine private behavior within the domain of French family law. Regulations in this domain constitute a classical example of the state's attempt to govern and control private social behavior. Whereas the earliest states tended to extract labor and wealth and not much else, modern states concerned themselves with regulating the details of everyday life (Migdal 1988, 14–15, 18, 25, 30–31). Family law thus offers an important lens through which to study the efficacy of state–society interaction.

We operationalize state–society interactions in this domain using data on marriages between widow(er)s and a brother (sister) of the deceased spouse. These "in-law" marriages were governed by a tangle of regulations that required interaction with a motley cast of local officials including mayors, justices of the peace, notaries, tax collectors, clerks, and the public prosecutor. The ability to marry one's in-laws thus depended critically upon an individual's willingness to engage with a broad segment of the local bureaucracy. Just as importantly, in contrast to other outcomes such as tax evasion or draft dodging, compliance with marriage regulations is *unlikely* to be driven by loyalty to the state. Instead, we argue that the prevalence of in-law marriages captures the role of transaction costs in state–society interactions.

To explore how literacy influences state–society interaction, our empirical strategy leverages the fact that the attainment of literacy proceeded along different trajectories in different French regions over the course of the nineteenth century. The panel structure of our data allows us to control for temporally and spatially invariant factors related to state–society interaction that are otherwise difficult to observe. Within this framework, we ask whether the pace of local improvement in mass literacy predicts changes in a region's incidence of in-law marriage.

We find that literacy is a consistent predictor of the frequency of officially registered in-law marriages. Over 1836–96, within-region improvements in literacy have a roughly equal-sized impact as urbanization. Further, using historical data on draft dodging to control for loyalty to the state, we show that reduced transaction costs constitute an independent mechanism linking literacy to increased state–society interactions. We also subject our analyses to a battery of robustness checks to address potential concerns about reverse causality, omitted variable bias, and sample composition. Overall, the evidence points to a considerable payoff from mass literacy in terms of citizens' interactions with the state.

This article contributes to two distinct literatures. First, we engage with an influential argument on the role of mass education in state and nation building. Although scholars commonly recognize that state schools fulfilled the dual functions of spreading nationalist ideas and providing instruction in the national language, the academic literature has tended to privilege analyses of outcomes

[1] For a different take on language, transaction costs, and state and nation building, see Wimmer (2018).

[2] See Balcells (2013, 468, 474–75), Bendix (1964, 108), Darden and Grzymala-Busse (2006, 89–90, 94, 96, 99–100), Darden and Mylonas (2016, 1447, 1456–58), de Swaan (1988, 91–92), Gellner (1983, 64), Hechter (2001, 66), Meyer (1977, 70), Ramirez and Boli (1987, 3), and Weber (1976, 331–36, 493–94).

related to national cohesion.[3] To the extent that language instruction is discussed, scholars place its importance in the context of reducing linguistic diversity and constructing a national identity around an "imagined community" of fellow speakers (and readers).[4]

Although we follow the extant scholarship in recognizing the importance of literacy and education for state–society relations, our article extends these ideas by emphasizing transaction costs rather than a lack of national sentiment as impediments to state development. We stress that in becoming literate in the official national language, individuals gain not only an awareness of their national identity, but also the ability to interact effectively with state agents and institutions—a channel that the literature has generally overlooked. We thus provide evidence for the importance of an additional, qualitatively different determinant of state–society relations. In this context, our article presents (to our knowledge) the first empirical test of the notion that this aspect of literacy can facilitate encounters between states and their citizens.

Second, we engage with a rich scholarship on state formation and state capacity. Much of this literature has fruitfully focused on explaining the origins of the state's formal institutions. The bellicist tradition, for example, holds that rulers facing external threats built institutions to extract revenue (Centeno 2002; Dincecco, Federico, and Vindigni 2011; Herbst 2000; Tilly 1992). Other scholars trace variation in institutional strength to the legacy of colonialism (Acemoglu, Johnson, and Robinson 2001; Lange 2004; Mahoney 2003). Domestic structural and political factors also influence the emergence of strong states, which may take particular institutional forms as a result of political bargains between powerful actors in society (North, Wallis, and Weingast 2009; Slater 2010).

We advance this line of research by studying how formal institutions, once constructed, actually interact with the populations they purport to rule. Focusing only on institutions while ignoring interactions risks misunderstanding the nature of state development and state power, which in turn has implications for policy interventions to improve state capacity. Migdal, who sought to clarify why observers arrived at such radically opposed assessments of state power in the developing world, described the problem succinctly: "states have become a formidable presence in their societies, but many have experienced faltering efforts to get their populations to do what state policy makers want them to do" Migdal (1988, 9). Put differently, state strength is more than just the institutions that compose the state; it is also about whether, where, and to what extent states interact with and govern their citizens in an effort to regulate and transform social relations (Mann 1984; Migdal 1988; Soifer 2008). We draw attention to the importance of state–society interactions in the development of state capacity during a period when the state sought to expand its powers beyond extraction and conscription into the realm of social regulation. Our article's primary contribution is to highlight the central role of transaction costs in shaping the state–society interactions that form the bedrock of state power.

Literacy and Communicative Transaction Costs

We develop our theory of transaction costs by focusing on several impediments to state–society interaction. Foremost among these are *linguistic barriers* whereby citizens whose mother tongue is not the national language may be literally unable to "speak" to the state. Such barriers are most pronounced in developing countries where multiple ethnolinguistic groups reside within "artificial boundaries," but this situation has also obtained in ostensibly monolinguistic states in the not too distant past (Laitin and Ramachandran 2016, 458; Laitin, Solé, and Kalyvas 1994, 5; Wimmer 2016, 1412–13). Indeed, a major theme in Weber's work concerns the challenge of educating children whose only encounter with French occurred inside the classroom and who would revert back to their native *patois* in daily life.

States could in principle address this problem by adopting multiple official languages. Yet there are practical limits to such an approach involving, at a minimum, the translation of official documents and decrees and the training of bilingual (or multilingual) officials (Grillo 2009, 35–36; Liu 2015, 15). Moreover, translation into local languages that are unstandardized or lack a written tradition is costly, as this requires considerable investments in the development of grammar, orthography, and syntax (Laitin and Ramachandran 2016, 469).

This last point underscores two important, if often underappreciated, *human capital* aspects of state–society interaction. First, most dealings with the state are transacted through the medium of official written documents, and citizens must fill out petitions and applications in paper. Thus, the ability to read and write becomes essential even for "native speakers" of the national language.

[3] See note 2. On the consequences of broader cultural homogenization for administration and control, see Slater and Kim (2015) and Scott (1998).

[4] See Anderson (2006, 44, 77, 84), Darden and Grzymala-Busse (2006, 98–99), Darden and Mylonas (2016, 1456), Meyer (1977, 69) and Wimmer (2016, 1412–13). On the role of language as a marker of ethnic or national identity, see e.g., Laitin (2007; 1998), Liu (2015, 8-9), and Lodge (1993, 24).

Second, scholars often highlight a functional divide between the formal language of administrative affairs and the "low" vernaculars employed in everyday life (Grillo 2009, 3–4, 195; Laitin 1992, 16; Laitin, Solé, and Kalyvas 1994, 18–19, 26; Lodge 1993, 13–14; Weber 1976, 336). The language of bureaucracy is distinguished by not only its abstractly formalized style and grammar, but also its use of a more abstract lexicon describing categories and constructs (e.g. *petitioner* vs. *respondent*) that have no analogue in the practical world of everyday experience (Darden and Grzymala-Busse 2006, 99; Weber 1976, 91–94). Given this separation of language into distinct social domains, it is little wonder that the "simple man" was often baffled and overwhelmed in his encounters with officialdom (Weber 1976, 51).

Taken together, these dynamics impose significant transaction costs that exclude citizens lacking linguistic and human capital from participation in the realms of law, government, and administration (Lodge 1993, 189). Such individuals would need to seek out mediators (e.g. solicitors, notaries) in order to conduct official business (de Swaan 1988, 59, 64, 73; Laitin 2007, 33; Weber 1976, 329, 338). However, beyond the normal financial cost of such services, as well as the potential discomfort involved in revealing one's private affairs to a third person, there was no guarantee that mediators would not abuse their positions to earn extra rents (Weber 1976, 329). Indeed, "the countryman, so often illiterate, always believed himself diddled by the educated or semi-educated men with whom he had to deal—and he very often was" (Weber 1976, 51). To avoid such expenses or the effort required to locate a trustworthy intermediary, citizens might forego interacting with the state altogether.

In this context, the expansion of literacy serves to facilitate state–society interaction by bridging the linguistic and human capital barriers separating citizens and central officials. Here, it is worth noting that in many (but certainly not all) European states, this expansion took place against the backdrop of state-sponsored schooling (Darden and Grzymala-Busse 2006, 94, 98; de Swaan 1988, 81; Wimmer 2016, 1415). Within such institutions, students acquired a bundle of skills that would prove useful in dealing with the state. First, since schooling was typically conducted in the national language,[5] education brought linguistic minorities into the fold and ensured that all schooled individuals could communicate via overlapping "linguistic repertoires" (Laitin 1992, 6). Moreover, students learned not only to *speak* a common vernacular, but also to read and write and thereby communicate with the state via its preferred medium. Finally, education served to steer students toward proficiency in a distinctly *formal* version of the national language. Thus, literate individuals gained an understanding of the abstract grammatical and lexical rules typically used in the "high" functions of bureaucracy and administration. Importantly, these were precisely the skills they would later need to comfortably navigate the world of paper, petitions, and official documents. For these reasons, we predict that as literacy increases, so too should the ease and frequency of state–society interactions.[6]

French Political and Linguistic Development

We test these arguments in the seminal case of French state and nation building during the nineteenth century. This case illustrates the challenge of trying to administer a population that often did not read, write, or even speak "standard" French. Additionally, France presents considerable subnational and temporal variation in the spread of mass literacy that we exploit in our analyses.

Historically, prerevolutionary France was a "mosaic state" composed of "a patchwork of provinces joined [together] at various times by conquest and diplomacy" (Grillo 2009, 27). Although French—the speech of Paris and the surrounding region as codified by the king and his court—had been granted monopoly status as the language of government in 1539, its use remained confined to members of the nobility and the legal and merchant classes (Grillo 2009, 29, 68; Lodge 1993, 141; Rickard 2003, 39-41, 83, 116–17). Importantly, the monarchy made little effort to impose its own speech or writing on the mass of the rural population (Grillo 2009, 28–29; Lodge 1993, 209–10).

This changed with the French Revolution. The Revolution wiped away the power of local authorities and subordinated the Church to state control. Thereafter, the state sought to expand its regulatory authority over private affairs and intensify its presence in the lives of the governed. To an unprecedented degree, these changes brought "even the most remote villager, willy-nilly, into contact with the world of administration, of documents, stamps, signatures, and counter-signatures" (Rickard 2003, 121–122). Furthermore, these interactions all took place through

[5]See e.g., Darden and Mylonas (2016, 1456–57) and de Swaan (1988, 52, 63, 82). Our discussion of scope conditions below also explores implications of our theory in cases where mass literacy exists in a language other than the official language of the state.

[6]In addition to these aforementioned elements, we recognize that schooling also imparted patriotic values and loyalty to the state. See note 2. We are careful to control for this alternative loyalty mechanism in our analyses below.

the medium of standard French as the bureaucracy "did not understand Breton, or Basque, or Provençal." (Grillo 2009, 68).

The newly activist state quickly recognized the difficulties posed by the lack of linguistic uniformity for effective governance and administration (Grillo 2009, 34, 38-39). Accordingly, throughout the first half of the nineteenth century, the government strove toward the realization of mass literacy through educational reform. Successive regimes invested directly in school facilities and teacher training, and complementary investments in local roads significantly reduced the costs of attending school for children in isolated rural areas (Weber 1976, 307-8, 319–20). The Ferry Laws (1881–82) mandating compulsory and free primary schooling gave further impetus to earlier reforms. These policies intersected with broader social and economic changes to markedly transform the linguistic landscape: on the eve of World War I, 97% of young men in their twenties could claim the ability to read and write (Ministère de la Guerre 1919).

A Statistical Portrait of French Literacy

Our theory holds that literacy in the official language should reduce transactional barriers to state–society interaction. To test this argument, our empirical strategy leverages the fact that increases in literacy occurred at different rates over time across French regions. This section provides a quantitative description of these patterns during the nineteenth century.

We measure literacy using data from the French military collected in the course of implementing France's system of universal conscription. Under the *Loi Gouvain-Saint-Cyr*, all men became eligible for conscription upon turning 20. On an appointed day each year, every male meeting basic age and residency criteria was called to the local district capital where a public drawing of lots took place to determine his draft order. At this drawing, all men—including those who were eventually excluded from service obligations—declared their ability to read and write. This information, compiled and released as a yearly data series by the Ministry of War, thus measures literacy for the universe of 20-year-old men and functions as an excellent proxy for literacy levels in the department more broadly.[7]

Figure 1 provides a snapshot of the expansion of literacy across France during the nineteenth century.[8] Darker areas indicate a higher percentage of literates. The maps corroborate our previous qualitative discussion: in the earliest panel, literacy rates were remarkably uneven, with a rough gradient running from the northwest to the southeast. By 1896, however, this gap had closed considerably with literacy rates at 80% or higher in all departments.

Marriage Regulation and State–Society Interaction

Before examining the consequences of this linguistic convergence, we turn to the important issue of how to operationalize state–society interaction. We examine these interactions through the lens of French family law. Five considerations drive this decision.

First, the encroachment of the state into private affairs is the hallmark of state building and state development. Although the earliest states primarily extracted taxes and labor, the modern state sought to regulate the more mundane details of social behavior of which the governance of family relations constitutes a primary example.[9] Family law is thus a theoretically appropriate domain for testing arguments about state–society interaction.

Second, in contrast to commercial regulations that are more likely to be relevant only for a relatively prosperous segment of the population, family law affects all classes of citizens. As such, marriage regulation provides a window into the state's penetration of elite and nonelite society.

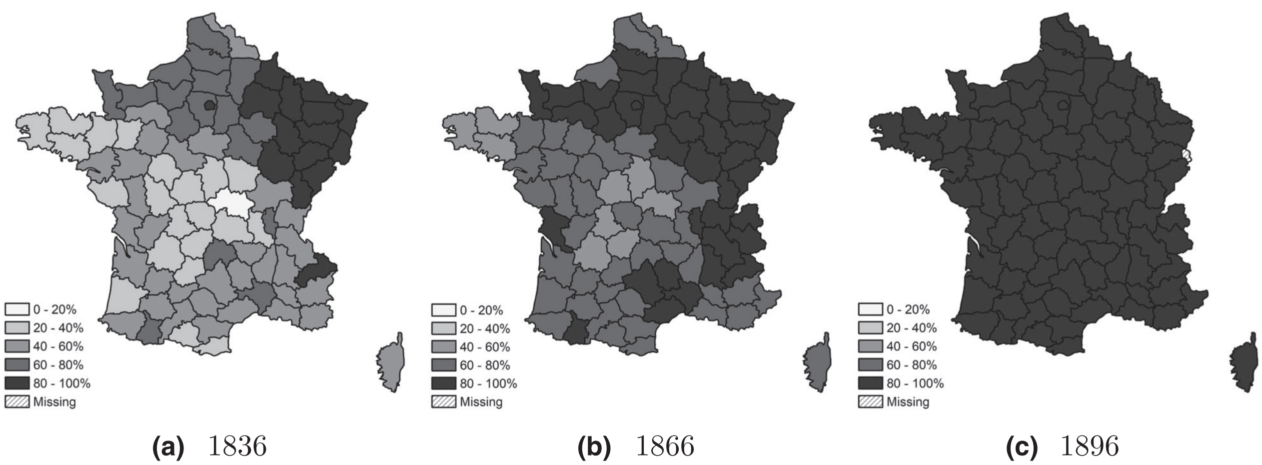
Third, the French government published comparable data on civil status aggregated at the departmental level. These data allow us to construct a subnational panel for 1836–96 that provides greater inferential leverage than a national-level analysis.

[7]We operationalize literacy as the percentage of 20-year-old men who can read French.

[8]Appendix 5.1 in the supporting information (SI) reports literacy trends by department and year for the full sample.

[9]Importantly, the regulation of family affairs was legally the sole prerogative of the French state and *not* of religious institutions. Although Napoleon's 1801 Concordat with the Papacy officially recognized a public role for the Catholic Church in French society, it limited the Church's purview to the moral and educational domains and, crucially, excised the Church's influence from governance over family relations including marriage, divorce, and inheritance (Bowen 2007, 23). The Civil Code of 1804 thus defined marriage not as a religious rite but as a civil law contract to be regulated and performed by the civil authorities alone (Tunc 1954–1955, 445–46).

FIGURE 1 Literacy Rates, 1836–96



Note: Literacy is defined as the percentage of conscripts who can at least read.

Fourth, we have information on not only the "letter of the law" but also the social context of the "law in action." We can thus enrich our interpretation of the statistical results with qualitative details about the mechanisms at play.

Fifth, and perhaps most importantly, marriage regulations allow us to isolate a domain of state–society interaction that depends principally on our theorized transaction cost mechanism. Compliance with family law therefore differs from compliance with tax or military obligations that are more likely to reflect patriotic or nationalist sentiments. We contend that these motivations are implausible explanations for adherence to marriage regulations, but we also directly account for the possibility of the loyalty mechanism in our analyses.

Our measure of state–society interactions draws on a class of laws governing marriages between close relatives. Specifically, we consider proposed unions between a widower (or widow) and a sister (or brother) of the deceased spouse. Though rare, such "in-law" marriages occurred throughout European societies well into the twentieth century and constituted between 1% and 3.5% of all French remarriages during the period we study.[10]

Historically, in-law marriages reflected a sociological context wherein marriage functioned as an economic arrangement designed to pool labor, land, and resources in service of the family as a unit of production (Weber 1976, 167–70). Upon the death of a spouse, however, this family economy could face severe dislocations: not only might property be split, but the loss of a husband's labor or a wife's domestic services could throw the family farm or business into considerable jeopardy (Blom 1991, 194–200).

Deprived of a partner's labor and earning power, widow(er)s faced strong incentives to remarry.[11] Finding a new partner could prove challenging, however, especially if the surviving spouse was old, had young children, lacked a sufficiently attractive dowry, or lived in a geographically isolated area (Bras, Van Poppel, and Mandemakers 2009, 794–95; Lévy 1910, 140; Sutter 1968, 303–4; Weber 1976, 168–70). In these circumstances, an unmarried sibling of the deceased may sometimes be "swapped in," thereby filling the vacant roles of housekeeper, breadwinner, and parent (Anderson 1982, 80; Bras, Van Poppel, and Mandemakers 2009, 800; Kuper 2002, 163–65; Lanzinger 2018, 10–14; Lévy 1910, 141; Pelaja 1996, 238; Segalen and Richard 1986, 127).

While convenient, such informal cohabitation arrangements often represented only a second-best option. Although they solved a household's immediate labor needs, the idea of an unmarried couple living together might also have aroused a certain social stigma, especially in (not uncommon) cases where the new couple subsequently conceived children out of wedlock.[12] More importantly however, cohabitation did nothing to restore the legal integrity of the property that was torn asunder at the death of the first spouse. For that (and to provide

[10]On the wider European context, see Anderson (1982), Bras, Van Poppel, and Mandemakers (2009), Gullette (1990), Kuper (2002), Lanzinger (2018), and Pelaja (1996).

[11]This was especially true for widows who typically had few job prospects outside the home. See Weber (1976, 172).

[12]See Girault (1873b, 285) and Lévy (1910, 138–39). On the other hand, it appears that once *legally contracted*, in-law relationships did not offend public mores. See Girault (1873a, 275, 277), Girault (1878, 141), and Lévy (1910, 140).

their arrangement with an "aura of respectability"), the cohabiting couple needed a marriage certificate from the state (Van de Walle 1968, 268).

Legally, however, in-law marriages were prohibited unless couples first obtained a dispensation.[13] The process began with filing a petition at the local prosecutor's office which ensured that applications were complete before forwarding them onto the Chancellery for formal approval. Importantly, almost all dispensation requests were approved as a matter of course.[14] The state even went so far as to remit the majority of legal fees depending upon the income of the petitioners. In other words, the only major difference in obtaining an in-law marriage versus cohabitation comprised the extra paperwork (and interaction with the bureaucracy) involved in the dispensation process.

Unfortunately, this process was far from simple. Although the litany of necessary documents could vary from one local tribunal to another, a "representative" list compiled by the public prosecutor of Rochechouart includes the following (Girault 1873a, 280; Girault 1873b, 278–79):

1. Birth and marriage certificates of the petitioners, their parents, and their grandparents
2. The death certificate of the late spouse
3. Birth certificates for any surviving children
4. Acts registering the petitioners' parents' consent
5. A certificate from the mayor attesting to the "good morals" of each petitioner
6. A certificate from the mayor attesting that the petitioners have full enjoyment of civil and political rights
7. A certificate that the future husband has no outstanding military service obligations
8. Separate opinions from the mayor, the justice of the peace, and the parish priest that the proposed marriage will be viewed favorably by the community
9. An extract of the cadastral map showing the petitioners' property
10. An extract of petitioners' tax returns
11. A certificate from the mayor attesting to the petitioners' wealth and annual income
12. A notarized act correcting any spelling mistakes on any official documents
13. Letters to the Head of State and the Lord Chancellor explaining the circumstances surrounding the proposed marriage and outlining why a dispensation should be granted

What stands out from this list is not simply the sheer quantity of official documents that the petitioners needed to assemble, but also the range of administrative actors to whom citizens must turn. The bureaucratic and paperwork-intensive nature of the dispensation process thus makes the phenomenon of in-law marriage an excellent vehicle for capturing the role of transaction costs in state–society interactions.

We gather statistics on the frequency of in-law marriages from annual accounts of the Civil Justice administration. Data are available for 1836–96. Because in-law marriage is a type of remarriage, we divide these figures by the total number of remarriages per year to create our dependent variable. In the nineteenth century, this ratio averages around 25 in-law marriages per 1,000 remarriages.

Figure 2 displays the prevalence of in-law marriage over the nineteenth century. Figure 2a indicates considerable geographic variation with relatively higher rates around the Massif Central and in the northeast.[15] These patterns may reflect regional differences in the importance of the family economy, the availability of (exogamous) marriage partners, or the stigma of cohabitation—all issues to which we return later. Suggestively, Figure 2 also shows that *increases* in marriage rates are concentrated primarily in the south and west of the country. Consistent with our theoretical expectations, these were precisely the regions that experienced the most rapid improvements in literacy over our study period.

Formal Tests

To formally assess the relationship between literacy and state–society interactions, we create a panel dataset comprising information from French departments over much of the nineteenth century. In addition to the aforementioned marriage and literacy statistics, our dataset contains economic, social, and demographic indicators covering the period 1836–96.[16] Within this span, we extract

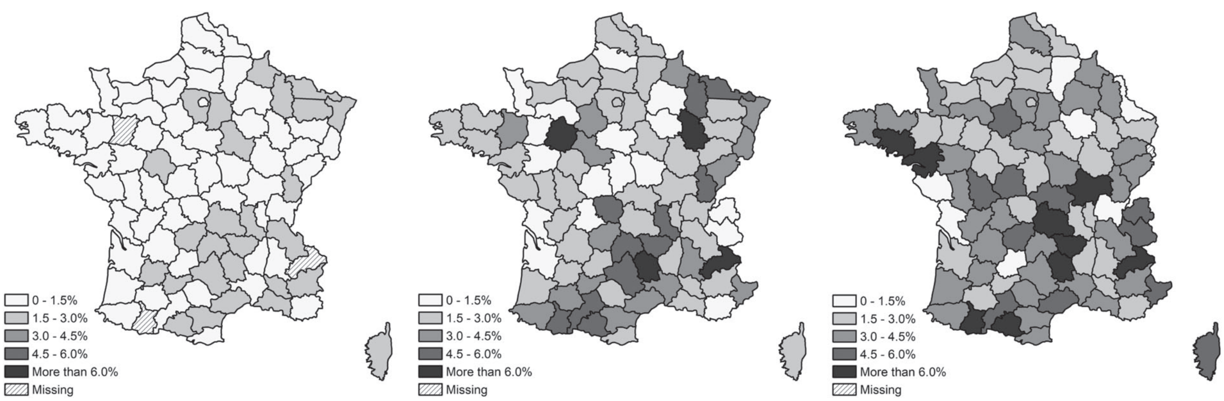
[13] See SI Appendix 1 (p. 1) for more on the legal history of this prohibition.

[14] Girault (1878, 141) notes that less that 1% of dispensation requests for in-law marriages were rejected. See also Girault (1873a, 278, 281–82) and Lévy (1910, 186).

[15] SI Appendix 5.2 reports in-law marriage trends by department and year for the full sample.

[16] We collected these data from primary historical sources including censuses, population registers, statistical yearbooks, and Ministry of Finance revenue reports. SI Appendix 2.1 provides full bibliographic information on the sources used to construct our data set.

FIGURE 2 In-Law Marriage, 1836–96



(a) 1836 **(b)** 1866 **(c)** 1896

Note: The figure depicts in-law marriage as a proportion of all remarriages.

observations spaced 5 years apart, corresponding to the dates of the national census.[17] The full panel contains 1,106 observations covering 13 points in time. Tables reporting descriptive statistics and correlation coefficients can be found in SI Appendices 3.1 and 3.2.

Our analyses exploit variation between and within departments over time.[18] An important advantage of our panel approach is that we can control for potential omitted variable bias due to regionally time-invariant factors such as the distance from Paris or historical experiences with state development (Sasaki 2019; Wimmer 2016; 2018). Accordingly, our models incorporate department-level fixed effects. Another potential source of bias concerns factors that vary uniformly across all regions over time. Examples include changes in the political regime or in the Chancellery's attitude toward approving dispensations. We account for these factors by also including period fixed effects in our regression framework.

More formally, we estimate the following equation:

$$y_{it} = \beta_1 T_{it} + \beta_2 X_{it} + \gamma_i + \delta_t + \epsilon_{it},$$

where i indexes departments, t refers to years, y is the ratio of IN-LAW MARRIAGES to all remarriages, T refers to the LITERACY of conscripts, X is a vector of covariates, γ and δ represent department and period fixed effects, and ϵ is the error. We report standard errors clustered by department.

Although our fixed effects eliminate several potential sources of bias, they cannot account for factors that vary within units at different rates over time. For example, demographers and historians generally agree that the frequency of marriages between close relatives is strongly shaped by (1) reliance upon a "family economy" pooling assets, land, and labor, as well as (2) geographic isolation that limits the number of available (exogamous) marriage partners (Bras, Van Poppel, and Mandemakers 2009, 794–95; Girault 1878, 142; Lanzinger 2018, 12–13; Sutter 1968, 303–4; Weber 1976, 168–70). To the extent that movement in these factors is also correlated with changes in literacy rates, our estimates may be biased.

We account for this possibility in two ways. First, since marriages between close relatives were more common in geographically isolated or underdeveloped areas, we control for the degree of URBANIZATION. Here, we follow several authors who have linked urbanization rates to economic prosperity (Acemoglu, Johnson, and Robinson 2002, 1232, 1239–42; Davis and Henderson 2003, 99, 120). Urbanization rates for 1851–96 are available from the census. For 1836–46, we use the estimates compiled by Le Mée (1989).

In addition to urbanization, we control for per capita TAXES on doors and windows. The logic is that more developed regions contained a greater number of large homes.[19] Further, in comparison to other forms of taxation, the doors and windows tax was easy to assess—tax collectors simply counted the number of visible openings on each house—thus minimizing concerns that tax receipts are also capturing state capacity. Data are available for 1836–96 from Ministry of Finance reports.

[17]The panel includes 1836, 1841, 1846, 1851, 1856, 1861, 1866, 1872 (delayed due to the Franco-Prussian War), 1876, 1881, 1886, 1891, and 1896. Note that dispensations were legally unobtainable before 1832, and literacy approaches a ceiling after 1900. Consistent data are also unavailable outside of this period.

[18]Unfortunately, we do not have individual-level data for this historical period.

[19]For robustness, SI Table 4.5 also reports models controlling for business taxes. Results are unchanged.

As an alternative approach, we control for the incidence of a closely related sociological phenomenon: namely, marriages between first cousins. Like in-law unions, marriages between first cousins were also concentrated in geographically isolated areas and related to the role of the family as an economic unit of production (Sutter and Tabah 1948, 610, 618.) The key difference, however, is that the Civil Code imposed no restrictions on cousin marriage. These unions could thus be contracted as any "normal" marriage without the extra hassle involved in obtaining a dispensation. By including the ratio of COUSIN MARRIAGES to total marriages in our model, we can control for the impact of broader social forces on in-law marriage and isolate the transaction costs element of literacy. Unfortunately, cousin marriage data are only available at the departmental level starting in 1856. Our models including this control are therefore estimated with a shortened panel.

Another potential source of bias concerns the social stigma associated with cohabitation and conceiving children out of wedlock. Our year fixed effects capture national-level changes in attitudes, but bias may remain if region-specific shifts in views toward such family arrangements are correlated with changes in the literacy rate.

We account for this possibility by controlling for the prevalence of so-called "repairing marriages" (*mariages réparateurs*). This was a legal mechanism by which married couples could legitimate *ex post* any children born out of wedlock (thereby "repairing" the original shame). We take the popularity of REPAIRING MARRIAGE (as a percentage of total marriages) as an indicator of the general desire for traditional family arrangements (Van de Walle 1968, 268.) As with cousin marriage, departmental statistics on repairing marriages are only available from 1856 onward.

Table 1 reports our regression results using LITERACY as a predictor of IN-LAW MARRIAGE. We begin with models that include only department and period fixed effects, and then add URBANIZATION, TAXES, COUSIN MARRIAGE, and REPAIRING MARRIAGE as additional controls. All variables are standardized to facilitate the comparison of coefficients.

Across all models, the percentage of in-law marriages increases with the literacy rate. This result corroborates our argument about literacy's role in reducing barriers to interacting with the state. Our controls for urbanization and taxes behave as expected: as regions develop economically, the frequency of in-law marriages decreases. Although neither effect reaches conventional levels of statistical significance, these controls help to frame the substantive importance of the association between literacy and in-law marriages. For example, Model 2 indicates that a one-standard-deviation change in literacy has an effect of about 70% of the size of a one-standard-deviation change in urbanization.

TABLE 1 Effect of Conscript Literacy on In-Law Marriage

	Long Panel: 1836–96		**Short Panel: 1856–96**	
	(1)	**(2)**	**(3)**	**(4)**
Literacy	0.222	0.175	0.410	0.386
	(0.077)	(0.076)	(0.121)	(0.128)
Urbanization		−0.245	−0.267	−0.361
		(0.160)	(0.289)	(0.305)
Taxes		−0.127	−0.037	−0.033
		(0.084)	(0.117)	(0.120)
Cousin Marriage				0.118
				(0.056)
Repairing Marriage				0.199
				(0.135)
Observations	1,105	1,105	777	777
Year Fixed Effects	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes

Note: OLS regression. All variables are standardized. Dependent variable is the ratio of in-law marriages to all remarriages. Standard errors are in parentheses and clustered by department.

Next, we examine the relationship between literacy and in-law marriage while controlling for cousin and repairing marriages. Since data on both controls begin in 1856, Model 3 first reports estimates of our main effect for this shortened period. Comparing Models 1 and 3, we see that the association between literacy and in-law marriage is even stronger in this later period, which is consistent with a pattern of rapid literacy expansion beginning in the latter half of the nineteenth century. Finally, our preferred specification in Model 4 shows literacy retains its strong effects in the presence of additional controls, and now has effects on roughly the same order as urbanization. Turning to the new controls, we note that changes in the rate of cousin marriage do indeed predict movements in the dependent variable, as expected. Repairing marriages are also positively correlated with in-law marriage, but the results fall short of statistical significance. Importantly, the inclusion of these additional controls does not substantively alter our main results.

Exploring Mechanisms

Our argument holds that literacy in the official language of state administration increases state–society

Table 2 Effect of Literacy on Draft Dodging and In-Law Marriage

	DV: Draft Dodging		DV: In-Law Marriage			
	Long Panel: 1841–96		Long Panel: 1841–96		Short Panel: 1856–96	
	(1)	(2)	(3)	(4)	(5)	(6)
Literacy	−0.231	−0.273	0.223	0.230	0.386	0.396
	(0.097)	(0.122)	(0.084)	(0.083)	(0.128)	(0.127)
Urbanization		0.103	−0.219	−0.222	−0.361	−0.366
		(0.266)	(0.182)	(0.182)	(0.305)	(0.304)
Taxes		−0.207	−0.077	−0.072	−0.033	−0.025
		(0.150)	(0.090)	(0.090)	(0.120)	(0.121)
Loyalty				0.027		0.039
				(0.029)		(0.027)
Cousin Marriage					0.118	0.120
					(0.056)	(0.056)
Repairing Marriage					0.199	0.200
					(0.135)	(0.132)
Observations	1,025	1,025	1,025	1,025	777	777
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS regression. All variables are standardized. Standard errors are in parentheses and clustered by department.

interactions by reducing the transaction costs of encounters with the state. An alternative account, however, links literacy to state–society interactions through the inculcation of nationalist sentiments via the institution of public education (Bendix 1964; Darden and Grzymala-Busse 2006; Darden and Mylonas 2016; Gellner 1983; Meyer 1977; Ramirez and Boli 1987; Weber 1976). As Darden and Grzymala-Busse (2006, 94) note, "a literate citizen would have spent at least four years in school and been exposed to the standard history, literature, geography, and music curricula that shaped common national identities and political loyalties." Further, it is possible that such loyalties increased citizens' willingness to interact with state bureaucrats. Thus, although we interpret our results as consistent with our arguments about the transaction cost–reducing effects of literacy, it is possible that literacy (as a proxy for exposure to the national curriculum) instead acts through the loyalty channel. We test this possibility here.

We operationalize LOYALTY using data on draft dodging (Weber 1976, 104–8). Specifically, we examine the number of individuals per department (normalized by the size of the military contingent) who are conscripted but fail to appear for duty (Balfour 1867). Data come from official recruitment reports and are available for 1841–96.

We first examine whether literacy affects draft dodging as a validity test of our loyalty measure. We regress draft dodging on literacy, include year and department fixed effects, and run models with and without our urbanization and taxation controls. Results are shown in Table 2, Models 1 and 2. As expected, greater literacy is associated with lower rates of draft dodging. These results are consistent with arguments that literacy-*cum*-education can build a national identity and increase loyalty to the state.

We now investigate whether literacy has any remaining explanatory power after accounting for the loyalty mechanism. Models 3–6 in Table 2 replicate the specifications from Table 1 with the addition of draft dodging as a control variable. Literacy remains a strong, positive predictor of in-law marriage, and coefficient sizes are virtually unchanged with and without the loyalty control. In contrast, the effect of draft dodging is statistically indistinguishable from zero. These results provide evidence supporting our contention that compliance with marriage regulations operates largely independently of the loyalty channel.

Additional Threats to Inference

Omitted Variable Bias

We next address two additional sources of potential omitted variable bias concerning (a) religiosity and (b) state presence. Regarding religiosity, Catholic doctrine had long taken a critical stance against marriages between close relatives (Lanzinger 2018; Pelaja 1996). Even though the Church no longer had responsibility for the institution of marriage in France, its moral opposition could nonetheless have affected popular behavior—for example, by dissuading the religiously devout from entering into an in-law union. This raises a concern to the extent that religious adherence also correlates with literacy.

Readers may also worry that greater physical presence of state institutions and bureaucrats correlates with higher literacy rates and independently facilitates contact between the state and its citizens (Darden and Mylonas 2016; Wimmer 2016). In this case, our results could be driven by the uneven expansion of state institutions.

In our main analysis, we elected to address these concerns using department fixed effects. Our choice is motivated by historians' accounts attesting to the regional stability of religiosity over the course of the nineteenth century (Gibson 1989; Larkin 1995). Similarly, fixed effects also account for historical legacies of state presence related to time-invariant factors such as distance from Paris, type of *généralité* under the *Ancien Régime*, membership in the Cinq Grosse Fermes (a customs union), or position on Roman road hubs. Nonetheless, to increase confidence in our results, we introduce additional models where we directly control for *intertemporal* changes in religiosity and state presence at the departmental level.

To measure religiosity, we examine adherence to the Catholic prohibition against marriage during Lent. Although the dates of Lent vary yearly, the Lenten period mainly falls during the month of March. A lower frequency of March marriages therefore indicates a higher degree of RELIGIOUS ADHERENCE (Camp 1961, 39–41). Unfortunately, data on Lenten marriages are only available for a limited set of years during 1872–96.

We measure state presence using data on PUBLIC ADMINISTRATION employment. We define this variable as the total number of public functionaries divided by department population. Data are available for years 1856–91 from the census.

Table 3 presents the findings. Models 1 and 3 reproduce our preferred specification using data from 1872 to 1896 (for religiosity) and 1856 to 1891 (for state presence), respectively. These models serve as benchmarks against which to compare the effect of introducing religiosity and state presence, an important step due to the altered sample size. In both cases, we observe the same positive effect of literacy, though the estimate in Model 1 falls just shy of the conventional statistical significance threshold ($p = 0.054$) as a result of our truncated sample. Models 2 and 4 next consider the relationship between in-law marriage and literacy with the addition of the religious adherence and public administration controls, and although literacy again falls just short of the threshold ($p = 0.059$) in Model 2, the stability of our coefficients indicates that neither religiosity nor state presence constitutes a major source of omitted variable bias with respect to our main results.

TABLE 3 Literacy, Religious Adherence, State Presence, and In-Law Marriage

	(1)	(2)	(3)	(4)
Literacy	0.506	0.506	0.229	0.231
	(0.258)	(0.265)	(0.113)	(0.114)
Urbanization	−0.236	−0.235	−0.364	−0.359
	(0.502)	(0.503)	(0.366)	(0.365)
Taxes	−0.068	−0.068	−0.035	−0.036
	(0.233)	(0.233)	(0.118)	(0.117)
Cousin Marriage	0.261	0.261	0.122	0.122
	(0.058)	(0.058)	(0.058)	(0.058)
Repairing Marriage	0.178	0.177	0.256	0.258
	(0.182)	(0.183)	(0.136)	(0.136)
Religious Adherence		0.002		
		(0.095)		
Public Administration				0.013
				(0.036)
Observations	424	424	691	691
Year Fixed Effects	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes

Note: OLS regression. All variables are standardized. Standard errors are in parentheses and clustered by department. Models 1 and 2 include 1872, 1876, 1881, 1891, and 1896. Models 3 and 4 include 1856–91.

Addressing Reverse Causality

A different concern relates to the potential for reverse causality. It is plausible that areas with high levels of state–society interaction provide individuals with both greater incentives and opportunities to obtain literacy in the official language (Laitin 2007, 1998; Weber 1976, 84–89, 323–29; Wimmer 2016, 1412). Ideally, we would address this issue by exploiting a policy change that induces exogenous variation in literacy. For instance, the introduction of the Ferry Laws (1880–81) mandating free and compulsory schooling across France would seem to provide just such leverage. The ideal test would then compare rates of in-law marriage among the first cohort exposed to the Ferry Laws against those who just missed the reform.

Unfortunately, such a comparison is not possible with our data because we lack individual-level information about petitioners that would allow us to determine their

TABLE 4 Literacy and In-Law Marriage with 5-, 10-, 15-, and 20-Year Lags

	Dependent Variable: In-Law Marriage				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Literacy	0.386 (0.128)				
Literacy (5-year lag)		0.378 (0.126)			
Literacy (10-year lag)			0.360 (0.126)		
Literacy (15-year lag)				0.329 (0.124)	
Literacy (20-year lag)					0.315 (0.130)
Observations	777	776	772	768	764
	Dependent Variable: Literacy				
	(6)	**(7)**	**(8)**	**(9)**	**(10)**
In-Law Marriage	0.043 (0.015)				
In-Law Marriage (5-year lag)		0.011 (0.013)			
In-Law Marriage (10-year lag)			−0.002 (0.014)		
In-Law Marriage (15-year lag)				0.008 (0.016)	
In-Law Marriage (20-year lag)					−0.019 (0.017)
Observations	777	772	765	759	752
Controls	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes	Yes	Yes

Note: OLS regression. All variables are standardized. Standard errors are in parentheses and clustered by department. All models include controls for URBANIZATION, doors and windows TAXES, COUSIN MARRIAGES, and REPAIRING MARRIAGES. Full tables that report covariate coefficients can be found in the supporting information.

age. Thus, we are unable to separate "treated" petitioners from the "controls." Instead, we adopt two alternative strategies to test for reverse causality. First, we regress contemporary in-law marriage rates on various lags of literacy to see whether past levels of literacy predict present levels of state–society interaction. Second, we reverse the dependent and independent variables and regress present literacy on past rates of in-law marriage. This allows us to test for an important implication of the reverse causality argument: if state–society interaction incentivizes the acquisition of literacy, then we should expect lagged in-law marriage to positively predict contemporary literacy levels.

Table 4 shows the results from both exercises. Models 1–5 replicate our main analysis using the short panel with 5-, 10-, 15-, and 20-year lags for literacy. We observe that the lagged coefficients, while decreasing in size, are positive and of the same order of magnitude as in our main results. Models 6–10 display the results from estimations reversing the independent and dependent variables. Present in-law marriages do indeed predict *present* literacy. However, the effect is substantively small and disappears as soon as lags are introduced in Models 7–10. In other words, departments that experience larger past increases in in-law marriage are *not* more likely to witness future improvements in literacy. This evidence suggests that reverse causality does not represent a major source of bias in our main results.

Sample and Specification Checks

Finally, we briefly report on several robustness checks related to sample selection and model specification. Tables are available in SI Appendix 4. First, we rerun our analyses using the percentage of SPOUSES WHO SIGN their marriage certificates (as opposed to making a cross) as an alternative measure of literacy. Second, we rerun our analyses using department-specific linear time trends in lieu of year fixed effects. Third, we estimate models with different samples that (a) exclude Seine, the department containing Paris; (b) include only departments that exist during the entirety of 1836–96; and (c) drop the Franco-Prussian War. Fourth, we rerun our models dropping a different department each time. Fifth, we implement models with standard errors clustered by pre-Revolution provinces to account for possible heteroskedasticity related to the historical relationships between departments. These changes do not appreciably alter the substantive or statistical significance of our findings. Literacy remains a strong predictor of state–society interactions.

Scope Conditions

Our analysis supports our theory that the expansion of literacy in the national language facilitates state–society interaction by reducing communicative transaction costs in encounters between citizens and public officials. We now turn to issues of generalizability.

Specifically, we have focused on one form of behavior—registration of in-law marriages—where loyalty concerns proved to be relatively unimportant. However, this is not to dismiss the role that loyalty plays in alternative domains of state–society interaction such as military enlistment or tax compliance. For these decisions, literacy could certainly influence outcomes through the loyalty channel. This possibility is important to acknowledge because efforts to expand the national language could have variable effects on loyalty. For instance, social movement analysts have linked increased education among (often marginalized) minorities to an enhanced ability to organize and challenge the state.[20]

Such movements can certainly be detrimental to state–society relations, but they do not contradict our core theoretical argument about the role of national-language literacy in eroding linguistic and human capital barriers. Regardless of whether educated individuals resist state demands, they face lower transaction costs in communicating with public officials. We therefore believe our analysis to be robust to this type of "limiting case."

Secondly, we emphasize that our transaction costs argument relates only to effects of literacy in the national language. Although this is typically the case (given the role of the state in providing public education), we do take note of instances where literacy is acquired outside of the state's purview, leading to the development of "non-national" literacy. Such situations can arise, for example, if international border changes cause populations educated under one language regime to be suddenly confronted with a "new" state "speaking" a different official language.[21] More prosaically, international migration can generate similar dynamics to the extent that first-generation migrants may (at least initially) possess only limited skills in the official language of the destination country. Finally, non-national literacy may develop where autonomous institutions (e.g., churches) preempt central authorities in the provision of education to an initially illiterate population.[22]

In each of these cases, although individuals may be formally literate, they are functionally illiterate when communicating with state officials. As such, we do not expect non-national literacy to facilitate state–society interactions via the transaction costs channel. These cases therefore lie outside the scope of our analysis.

Conclusion

State power rests not only on the structure of state institutions, but also on the extent to which those institutions interact with the population the state seeks to control. This article has argued that literacy in the official language increases state–society interactions constituting a crucial foundation for the development of state capacity. When citizens are literate in the language of state administration, they are more likely to comprehend the state's rules and regulations, and more likely to possess

[20] See e.g., Wimmer (2002, 136–55). See also Gellner (1983, 64–75).

[21] Along these lines, Laitin (2007, 47–48) describes the dilemma facing ethnic Russians in Estonia following the breakup of the Soviet Union who were suddenly confronted with the need to become proficient in Estonian or risk that "future communications with political authority . . . require translation services."

[22] See Darden and Mylonas (2016, 1463–64) on Zaire (now the Democratic Republic of the Congo) and Balcells (2013, 477–78) on Catalonia.

the human capital necessary to navigate encounters with public officials. Empirically, we show in the context of nineteenth-century France that changes in literacy rates are associated with increased state–society interaction as proxied by the official registration of in-law marriages. By contrast, where citizens rely predominantly on oral communication in local idioms and dialects, state–society interactions are subject to high transaction costs and are therefore less frequent.

A central contribution of this article is to bring the study of state–society interactions back into the scholarship on state development and state capacity. Mann (1984) and Migdal (1988) both wrote about the centrality of the state's penetration of society (what Mann calls "infrastructural power") in explaining the state's ability to shape outcomes "on the ground." Though recent scholarship has begun to explore variation in infrastructural power, much of the literature on state power remains focused on the state's formal institutions.[23] In refocusing attention on the infrastructural nature of state power, this article advances the literature beyond the study of institutions to investigate how one factor—literacy—influences the degree to which citizens actually interact with the state.

Within this context, and in contrast with the existing scholarship, we show that the effect of mass literacy in state development is not limited to its oft-cited identity-defining role. Literacy also supports the extension of the state's rulemaking authority by reducing the costs of citizen–state communication. To be clear, we do not dispute that literacy can also operate through the loyalty channel. Rather, by linking these communicative aspects of literacy to the everyday practice of state–society interactions, our article points to an important and qualitatively different relationship between linguistic development and state power than the literature has generally recognized.

This argument has broad implications for state power in the contemporary period. Mass literacy in the official language has spread dramatically since the end of World War II. Because literacy facilitates state–society interactions, our theory implies that we now live in an era of much greater state power. Our theory also implies that recognizing more than one official language and promoting literacy in those languages can pay dividends to state power. This effect is likely to be strongest in states where some individuals did not previously speak the dominant national standard.

[23] Important exceptions include Brambor et al. (2020), Berwick and Christia (2018), Lee (2018), Slater and Kim (2015), Soifer (2008), and Soifer and Vom Hau (2008).

Our theory also has important implications for the literatures on state capacity and nationalism. First, our results point to a spillover effect wherein the state's intervention in the domain of mass education was highly consequential for interactions in a profoundly different and unrelated realm: compliance with family law regulations. States can undertake a range of activities, and demonstrating that investments in one area can pay dividends in another—suggesting "economies of scope"—is especially intriguing for the scholarship on state capacity (Alesina and Spolaore 2003, 22). Future research should take up this line of inquiry by exploring the conditions surroundings spillovers as well as their consequences for state development.

Second, our results suggest that scholars of nationalism have construed the effects of mass education too narrowly. Literacy is not simply a proxy for exposure to nationalist curricular content, but also plays a direct, if more mundane, role in state development by facilitating communicative efficiency. Our analysis suggests that future research could benefit from decentering the loyalty mechanism in studies of state development while taking greater account of the importance of transaction costs in state–society relations. The existence of this alternative pathway is important for explaining state power in behavioral domains where outcomes are unlikely to depend on patriotism alone. Our article demonstrates the fruits of such an approach by showing the power of the transaction costs mechanism in explaining compliance with regulations governing family affairs. These regulations are neither apolitical nor unimportant—rather, they are the very essence of modern statehood.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix 1: Further background on in-law marriage
Appendix 2: Data
Appendix 3: Additional tables and figures
Appendix 4: Sample and specification robustness checks
Appendix 5: Examining heterogeneity across linguistic regions