

# **The Theory of Educational Relativity**

## Reconsidering Education's Relationship to Democratic Citizenship

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### **Abstract**

Education has a strong and consistently positive relationship to virtually every dimension of democratic citizenship, but the reasons why are not well understood. Nie, Junn, and Stehlik-Barry have provocatively argued that education's impact on public engagement is due to the credential that schooling provides —education serves to sort people by social status (the sorting model). Education's impact on engagement is thus relative; how much status is conferred by your level of education is determined by the average level of education within your environment. This paper tests the sorting model, by paying strict heed to its assumptions. The analysis confirms the sorting model, but considerably narrows its reach. Contrary to Nie, Junn, and Stehlik-Barry, who argue that sorting applies generally to myriad forms of public engagement, this analysis shows that it applies only to one particular type, only when the educational environment accounts for variation across age and place, and only when one models the interactive relationship between education at the individual and environmental levels. Evidence is also presented that the educational environment amplifies the relationship between education and democratic enlightenment (political knowledge and tolerance).

Over thirty years ago Converse wrote that education “is everywhere the universal solvent, and the relationship is always in the same direction. The higher the education, the greater the ‘good’ values of the variable” (1972, 324). In the years since, nothing has changed. In 2000, Putnam described education similarly, “Education is one of the most important predictors—usually, in fact, *the* most important predictor—of many forms of social participation—from voting to associational membership, to chairing a local committee to hosting a dinner party to giving blood” (2000, 186). In spite of, or perhaps because of, its sheer ubiquity, however, the precise nature of the link between education and civic engagement remains largely in the proverbial black box. Why people with more education have higher levels of engagement is an open question. Is it that students gain knowledge which breaks down barriers to public engagement (Delli Carpini and Keeter 1996) ? Does education inculcate a norm encouraging civic involvement (Campbell 2006)? Is it because schools teach civic skills (Verba, Schlozman, and Brady 1995)? (And, of course, it might be a combination of reasons). Perhaps the strong correlation is due only to a selection effect—the same people who would have been civically engaged anyway also obtain higher education. While there has been recent evidence suggesting that education has a causal impact on various dimensions of democratic citizenship (Dee 2004; Milligan, Moretti, and Oreopoulos 2003), in the absence of full-blown randomized experiments there is always the lingering suspicion that the strong correlation between education and engagement is spurious.

A strong counter to any causal claim for the content of the educational experience is the argument that education simply proxies social class, and so the relationship between education and engagement merely reflects the venerable SES model of

participation (Verba and Nie 1972). By far the most sophisticated version of the education-as-proxy-for-class argument has been advanced by Nie, Junn, and Stehlik-Barry (hereafter, NJS) in *Education and Democratic Citizenship in America* (1996). According to NJS, education serves as a social sorting mechanism—more education means higher status (the *sorting model*). And since higher-status people are more likely to engage in many different forms of engagement, education and engagement have a strong, positive correlation. However, as average levels of education in the population have risen, each individual has needed ever more education to be positioned at the top of the class hierarchy. The same status conferred by a college degree a generation ago now requires a graduate degree. In other words, education has undergone inflation. Just as price inflation decreases the value of a dollar, so has education inflation decreased the “value” of a year of education, as least as far as its impact on public engagement is concerned. Consequently, NJS argue, what matters when predicting public engagement is not people’s absolute level of education, but rather their educational attainment relative to the average education level in their social environment (i.e. the people with whom they compete economically, socially, and politically). Building on this insight, NJS present evidence that accounting for the educational environment (“education inflation”) over time explains why, after decades of rising education, we have not also seen an increase in civic and political participation. Their analysis has a broad scope, as they argue that the sorting model applies to many forms of democratic engagement, from voting to working on political campaigns to membership in voluntary associations.

However, NJS posit that the educational environment has a very different effect on what they label democratic *enlightenment*, by which they mean both political

tolerance and political knowledge.<sup>1</sup> They posit a *cumulative model*, which predicts that a more highly educated environment pushes enlightenment up for everyone, regardless of their own level of education.

NJS make a provocative argument that has not received enough attention among scholars of participation. If they are right, it means that virtually every model of participation and tolerance in the literature is mis-specified, since education is habitually used as a control without accounting for the educational environment. Furthermore, if NJS are correct, their conclusions have a profound implication for public policy, as they lead ineluctably to the conclusion that efforts to boost engagement by enhancing education will fail. At a time when much ink has been spilt on how schools can enhance the public engagement of America's young people, if the sorting model is correct it means that such efforts are futile (Gutmann 1999; Macedo 2000; Torney-Purta 2002; Niemi and Junn 1998). Neither an increase in the quantity nor the quality of education would boost rates of civic and political participation.<sup>2</sup> A rise in both high school and college completion rates would only fuel education inflation, "cheapening" the value of each individual's own educational attainment. Since the content of education has no effect on whether people are publicly engaged, neither would it make any difference to design civics curricula to boost engagement. Participation is affected only by the status conferred by your diploma, not what you learned to earn it.

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<sup>1</sup> This paper adopts the term "enlightenment" to describe knowledge and tolerance, in keeping with the terminology used by NJS.

<sup>2</sup> Although, as explained in more detail below, by NJS's account it would still be expected to increase enlightenment, particularly political tolerance.

The scope of NJS’s argument regarding the educational environment compels a closer look, a test of whether its conclusions hold up under scrutiny. In this case, further analysis serves to refine the sorting model. For example, whereas NJS argue that the sorting model can be applied to many forms of engagement, a close reading of its assumptions suggests that it should only apply to activity that has a competitive edge. But not all forms of public engagement are equally competitive in nature, and some are not plausibly considered competitive at all. This analysis thus finds evidence favoring the “competition assumption,” which is that only the most competitive form of engagement—namely electoral activity—is explained by the sorting model. The analysis also innovates by accounting for variation in the educational environment across the United States. The focus on place enables a test of the central causal mechanism underpinning the sorting model, namely that education serves to position people within their social networks—a tenet of the sorting model that goes untested in NJS’s analysis. Social networks are generally a local phenomenon, which suggests that educational environment should be contained to one’s community. Furthermore, the primary observable implication of the sorting model is the predicted interaction between an individual’s own level of education and the educational environment, even though such an interaction has not previously been explicitly modeled. This analysis tests for such an interaction.

With these innovations the sorting model is confirmed but narrowed. The results show that sorting by education applies only to one particular type of public engagement, only when the educational environment is measured correctly, and only when the model

properly accounts for the hypothesized interaction between people's level of education and their educational environment.

While the sorting model is narrowed, the cumulative model is broadened. Using the same analytical framework—educational environment defined in local terms—the analysis shows that a highly educated environment does not simply push enlightenment up for everyone. Instead, there is a positive interaction between education at the individual level and the educational environment. Living in a highly educated environment amplifies the impact of an individual's own level of education on political tolerance and knowledge.

### **The Competition Assumption**

We begin with the sorting model, which means we begin with the view NJS have of public engagement. The sorting model rests on the critical assumption that public engagement entails a clash over finite resources. The competitive nature of engagement, in turn, means that political participation results in both winners and losers. In their words:

We argue that certain aspects of democratic citizenship are in fact bounded, or limited, by their essentially competitive nature. The instrumental behaviors and cognitions of political engagement can be seen as more of a zero-sum game, bounded by finite resources and conflict, where one's gain will necessarily be another's loss. (101)

The competitive complexion of political engagement also means that people with higher social status are more likely to get involved in politics, since they are more likely to prevail in any political contest. The linchpin of the sorting model is that education serves

as the primary criterion by which people are sorted by class and, thus, status. Those with greater relative education—that is, more education than others in the same environment—are at the top of the class hierarchy. Those at the top have the most sway, and thus are most apt to engage in political activity. They incur the costs, in both time and treasure, of public engagement because they perceive that they will reap the benefits. In other words, the sorting model is a variation of the longstanding SES model of participation, with the theoretically important addition that relative education is the primary marker of social status.

By NJS's own logic, the sorting model applies to activities which are intrinsically competitive in nature. In thinking about the many different ways in which people can be engaged, some clearly have a competitive cast. Specifically, it seems plausible that activities tied to an election campaign fit the bill. However, many public activities have no winner per se, or are not tied to conflict at all. For these, it is not clear why the sorting model should apply. Nonetheless, NJS extend their analysis to a form of public engagement, membership in voluntary associations, that has no obviously competitive dimension or intrinsically conflictual nature.<sup>3</sup>

[M]embership in voluntary associations is, we expect, the result of relative, rather than absolute, educational attainment. Members of associations obtain substantial psychic and social rewards for their organizational involvements. Moreover, voluntary membership requires time, energy, and often money, and those who are relatively near the center of the social network can better afford to pay the costs and are more likely to reap the benefits. (162)

NJS thus assert that group membership is driven by the same conflict over rewards as political engagement, a puzzling claim. While membership in voluntary associations does require time and energy, it is not clear that money is necessary at all (a point essentially conceded by NJS by their qualification that money is “often” -- and thus not “always”-- required). Social status does not necessarily give people more free time (Verba, Schlozman, and Brady 1995) --indeed there is reason to think that more status means less leisure time (Aguilar and Hurst 2006)-- and neither is it clear why people with more social standing would have more energy to devote to civic activity. NJS indicate that the rewards for this form of engagement are psychic and social, rather than material. But while it is clear that material rewards are scarce resources, why should psychic and social rewards be considered competitive?

Similarly, it seems likely that the sorting model does not apply to forms of expressive activity which, although political in nature, are not necessarily driven by electoral competition. Much expressive activity, in fact, takes place around valence issues, like environmentalism, and thus is not narrowly competitive in the same manner as an election campaign. So while there is a positive correlation between education and expressive activity, it seems unlikely that this is owing to the relative social status conferred by one’s level of education (as compared to other reasons that education might facilitate such engagement).

The point is not that there are a few special cases of engagement which fall outside the reach of the sorting model, but rather that only a few fall within it.

By NJS's own logic, the sorting model should only apply to that particular genus of engagement, namely campaign-related activity, which fits the criterion of being intrinsically competitive.

### **Age and Place**

The second supposition underpinning the sorting model, just as critical as the competition assumption, is that the jockeying for status occurs within one's educational environment, which is defined by the people with whom we interact. NJS stress that our relative social position is not determined by our education relative to the entire population, but rather relative to our own age cohort. Accordingly, they compare a respondent's level of education to the mean educational attainment of people age 25-50 at the time that the respondent was 25 years old. Tenn (Tenn 2005) criticizes this definition as too imprecise and offers an alternative measure: measuring educational environment as one's educational attainment relative to people born in the same year.<sup>4</sup> Helliwell and Putnam (2007) offer a still more critical assessment. They note that NJS have operationalized the educational environment so that it only accounts for the education level of people born before you, which means that "no one ever competes against anyone younger, but everyone always competes against everyone older (including the dead)" (2-

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<sup>4</sup> Tenn's measure of relative education requires fine-grained data on educational attainment, available only from the Current Population Survey. A reliance on the CPS means that he is limited to testing the sorting model on voter turnout (although, as discussed below, there are strong theoretical reasons to expect that voting is not subject to educational sorting).

3). In their analysis, Helliwell and Putnam do not differentiate educational attainment by age.

However, no matter the age range used when measuring relative education within the educational environment, there is a critical omission when the educational environment is defined in national terms (as NJS and Tenn have done). The sorting model assumes that relative education serves to position people within their own social networks. “[E]ducation works as a sorting mechanism by placing those with higher levels of education in positions closer to the center of social and political networks” (131-132). Indeed, much of *Education and Democratic Citizenship in America* is dedicated to explaining the significance of “social network centrality” as a factor driving political participation. Social networks, however, are not national; they are local. Consequently, Helliwell and Putnam argue that the sorting model requires the analyst to account for the geographic differences in educational attainment across the United States. They do so by comparing respondents’ own educational attainment to the mean education level—not differentiated by age--within the same U.S. census region.

Using their measure of relative education Helliwell and Putman arrive at conclusions that contrast sharply with those of NJS, stressing that they “find no systematic evidence that increases in average education have any negative effects on participation”(15). Helliwell and Putnam are careful to note they do not assume that census region is the ideal geographic unit for their analysis, but mean only to emphasize that shifting the parameters of NJS’s definition even a little produces different results. However, we cannot rule out the possibility that NJS differ from Helliwell and Putnam because the latter have not accounted for the considerable differences in educational

attainment across age cohorts. Also, note that Helliwell and Putnam do not include any activities in the electoral domain, even though that is where theory leads us to expect educational sorting.

In sum, the literature has defined educational environment in terms of age (NJS and Tenn) and place (Helliwell and Putnam). Both matter. The average level of education has undergone a steady increase over time--the average 25-34 year old has 13.8 years of education, compared to 12.3 years for 65+ year-olds.<sup>5</sup> At any given point in time, there is wide variation in average education across the United States. For instance, in the McAllen-Edinburg-Mission, Texas metropolitan area, the average educational attainment for people over age 25 is 10.6 years, while residents of the Corvallis, Oregon MSA average 14.8 years of schooling. However, the previous literature has defined educational environment in terms of either age *or* place, neither both. This analysis measures the educational environment by uniquely combining age *and* place.

To combine age and place when measuring educational environment requires determining which ages and which places should go into the measure. On this score, the sorting model itself provides some guidance. Recall that, according to NJS, status is determined within social networks--the people with whom we interact within our local communities. This analysis accounts for the local nature of social networks by defining educational environment on a much smaller scale than the national population, or the census region. While theory suggests that the geographic scale should reflect the local community, it is not necessarily clear how that should be operationalized for the purpose of empirical measurement. Accordingly, the analysis tests three levels of geography: the

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<sup>5</sup> These numbers are based on the National Civic Engagement Survey, described below.

state, the metropolitan area, and the zipcode.<sup>6</sup> While none of these perfectly mirror an individual's own social networks, they do come closer than defining educational environment on a national or regional scale. Including all three enables a test of the hypothesis that educational sorting takes place within localized social networks. If sorting is a local phenomenon, then we should observe a stronger impact for educational environment the smaller its geographic scale.

Within each geographic unit—state, MSA/county, and zipcode—years of education have been measured within the standard age cohorts that the U.S. Census Bureau uses when reporting educational attainment: 25-34, 35-44, 45-64, 65+ . Educational environment is thus operationalized as the mean educational attainment, measured in years of schooling, for each age cohort within the relevant geographic unit. When measured in this way, there is considerable variation in educational environment by age cohort. For example, at the zipcode level, the educational environment for those

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<sup>6</sup> In most cases, the state is not a terribly local environment, but is included for the purpose of guiding future empirical analysis, since it is often relatively straightforward to merge state-level measures with individual-level data. The metropolitan area is defined using the Census Bureau's designated Metropolitan Statistical Areas (MSA). For respondents who do not live in a metropolitan area, their county is substituted. Thus, references to "MSA" should be read as references to "MSA or county." Note also that the zipcode, while the smallest of the three geographic units, is not a tangible community per se, and is meant only to proxy a highly localized geographic location.

age 65 and up is a mean of roughly 11.6 years of education, while for 25-34 year-olds it is approximately 13.2 years.<sup>7</sup>

Recall that Tenn objects to the 25-year span of the NJS measure, while Helliwell and Putnam criticize NJS for their asymmetric definition of educational environment. Using the Census Bureau's age cohorts accounts addresses both concerns—the cohorts are relatively narrow, and respondents' education levels are compared to others within the same age range, both older and younger.<sup>8</sup> While this method is not identical to the one used by either Tenn or Helliwell and Putnam, it is consistent with the spirit of both.

For the analysis, the geographic data on educational environment has been merged with individual-level survey data (described in more detail below). For respondents in, say, Chicago, think of their educational environment as defined by three concentric circles. The widest circle is the average educational attainment of people in

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<sup>7</sup> The Census reports educational attainment in categories, which have been converted to the following years of educational attainment for the purposes of calculating the mean within an educational environment:

Less than 9 years:	6 years
9- 12 years:	10 years
High school:	12 years
Some college:	13 years
Associate degree:	14 years
Bachelors degree:	16 years
Graduate degree:	18 years

These cut-offs are admittedly a matter of judgment, but shifting them does not affect the results. Years of Education, measured at the individual level, uses a parallel conversion system.

<sup>8</sup> Except in the small number of cases of someone whose age is at the cut-off.

their age cohort who also live in the state of Illinois, the next widest covers the Chicago metropolitan statistical area, while the smallest circle is the zipcode in which they live.

Note that allowing the educational environment to vary across place enables a test of the sorting model that can simultaneously account for both age and the educational environment which, as noted by NJS, is impossible using their method of measuring the environment on a national scope, since age is almost perfectly correlated with a nationwide measure of educational attainment (167-168). However, age is not so closely correlated with a localized measure of educational environment. When NJS turn to a test of the sorting model in cross-sectional data, they must exclude age from the estimation, leaving open the question of whether effects attributed to the educational environment are actually a function of age-related differences in engagement (Miller and Shanks 1996; Putnam 2000; Wattenberg 2002; Zukin et al. 2006).

### **Refining the Sorting Model**

This analysis employs the National Civic Engagement Study (NCES). Conducted by Zukin et al. in the Spring of 2002 (with a total N of 3,248), it meets the criteria necessary for a test of the relationship between the educational environment and different forms of public engagement.<sup>9</sup> First, it includes an array of engagement items. Further, as

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<sup>9</sup> The survey has an oversample of young adults age 15-25, but because this analysis is only appropriate for people who have completed their education, it is limited to those age 25 and up, the standard cut-off in the literature for “educational maturity” and the one also employed by NJS. For the purposes of the analysis in this paper, there is a working N of roughly 2,200 cases. The data have been made publicly available by CIRCLE, the

a national telephone survey it includes respondents across an extensive range of geographic locations. As well, the inclusion of geocodes makes it possible to link respondents to their educational environment, down to the level of the zipcode.<sup>10</sup>

Since the refined hypothesis stemming from the sorting model being tested here is that only those forms of engagement most likely to be driven by competition are explained by the sorting model, it is necessary to differentiate among the many forms of public engagement. Which public activities are most likely to have a competitive edge? The challenge is to employ a system of divvying up the different activities in a manner that is not post-hoc, but is instead both empirically sound and theoretically coherent. Perhaps the most compelling such classification system is one developed by Zukin et al. (2006). Rather than rely on the pre-existing measures of engagement found on surveys such as the NES and GSS, they have examined many new, or at least different, ways in which people, especially young people, are civically and politically engaged. After an extensive process of multi-method research (including consultation with experts, focus groups, and extensive pre-testing), they have produced a battery of 19 items, covering the gamut of public engagement. This index forms the core of the NCES. Some of the index items replicate measures that have been used for decades (such as voting and volunteering in political campaigns), while others are novel (biking, walking, or running

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Center for Information and Research on Civic Learning and Engagement. For more details on the NCES, including the dataset itself, see [www.civicyouth.org](http://www.civicyouth.org).

<sup>10</sup> I am grateful to Mark Lopez, Research Director of CIRCLE for generously granting me access to the geocodes.

for charity and signing e-mail petitions). Most importantly, factor analysis shows that the activities in this battery can be grouped into three distinct types of engagement.<sup>11</sup> The first is comprised of activities that all take place in the electoral arena (*Electoral Index*), the second constitutes expressive political activity (*Expressive Index*), while the third consists of civic activity, including but not limited to involvement in voluntary associations (*Civic Index*). Table 1 lists the activities in each category.<sup>12</sup>

<Table 1 about here>

Note that for the purposes of this analysis, voting is not included in the Electoral Index.<sup>13</sup> Even though voting is obviously central to elections, previous research has demonstrated that the decision to vote has a distinctive bundle of motivations, blending both self-interest and a sense of civic obligation (Blais 2000; Campbell 2006; Fiorina 1976; Riker and Ordeshook 1968; Shachar and Nalebuff 1999). NJS themselves acknowledge the unique nature of voting by referring to the “double-barreled nature of voting as part instrumental and part symbolic behavior” (68). Consequently, the existing literature typically isolates voting from other forms of engagement, which suggests that there is good reason here to treat voting as *sui generis* (Verba, Schlozman, and Brady 1995). Most often, NJS treat voting as one component of a political engagement index (see page 127), although they also model it separately (see page 145). For the analysis at

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<sup>11</sup> See chapter 3 of Zukin et. al. for a detailed discussion of the different dimensions of engagement.

<sup>12</sup> Note that Zukin et. al. use some different terms than those I have adopted here, namely Political instead of Electoral and Voice instead of Expressive.

<sup>13</sup> This is a deviation from Zukin et. al., who include voting in their political index.

hand, voting is modeled on its own, using an item that asks respondents how often they vote in national and local elections.

In addition to differentiating among types of engagement and combining both age and place when measuring educational environment, this analysis employs a third innovation in testing the sorting model. In previous research, educational environment has been included alongside the individual's level of education in models of democratic engagement. A negative coefficient for educational environment is interpreted as evidence favoring the sorting model, since it indicates that, when controlling for education at the individual level, a greater mean level of education in the environment drives engagement down. However, this specification does not fully test what the sorting model predicts, as it posits an *interaction* between the individual's own education and the educational environment. The hypothesized relationship is that, as the average level of education in the environment rises, each year of education matters less. Operationally, this would be observed as a negative coefficient for an interaction between individual-level educational attainment and the mean years of education in the environment (*Education X Educational Environment*).

Even though the hypothesized relationship between education and the educational environment is interactive, the three previous studies testing the sorting model have not explicitly modeled it as such. In doing so, the sorting model is subjected to a statistically stringent test, since the interaction term is, by definition, highly correlated with the main terms of which it is comprised, which for the sake of properly interpreting the model are also included in the equation. As with all such interaction terms, this colinearity is a high hurdle for achieving both statistical and substantive significance.

Evidence for the sorting effect consists of a negative coefficient for the interaction, which would mean that as the mean level of education in the environment rises, the impact of individual-level education is weakened. To use an intuitive example, it would mean that having a college degree in a place where few people have college degrees provides a larger boost to engagement than being college-educated in a place where college degrees are the norm.

To summarize, three interlocking hypotheses have been proposed:

1. The Interaction Hypothesis: As average education rises, each year of an individual's own education has a smaller impact (Education X Educational Environment is negative and statistically significant).
2. The Geography Hypothesis: The interaction between education and educational environment should be stronger as the geographic scope of the environment narrows (the smaller the geographic scope of the educational environment, the greater the confidence, in statistical terms, we can have in the coefficient for Education X Educational Environment).
3. Electoral Hypothesis: The sorting model should apply only to electoral activity (the coefficient for Education X Educational Environment is only negative and statistically significant for the model of the Electoral Index, and not the other dependent variables).

The models also control for a number of factors known to be correlated with engagement and education. For the sake of comparison, the array of variables replicates those used by NJS. They include gender, race/ethnicity, marital status, retirement, home ownership, church attendance, rural residence, having recently moved, strong

partisanship, and independent partisanship (see the appendix for details on how the variables have been coded). The model also controls for age, by grouping respondents in one of the four age categories defined by the Census Bureau (18-34, 35-44, 45-64, 65+). As noted, age is an especially important control variable to include, since it correlates highly with civic and, especially, political engagement, and is missing from the cross-sectional analysis of NJS. By including age in the model, we can separate the impact of being in a particular age cohort from the impact of the educational environment.

All four dependent variables are ordinal, which calls for the use of ordered logit as an estimator. (Results are substantively unchanged when OLS is instead used as the estimator).

<Table 2 about here>

Table 2 displays the results for Electoral Index, the form of engagement for which we have the strongest theoretical prediction. Each column reports results from defining educational environment at, respectively, the level of the state, metropolitan area/county and zipcode (recall that the environment measure also accounts for differences in educational attainment across age groups within each geographic unit). The inclusion of these contextual variables requires attention to the geographic clustering, and thus potential non-independence, of cases. Intuitively, the econometric problem is that, by design, all respondents within the same age cohort in the same geographic stratum have the same value for educational environment, and thus are not independent of one another.

All of the models, therefore, account for clustering by educational environment, defined as the respondent's age cohort within the relevant geographic unit.<sup>14</sup>

First, we find support for the Interaction Hypothesis—a negative interaction between Education and Educational Environment in all three models. Second, we see evidence favoring the Geography Hypothesis. We can have greater confidence in the coefficient for Education X Educational Environment as the educational environment narrows in scope. It is not statistically significant (p value of 0.54)<sup>15</sup> when the environment is defined as the state, is marginally significant (p= 0.08) when it is measured at the MSA/county level, and is clearly significant for the zipcode (p =0.03).<sup>16</sup>

<Table 3 about here>

We find support for the Electoral Hypothesis by comparing Tables 2 and 3. Table 3 displays the identical model specification as before, but applied to Voting, the Expressive Index, and the Civic Index. For these models, the educational environment is defined as the zipcode, but results are no different when the state or MSA/County is used instead. Across the board, we see that while the coefficient for Education X Educational

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<sup>14</sup> Specifically, the models employ the “cluster” command in STATA 9.0. Output available upon request.

<sup>15</sup> All p values reported in the paper are for a two-tailed test.

<sup>16</sup> Careful readers will note that in many of the models reported in Tables 2-5, the main effect for Years of Education is not statistically significant. This is owing to the high degree of colinearity with Education X Educational Environment. In all cases, removing the interaction from the equation restores a positive and highly significant coefficient for Years of Education.

Environment is negative, in sharp contrast to the model of the Electoral Index in Table 2 it does not approach statistical significance.

<Figures 1 and 2 about here>

Interactions are always difficult to interpret, even more so when the estimator is ordered logit. Determining the magnitude of the sorting effect is thus best accomplished graphically. Figures 1 and 2 display the interaction of education and educational environment (zipcode) for two illustrative categories, 25-34 year olds and 65+ year olds (with every control variable set to its mean value). The y axis reflects the score on the political activity index, while education at the individual level is arrayed along the x axis. The three lines represent respondents in educational environments at the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> percentiles for their age group.<sup>17</sup> In both figures, we see that all the lines slope upward, indicating that more education correlates with more engagement. The slope is steepest, however, for people in an educational environment at the 10<sup>th</sup> percentile, and least steep for the educational environment at the 90<sup>th</sup> percentile. In other words, we see visual evidence of the fundamental claim underlying the sorting model—educational attainment at the individual level interacts with the educational environment.

The significance of accounting for educational environment is underscored when we note that for people with twelve years of education, the educational environment

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<sup>17</sup> Thus, the precise values for the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> percentiles are different for the two groups. They are:

	25-34 year olds	65+ year olds
10 <sup>th</sup> percentile	12.03	10.29
50 <sup>th</sup> percentile	13.07	11.57
90 <sup>th</sup> percentile	15.23	13.58

makes essentially no difference, while for people with eighteen years of education the difference across educational environments is substantial. Among 25-34 year olds, the gap between the electoral activity of someone with eighteen years of schooling (two years of post-graduate study) in an educational environment at the 10<sup>th</sup> versus the 90<sup>th</sup> percentile is 0.26, or roughly the same magnitude as moving from a high school diploma to having a Master's degree in a model which does not account for the educational environment.<sup>18</sup>

When comparing across the figures, we see the higher overall rate of engagement among the 65+ year olds. More importantly for present purposes, we also see that individuals' educational attainment has a bigger impact on the engagement of 65+ year olds (all three lines have a steeper slope than the corresponding lines for 25-34 year olds). The contrast between 25-34 year olds and 65+ year olds provides a graphical summary of the sorting model. Because 65+ year olds are, on average, in less educated environments than 25-34 year olds, each year of a 65+ year old's own education has a larger impact on engagement. Among 65+ year olds, having 18 years of education puts you near the top of the class hierarchy, but among 25-34 year olds, a more highly-educated stratum of the population, that much education does not confer nearly as much status.

### **Group Membership**

Tables 2 and 3, as well as Figures 1 and 2, provide evidence that the sorting model has a more limited application than claimed by NJS. Recall, however, that this line of reasoning is rooted in a concern over whether the sorting model applies specifically to group membership. Because group membership is only one item within the Civic Index,

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<sup>18</sup> Results for the model underlying this claim are available upon request.

it is possible that using the entire index obscures any impact on group membership specifically. To test whether educational environment has a different impact on group membership when taken alone, Table 4 presents three models which test different ways of measuring group membership as a dependent variable:

Belonging to at least one group

Active participation in at least one group

Count of nonpolitical group memberships (up to three)<sup>19</sup>

The models are otherwise identical to those in Tables 2 and 3, including the definition of educational environment as the zipcode. In each case, Education X Environment is nowhere near statistical significance. Just as the sorting model does not apply to the overall index of civic activity, neither does it apply to group membership specifically.

<Table 4 about here>

### **Mobilization?**

A potential counter-explanation for the observation that relative education predicts electoral activity is simply that it reflects mobilization efforts—those people at the top of social hierarchy are those most likely to be invited to participate (Brady, Schlozman, and Verba 1999; Rosenstone and Hansen 1993). If true, this would still demonstrate a sorting effect of sorts, but it would be the mobilizers who are doing the

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<sup>19</sup> “Belonging to at least one group” and “Active participation in at least one group” are both dichotomous and thus are modeled using binary logistic regression. “Count of nonpolitical group memberships” is ordinal and so, as in the earlier models, is estimated using ordered logit.

sorting—targeting their mobilization efforts toward people at the top of a class hierarchy defined by age and place.

The mobilization hypothesis is tested with a model which predicts whether, in the past 12 months, the respondent was “contacted by someone personally to work for or contribute money to a candidate, political party, and any other organization that supports candidates.” The educational environment is the zipcode, since that is the environment in which the sorting model had the strongest impact, while every control variable is the same as in the previous models of engagement. As displayed in column 4 of Table 4, Education X Educational Environment is nowhere near statistical significance as a predictor of mobilization.<sup>20</sup> The sorting effect, it would appear, cannot be explained away as a function of mobilizers’ behavior.

### **Narrowing the Sorting Model**

There are two ways to read the finding that the sorting model applies to electoral activity. On the one hand, the validity of the model has been affirmed. On the other hand, though, the finding demonstrates that the sorting model has a limited application—far more constrained than suggested by NJS. Ironically, however, the limits placed on the application of educational sorting derive from the parameters of the model as described by its originators. Sorting by education does matter for competitive engagement; it is just that not all forms of engagement are equally competitive.

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<sup>20</sup> Similarly, including mobilization in a model of the Electoral Index does not make a dent in the environment-education interaction.

It is instructive that the activities contained in the electoral index--for which we find evidence for the sorting model--are not all literally “zero-sum” in nature even though, according to NJS, that is the defining characteristic of activity subject to educational sorting. Persuading others to vote a certain way, making campaign contributions, displaying campaign buttons and signs, and even volunteering for a campaign are not obviously activities in which my gain is your loss. Indeed, if you are working on behalf of a candidate, would you not welcome the assistance of others? In other words, the evidence is not consistent with the inference that the sorting model applies because political activity is zero-sum, at least in the term’s literal meaning. Rather, the evidence supports the conclusion that the sorting model applies to activity in support of a cause that is intrinsically *competitive*. By definition, election campaigns are driven by competition—elections produce winners and losers. Expressive political activity, on the other hand, is often (although not always) conflictual but is not necessarily motivated by a sense of competition. Picture a march to protest abortion—it is conflictual, but there is not a clearly defined opponent. Or think of a petition drive in favor of an environmental policy, which might be minimally conflictual and/or competitive.

Our theoretical understanding of the sorting model is also enhanced with the observation that evidence for sorting only emerges when we define the educational environment by age cohort and at the local level, which is consistent with the claim that sorting by education takes place within localized social networks. Furthermore, the argument that sorting occurs within social networks finds still more support in the results

which indicate that the more local the environment, the clearer the impact of relative education.

### **The Amplification Effect: Political Knowledge and Tolerance**

The evidence suggests that the educational environment affects electoral activity because of social sorting—the level of education you need to be at the top of the social ladder differs between Manhattan, New York and Manhattan, Kansas. However, NJS argue that the educational environment has a very different impact on what they call “democratic enlightenment,” which includes both political tolerance and knowledge. Instead of sorting, they argue that the educational environment has a cumulative effect on enlightenment—that is, more education in the environment increases enlightenment for everyone (the cumulative model). In their over-time analysis of repeated cross-sectional data, they find evidence to support the cumulative model’s impact on tolerance, but do not test it on knowledge.

Estimating the impact of a localized educational environment on tolerance and knowledge presents another opportunity to confirm, and broaden, the theory proposed by NJS. Specifically, NJS find that an environment with greater mean education is a rising tide, lifting the tolerance of everyone equally, regardless of their own level of education. This analysis tests whether that will also prove to be the case when accounting for the variation in educational environment across both age and place, and when applying the cumulative model to measures of both tolerance and knowledge.

The modeling strategy employed above to test the relationship between the educational environment and different forms of engagement presents an opportunity to test an important theoretical implication of the cumulative model. While NJS argue that

more education in the environment raises the enlightenment of all equally, their own explanation of the mechanism at work implies an interaction between education at the individual level and the educational environment.

For characteristics of enlightenment, the educational environment represents the cognitive sophistication of those *with whom one has contact and by whom one is influenced*. In the cumulative model, a more educated environment works in a positive direction in its influence on certain characteristics of enlightenment, such as tolerance. (107, emphasis added)

In other words, NJS argue that it is through direct contact with people who have a higher level of education that an educated environment pushes up an individual's level of tolerance and, by implication, knowledge as well. Since "like attracts like," it is the highly educated who are most regularly in contact with others who have a high level of education. The greater the average attainment level within the educational environment, the more likely that highly educated people have a social network comprised of people with a similarly high level of education. We should thus expect that, in stark contrast to the model for electoral activity, the more education one has, the *greater* the impact of living in a highly educated environment—because of social interaction with others who have a high level of education and, therefore, enlightenment. In other words, a more educated environment amplifies the impact of an individual's own level of education (the *amplification hypothesis*).

To test the amplification hypothesis, the identical set of variables used to model the various forms of engagement are included in equations predicting both tolerance and knowledge. Tolerance is measured with a single item that asks whether it should be

permissible for someone to give a speech advocating the inferiority of women, while knowledge is tapped with three factual questions.<sup>21</sup> The amplification hypothesis presumes personal interaction as a mechanism, which requires a localized context for the educational environment. Zipcode is the smallest geographic unit available, and so that is the level at which the educational environment is measured. As with the above models of engagement, zipcode is admittedly a crude approximation of localized context, but is nonetheless better than the metropolitan area, and much better than the state. In operational terms, the amplification hypothesis predicts that the interaction between Education and Educational Environment is positive. Ordered logit is again the estimator, and the standard errors are adjusted for clustering by educational environment.

<Table 5 about here>

As displayed in Table 5, the amplification hypothesis finds support for both tolerance and knowledge; in each model, Education X Educational Environment is positive and highly significant. Figures 3 and 4 graph the cumulative effect for 25-34 year olds (chosen to be illustrative). In both figures, we see that the educational environment makes no difference for people with a high school diploma, but that as

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<sup>21</sup> For the tolerance question, respondents could indicate that the speech should be permitted, should not be permitted, or “depends/both/neither/don’t know” (coded as being in the middle of should and should not be permitted). The knowledge index comprises three standard factual questions: does the federal government spend more on Social Security or foreign aid?, which party is more conservative?, and what is the majority needed in Congress needed to overturn a presidential veto? Tolerance is modeled as a three-point scale, knowledge using four points (0-3 correct answers).

educational attainment rises, the educational environment at the 90<sup>th</sup> percentile has the steepest incline. In short, the results for enlightenment are a mirror image of what was observed for electoral activity. The impact of education is larger (that is, amplified) within a more educated environment.

<Figures 3 and 4 about here>

The evidence favoring the amplification hypothesis suggests a contagion effect. These results are consistent with the hypothesis that being around others with a high level of tolerance begets greater tolerance; likewise, there is also evidence that interaction with others who have a high level of political knowledge begets greater knowledge. If further evidence for a contagion effect holds up, it would support the claim that education has positive externalities for fostering two democratic virtues, knowledge and tolerance. In other words, it is not just that individuals who have more education are more enlightened. Living in a community with others who are highly educated accelerates that enlightenment.

It is important to note that cross-sectional data cannot determine whether there truly is a contagion effect, as these results are also consistent with a self-selection process whereby people who are more knowledgeable and tolerant choose to live in more highly educated environments. Contagion is mentioned as a mechanism worth pursuing in other research specifically designed to sort out causation.

## **Conclusion**

This paper revisits the implicit model of education which is assumed whenever educational attainment is included in any equation modeling any aspect of democratic citizenship. Indeed, the assumption is so implicit that few scholars probably give it any

thought. Whenever educational attainment is entered into a model as a single individual-level term, we are assuming that education's impact is in absolute, not relative, terms. The impact of an individual's level of education is thought to operate in a vacuum, unaffected by the education level of others in the same environment. Nie, Junn, and Stehlik-Barry have argued, however, that this assumption is wrong. Instead, education at the environmental level mediates education at the individual level. According to them, education does not affect engagement because of what you learn in school, but rather because your education level determines your social position—more education relative to others in the same environment means more social status, which in turn leads to more engagement.

On the essential point that the educational environment matters, this paper concurs with NJS. We diverge on how much it matters or, more precisely, how broadly it applies. NJS essentially posit that sorting affects many forms of engagement—from voting to campaign work to voluntary associations—equally. However, when account is taken of the wide variation in educational attainment across both place and age, sorting has been shown here to apply only to electoral activity, and not to voting, expressive political involvement, or civic activity. These results provide guidance for future research on when, and how, relative education might be included in models of both engagement and enlightenment. Subsequent work that incorporates relative education should take note that educational environment is best defined locally (place), and should account for the rise in educational attainment over time (age). These findings also demonstrate the utility of modeling an interaction between education at the individual level and that individual's educational environment. Furthermore, our understanding of the mechanism

underpinning the sorting model has been expanded. NJS postulate that educational sorting applies because engagement is zero-sum—a gain by one equals a loss by another. The specific activities to which sorting applies, however, are not truly zero-sum. Rather, they are better described as being simultaneously competitive and conflictual.

Although this analysis has narrowed the sorting model, it broadens the cumulative model of education, whereby a more educated environment pushes enlightenment up. In a finding consonant with NJS, this paper finds that the educational environment, again defined in terms of both age and place, has a cumulative effect on both political tolerance and knowledge. The analysis also moves beyond NJS by showing that the cumulative effect is not the same for everyone, as the educational environment amplifies the impact of an individual's own educational attainment. Again, theory is informed by this empirical refinement. NJS stress that enlightenment is a product of the cognitive development that results from formal schooling, a conclusion which is consistent with the analysis at hand. The amplification effect, though, also comports with a “contagion model” of education's impact. Everyone has greater enlightenment in a highly educated environment, potentially because of contact with people who have more education, and thus higher levels of tolerance and knowledge. Because of the tendency toward homophily, there is a self-reinforcing pattern of social interaction among the highly-educated. People with a lot of education (and thus enlightenment) tend to associate with other people who have a lot of education (and enlightenment). If the amplification effect is due to social interaction—a plausible but admittedly untested claim—it suggests that formal schooling is only the beginning of education's impact on tolerance, knowledge, and perhaps still other democratic virtues. At this point, a contagion effect is merely

hypothetical, as its existence is only a matter of informed speculation. Just as NJS have drawn attention to education inflation, future research would profit from testing for “education contagion.”

There is a common thread that runs through both the narrowing of the sorting model and the broadening of the cumulative model. In both cases, we see evidence that education is more than just a credential which signals people’s class status within their social networks. Perhaps education qua education can foster both public engagement and democratic enlightenment—that is, both dimensions of democratic citizenship are enhanced by what one learns and does in school. While the above analysis cannot determine whether there is a truly causal connection between education and engagement, it does suggest that such research, difficult though it might be, is worth doing. We still have much to learn about the universal solvent.

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**Table 1. Classifying Forms of Engagement**

**Electoral Index**

Persuading others	When there is an election taking place do you generally talk to any people and try to show them why they should vote for or against one of the parties or candidates, or not?
Displaying button, signs, stickers	Do you wear a campaign button, put a sticker on your car, or place a sign in front of your house, or aren't these things you do?
Campaign contributions	In the past 12 months, did you contribute money to a candidate, a political party, or any organization that supported candidates?
Volunteering for candidate or political organizations	[From volunteering sequence, respondent indicated having volunteered for] "A political organization or candidates running for office"

**Expressive Index**

Contacting officials	[Now I'm going to read you a quick list of things that some people have done to express their views. For each one I read, please just tell me whether you have ever done it or not. (For each yes, probe: And have you done this in the last 12 months or not?)] Contacted or visited a public official—at any level of government—to ask for assistance or to express your opinion?
Contacting the print media	Contacted a newspaper or magazine to express your opinion on an issue?
Contacting the broadcast media	Called in to a radio or television talk show to express your opinion on a political issue, even if you did not get on the air?
Protesting	Taken part in a protest, march, or demonstration
E-mail petitions	Signed an e-mail petition?
Written petitions	And have you ever signed a written petition about a political or social issue?
Boycotting	Not bought something because of conditions under which the product is made, or because you dislike the conduct of the company that produces it?
Buycotting	Bought a certain product or service because you like the social or political values of the company that produces or provides it?
Canvassing	Have you worked as a canvasser—having gone door-to-door for a political or social group or candidate?

**Civic Index**

Community problem solving	Have you ever worked together informally with someone or some group to solve a problem in the community where you live? If Yes, Was this in the last 12 months or not?
Regular volunteering for a nonelectoral organization	Have you ever spent time participating in any community service or volunteer activity, or haven't you had time to do this? [Prompt is followed by a detailed list of specific types of organizations]
Active membership in a group or association	Do you belong to or donate money to any groups or associations, either locally or nationally? Are you an active member of this group/any of these groups, a member but not active, or have you given money only?
Participation in fund-raising run/walk/ride	[Now I'm going to read you a quick list of things that some people have done to express their views. For each one I read, please just tell me whether you have ever done it or not. (For each yes, probe: And have you done this in the last 12 months, or not?) Personally walked, ran, or bicycled for a charitable cause—this is separate from sponsoring or giving money to this type of event?
Other fund raising for charity	And have you ever done anything else to help raise money for a charitable cause?

**Voting**

Regular voting	We know that most people don't vote in all elections. Usually between one-quarter to one-half of those eligible actually come out to vote. Can you tell me how often you vote in local and national elections? Always, sometimes, rarely, never
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Source: Zukin et. al. *A New Engagement? Political Participation, Civic Life, and the Changing American Citizen* (2006)

**Table 2. Educational Environment and Electoral Index**  
Results from ordered logit

	(1)	(2)	(3)
Unit of aggregation for educational environment	State	MSA/County <sup>22</sup>	Zipcode
Education X Educational Environment	-0.031 (0.029)	-0.037* (0.021)	-0.032** (0.015)
Years of Education	0.507 (0.372)	0.586** (0.273)	0.520*** (0.191)
Educational Environment	0.263 (0.423)	0.411 (0.310)	0.397* (0.224)
Female	-0.329*** (0.117)	-0.324*** (0.105)	-0.316*** (0.097)
African American	0.290* (0.175)	0.285 (0.176)	0.279* (0.166)
Asian American	-0.199 (0.282)	-0.175 (0.282)	-0.130 (0.310)
Hispanic American	-0.130 (0.242)	-0.137 (0.219)	-0.114 (0.223)
Married	0.262** (0.125)	0.249** (0.106)	0.245** (0.106)
Retired	-0.082 (0.152)	-0.054 (0.145)	-0.020 (0.146)
Homeowner	0.199* (0.117)	0.198* (0.116)	0.184 (0.122)
Religious attendance	0.131*** (0.028)	0.132*** (0.030)	0.134*** (0.031)
Not in metropolitan area	-0.148 (0.130)	-0.181 (0.128)	-0.159 (0.124)
Strong partisan	0.999*** (0.116)	1.000*** (0.107)	0.997*** (0.110)
Independent	-0.579*** (0.185)	-0.587*** (0.171)	-0.582*** (0.166)
Residential mobility	-0.261 (0.162)	-0.254 (0.158)	-0.246 (0.153)
Age cohort	0.072 (0.062)	0.093 (0.060)	0.115** (0.056)
Observations	2220	2219	2211
Pseudo R-squared	0.065	0.065	.065

Robust standard errors in parentheses, clustering by educational environment (age cohort and geographic unit, as explained in the text)

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<sup>22</sup> For those respondents who live in a metropolitan statistical area, the MSA is their educational environment. For respondents who live outside an MSA, educational environment is defined as their county.

**Table 3. Educational Environment and Voting, Expressive Index, and Civic Index**

Results from ordered logit

Zipcode as unit of aggregation for educational environment

	(1) Voting	(2) Expressive Index	(3) Civic Index
Education X Educational Environment	-0.011 (0.017)	-0.006 (0.013)	-0.018 (0.019)
Years of Education	0.322 (0.217)	0.237 (0.171)	0.485* (0.251)
Educational Environment, Zipcode	0.147 (0.239)	0.135 (0.198)	0.243 (0.281)
Female	-0.471*** (0.109)	-0.257*** (0.091)	-0.067 (0.093)
African American	-0.125 (0.186)	-0.098 (0.170)	-0.294* (0.171)
Asian	-0.552 (0.358)	-0.895*** (0.322)	-0.012 (0.288)
Hispanic	-0.467** (0.238)	-0.280 (0.196)	-0.378* (0.200)
Married	0.244** (0.121)	0.063 (0.098)	0.162 (0.103)
Retired	0.340* (0.198)	-0.272* (0.146)	-0.459*** (0.149)
Homeowner	0.504*** (0.135)	0.070 (0.119)	0.352*** (0.123)
Religious attendance	0.123*** (0.036)	0.020 (0.029)	0.291*** (0.030)
Not in metropolitan area	0.118 (0.137)	-0.272** (0.118)	0.068 (0.116)
Strong partisan	0.807*** (0.123)	0.419*** (0.105)	0.181* (0.108)
Independent	-0.856*** (0.174)	-0.143 (0.129)	-0.200 (0.138)
Residential mobility	-0.128 (0.146)	-0.198 (0.128)	-0.531*** (0.136)
Age cohort	0.503*** (0.062)	-0.057 (0.055)	-0.072 (0.054)
Observations	2151	2211	2211
Pseudo R-squared	0.123	0.035	.083

Robust standard errors in parentheses, clustering by educational environment (age cohort and geographic unit, as explained in the text)

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 4. Educational Environment and Group Membership, Mobilization**

Results from ordered logit

Zipcode as unit of aggregation for educational environment

	(1) Group membership (at least 1)	(2) Active in group	(3) Number of groups	(4) Mobilization
Education X Educational Environment	-0.015 (0.020)	-0.007 (0.024)	-0.017 (0.025)	0.020 (0.016)
Years of Education	0.405 (0.256)	0.302 (0.314)	0.516 (0.323)	-0.013 (0.205)
Educational Environment, Zipcode	0.325 (0.281)	0.106 (0.363)	0.212 (0.379)	-0.288 (0.247)
Female	-0.078 (0.115)	-0.262** (0.113)	0.160 (0.121)	-0.263** (0.114)
African American	-0.413** (0.192)	-0.150 (0.204)	-0.442* (0.242)	-0.594*** (0.214)
Asian	-0.199 (0.348)	-0.487 (0.413)	-0.461 (0.384)	-0.325 (0.447)
Hispanic	-0.147 (0.238)	-0.436 (0.266)	-0.475* (0.245)	-0.178 (0.253)
Married	-0.113 (0.123)	-0.100 (0.121)	0.253* (0.133)	0.302** (0.124)
Retired	-0.238 (0.184)	-0.270 (0.179)	-0.125 (0.193)	0.174 (0.173)
Homeowner	0.603*** (0.140)	0.470*** (0.151)	0.246 (0.165)	0.255* (0.152)
Religious attendance	0.092** (0.036)	0.284*** (0.037)	0.443*** (0.042)	0.065* (0.036)
Not in metropolitan area	-0.042 (0.140)	0.019 (0.144)	0.062 (0.157)	-0.168 (0.148)
Strong partisan	0.234* (0.130)	0.305** (0.126)	0.197 (0.129)	0.399*** (0.117)
Independent	-0.038 (0.163)	0.074 (0.163)	-0.269 (0.184)	-0.204 (0.182)
Residential mobility	-0.126 (0.159)	-0.290* (0.170)	-0.484*** (0.171)	-0.518*** (0.183)
Age cohort	0.162** (0.068)	-0.022 (0.064)	-0.154** (0.064)	0.245*** (0.067)
Observations	2211	2211	2211	2196
Pseudo R-squared	0.095	0.102	0.123	0.111

Robust standard errors in parentheses, clustering by educational environment (age cohort and geographic unit, as explained in the text)

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 5. Educational Environment and Political Knowledge, Tolerance**

Results from ordered logit

Zipcode as unit of aggregation for educational environment

	(1) Knowledge Index	(2) Approve of free speech
Education X Educational Environment	0.034** (0.017)	0.027* (0.014)
Years of Education	-0.121 (0.221)	-0.181 (0.171)
Educational Environment, Zipcode	-0.401 (0.254)	-0.303 (0.205)
Female	-0.998*** (0.100)	0.150 (0.134)
African American	-0.488*** (0.185)	-0.191 (0.207)
Asian	-0.759** (0.384)	-0.987** (0.401)
Hispanic	-0.154 (0.190)	-0.794*** (0.212)
Married	0.138 (0.105)	0.290** (0.137)
Retired	-0.159 (0.162)	-0.207 (0.194)
Homeowner	0.053 (0.118)	-0.227 (0.157)
Religious attendance	0.000 (0.031)	-0.139*** (0.041)
Not in metropolitan area	-0.243* (0.131)	-0.002 (0.156)
Strong partisan	0.547*** (0.107)	0.036 (0.151)
Independent	-0.626*** (0.154)	-0.298* (0.173)
Residential mobility	0.154 (0.136)	-0.192 (0.189)
Age cohort	0.186*** (0.057)	0.067 (0.077)
Observations	2211	2204
Pseudo R-squared	0.128	0.049

Robust standard errors in parentheses, clustering by educational environment (age cohort and geographic unit, as explained in the text)

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Figure 1. Educational Sorting and Electoral Activity (25-34 year olds)

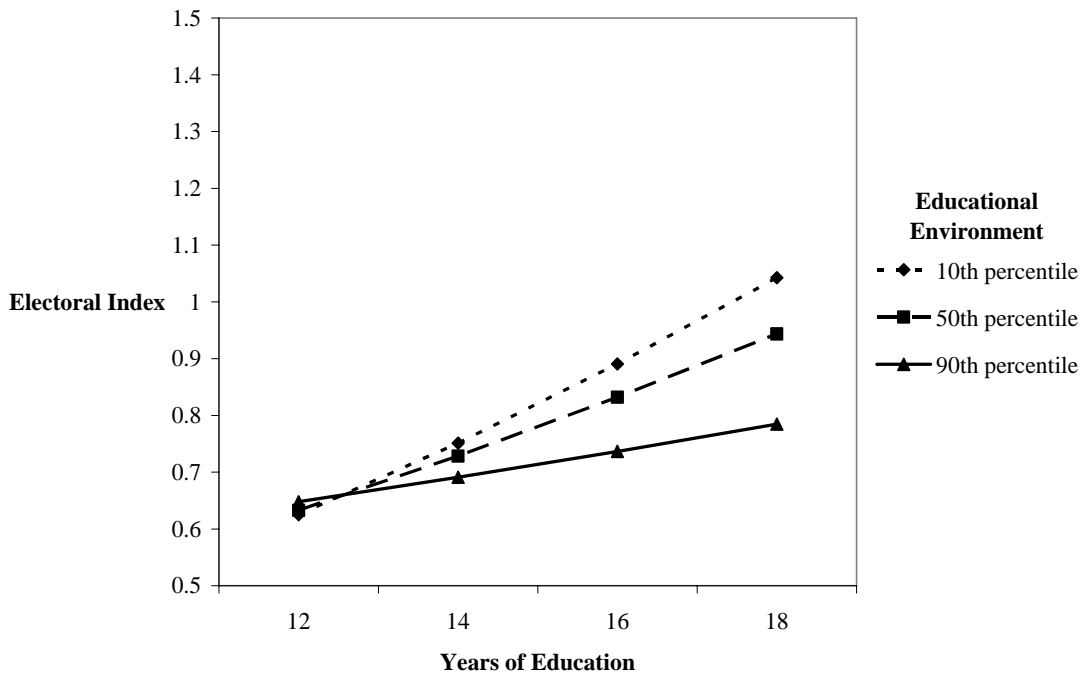
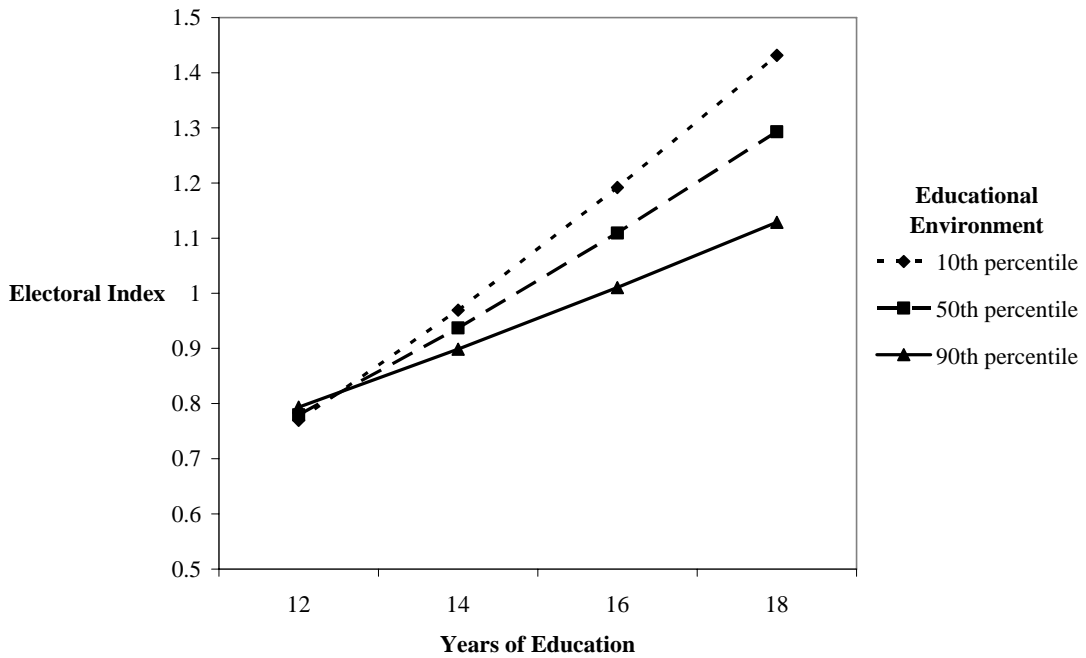


Figure 2. Educational Sorting and Electoral Activity (65+ year olds)



Estimates based on models reported in Table 2. All control variables set to their means.

Figure 3. Amplification Effect and Political Knowledge (25-34 year olds)

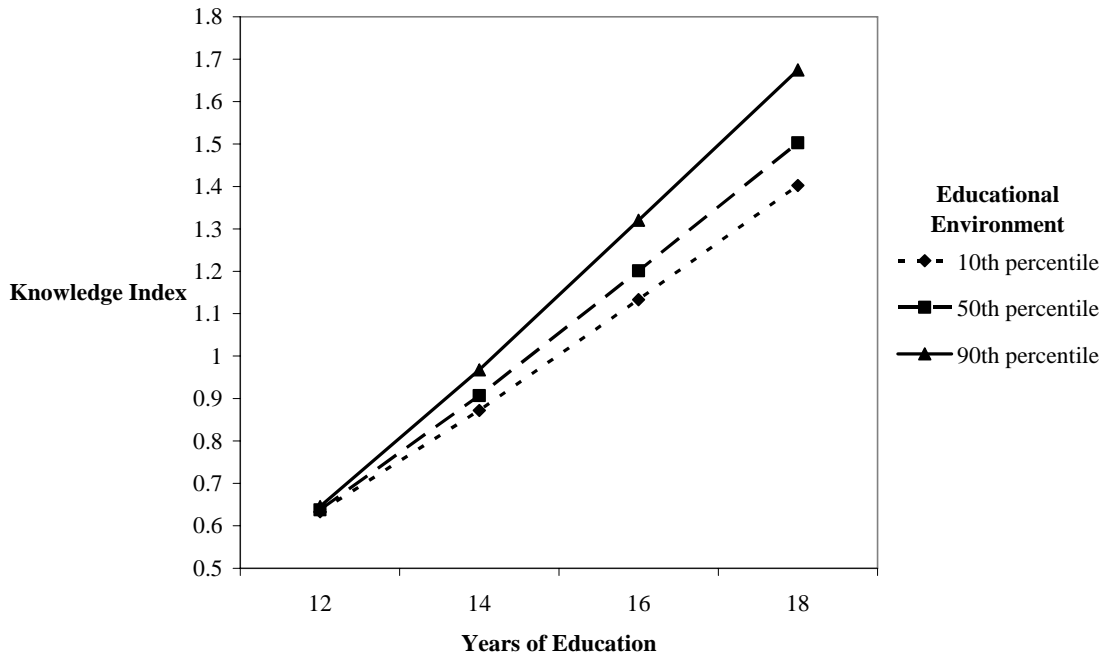
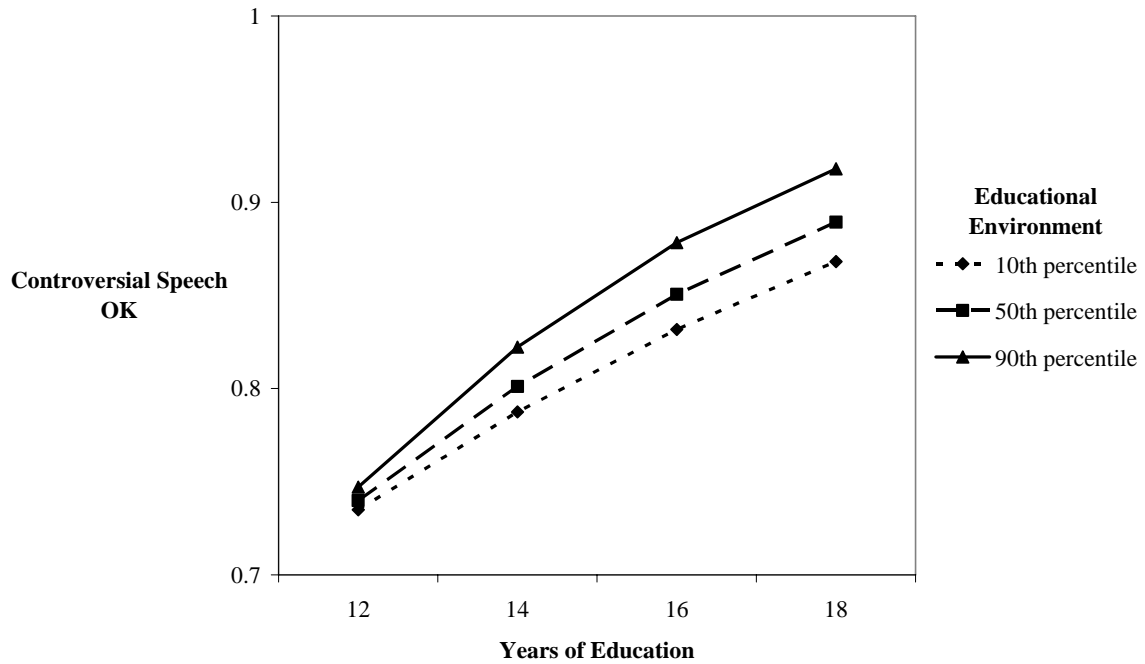


Figure 4. Amplification Effect and Political Tolerance (25-34 year olds)



Estimates based on models reported in Table 5. All control variables set to their means.

## Appendix

### Variables from National Civic Engagement Survey

#### *Years of Education*

What is the last grade or class that you completed in school?

<i>Response</i>	<i>Code for years of education</i>
None or grade 1-8	6 years
High school incomplete (grades 9-11)	10 years
High school graduate (grade 12 or GED)	12 years
Business, technical, or vocational school after high school	13 years
Some college, no 4 year degree	14 years
College graduate	16 years
Some post-graduate training or professional schooling / Post-graduate degree	18 years

*Female* (determined by interviewer)

*African American/Asian* Are you white, black, or of Asian origin?

*Hispanic* Are you of Latino or Hispanic origin, such as Mexican, Puerto Rican, Cuban, or some other Spanish background?

*Married* Are you married, living as married, widowed, divorced, separated, or have you never been married? (married =1, else=0)

*Retired* Are you now employed full-time, part-time, not employed, or retired? (retired=1, else=0)

*Homeowner* Which of the following best describes where you are currently living? I own my home, I rent my home or apartment, I live in college or university housing, I live with my parents (own my home=1, else=0)

<i>Religious attendance</i>	Aside from weddings and funerals, how often do you attend religious services . . . more than once a week, once a week, once or twice a month, a few times a year, seldom or never?
<i>Not in metropolitan area</i>	(determined by zipcode)
<i>Strong partisan/Independent</i>	In politics today, do you consider yourself a Democrat, Republican, Independent, or something else?  (asked of independents and those who did not report a partisan affiliation): Do you lean more toward the Democratic Party or more toward the Republican Party?
<i>Residential mobility</i>	For how many years have you lived in the community or town where you now reside, or have you lived here all your life? (less than 1 year=0, else=0)
<i>Age cohort</i>	What as your age on your last birthday? (subtracted from 2002, the year the survey was conducted)