

Digital citizenship and school for democracy in Britain 2006-2008

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Abstract

The verdict on the effect of the Internet on generalised trust has been equivocal at best and dominated by evidence from the U.S. Concerns about the unsocialising effect of the Internet on society and polity have been argued in the past. Recent evidence from the U.S. betrays an evolution in people's use of the Internet that raises new questions on its link with generalised trust, civic engagement and sociability. The evolution of Internet uses also suggests a form of varied engagement that presage a digital citizenship.

Previous assessments on the link between the Internet and trust have been hampered by endogeneity. Unobserved individual heterogeneity may drive people both to embrace the technology and to generally trust in others. Additionally, in my British data source, individuals reside within neighbourhoods so that unobserved neighbourhood heterogeneity may condition the effect of digital citizenship on trust or social capital. Addressing both kinds of heterogeneity requires a new model: a multilevel endogeneous treatment model.

I build and apply the multilevel endogeneous treatment model to estimate the effect of Internet use on social capital. British Taking Part surveys data 2006-2008 ($N = 10,196$; neighbourhoods = 3,175) demonstrate that, controlling for individual heterogeneity and neighbourhood heterogeneity, varied engagements with the Internet increase the amount of individual social capital. A move towards inclusive digital citizenship or varied Internet engagement thus may improve social capital.

Keywords: multilevel endogeneous treatment model, digital citizenship, Internet, social capital, trust, civic engagement

1 From de Tocqueville to Dean

Social capital, understood as “networks, norms and trust” to use Putnam’s lean definition, is often seen as a solution to collective action problem (Putnam, 1993, 2000; Brehm and Rahn, 1997; Dasgupta and Serageldin, 2000; Fountain, 1998). This is despite heavy criticisms levelled at the concept of social capital. Woolcock (2010) assesses the literature over the past two decades and its title sums up the current state of the literature “The rise and routinization of social capital.” The role as solution lies at the heart of many instances where the efficacy of social capital is routinely documented. In the domain of politics, Putnam’s works have been influential. In the domain of development, the World Bank researchers have documented many country studies e.g. (Dasgupta and Serageldin, 2000) and have even prompted an instance of soul-searching amongst these consummate policy advisors (Bebbington et al., 2006). In the domain of public health, Kawachi and Berkman (2003) and Marmot et al. (2010) present mechanisms involving social capital and document its effects on a wide range of health outcomes. In the domain of business management, works collected in Lane and Bachmann (1998) discuss trust and its relationship with business performance. These domains are just an idiosyncratic sample.

A concern is often raised since despite this overwhelming evidence of its consequences, relatively less is understood about the causes or the creation of social capital. If it is so desirable, what can be done to create and maintain the level of social capital? The role of government and public policy are clearly important; see Cohen (1999); Hall (1999) on the U.S. and U.K. respectively. Additionally, Schneider et al. (1997) suggest that the institutional arrangement of public school enables the creation of social capital.

The most contentious and illustrious cause is perhaps captured by the Tocquevillian perspective: civic associations lead to social capital. Alexis de Tocqueville, as is well known, put the vibrant civic associations at the

heart of American democracy, hence the perspective can be called ‘school for democracy’ perspective. As he puts it in de Tocqueville (1863, :132)

Feelings and opinions are recruited, the heart is enlarged, and the human mind is developed, only by the reciprocal influence of men [sic] upon each other . . . These influences must therefore be artificially created, and this can only be accomplished by associations.

Earlier in the writing he refers specifically to “those associations only which are formed in civil life, without reference to political object” (:129). Putnam draws upon this and emphasises that *generalised reciprocity is a community asset* (Putnam, 2000, :136, original emphasis). It is a short step from this community asset to generalised trust or social capital as is now often understood. In the passage, Putnam writes that trust in the generalised other, “rests implicitly on some background of shared expectations of reciprocity“. This claim is the source of much of empirical works which purported to test whether civic associations lead to social capital. Stolle and Hooghe (2004, :424) write for instance that “interaction within any kind of context, whether formal or informal, can exert . . . feelings of tolerance, generalized trust and norms of reciprocity.” Although Putnam is quick to remark, in fact in the same spread, that engagement in civic associations and trust are likely to form a virtuous cycle, this Tocquevillian perspective, i.e. associations as school for democracy, is often the starting point in empirical analysis on civic engagement and social capital e.g. (Brehm and Rahn, 1997).

Given that formal and informal civic engagement may create this community asset, contemporary observers of new technology are led to raise the possibility that the Internet, by facilitating more and varied civic engagement, might also help in the creation of social capital. And these observers have Howard Dean as a major exhibit. His flickered campaign in the Democratic nomination for the U.S presidential election 2004 is an intriguing case of how the Internet facilitates widespread citizen engagement. There is now a sizable literature on Dean’s campaign e.g. by the social theorist Manuel

Castells in Sey and Castells (2004).

The most sanguine view on the role of the Internet is perhaps argued for by legal theorists. Borrowing from the critical theory of Habermas, especially his procedural discourse ethics, Michael Froomkin echoes the enormous potential bequeathed by the Internet, not only on engaged citizenship, but more importantly on morally legitimate social ordering (Froomkin, 2003). Having described Habermasian procedural philosophy “that can validate moral choices about how society should be organized,” he goes on to write [753, my emphasis],

the forces needed to push public decisionmaking [sic] in the directions advocated by [Habermas’s] philosophy are likely to come from a re-energized, activist, engaged citizenry working together to create new small-scale communicative associative institutions . . . New technology may increase the likelihood of achieving the Habermasian scenario of diverse citizens’ groups engaging in practical discourses of their own. Technology may not compel outcomes, but . . . new Internet tools might, *in time*, help actualize this scenario.

My aim is to find out whether indeed the time has come. I visit the connections between civic engagement, Internet use and generalised trust. The phrase digital citizenship is perhaps consonant with the view above about Internet use, hence I use both interchangeably. I admit not to problematize deeper the phrase digital citizenship and merely borrow from Mossberger et al. (2008, :9ff) who define it as frequent or daily Internet access for various forms of access or participation. Like their work, such an enterprise is best pursued in a monograph.

Partially to restore the empirical balance between causes and consequences of social capital, I focus on how wider civic engagement especially via the Internet creates social capital. The focus is not on the virtuous cycle of engagement and social capital. I shall highlight the features of a new model as a solution to three sources of unobserved heterogeneity in this empirical study. First, individual heterogeneity that drives both civic

engagement and social capital (as emphasised by Uslaner (2002) and others) making engagement an endogeneous treatment; second, neighbourhood heterogeneity raised by the survey structure where individuals are sampled in neighbourhoods. Lastly, incidental heterogeneity or overdispersion due to the count scale of the Internet use as the treatment variable. The endogeneous treatment model (Heckman, 1978) to deal with endogeneity above is designed for treatment as a binary variable. Thus empirical studies using Heckman's model often recast their treatment into a binary variable. Following this practice requires recasting the number of Internet use into a binary variable (use versus non-use). This is undesirable. I opt to let the Internet use variable remains as count of the number of uses $(0, 1, \dots)$ and the model must start with Poisson model to deal with this count. However, because of additional overdispersion (the mean is less than half the variance), Poisson model is inadequate. The final model is extended to have an overdispersion or heterogeneity parameter. This is an incidental heterogeneity in comparison to the other two heterogeneity above.

To preview the results, British society at the beginning of the 21st century witness that varied engagement through the internet does increase social capital. The results stand even after controlling for various forms of observed and three forms of unobserved heterogeneity. This affirmation is however tempered by the equally strong findings that Internet use or digital citizenship, hence potentially political voice, continues to be unequally distributed along social class cleavage. The ultimate effect of digital citizenship on British democracy may yet to be determined as the balance between social capital creation and unequal voice distribution that the digital citizenship enables.

2 Civic engagement, Internet and trust: broadening the connections

The inter-relations between civic engagement, Internet use and trust are only beginning to draw the attention of scholars, although such attention is indeed

currently intense. Such appeal will ride on the continuing innovations around the Internet and on the contributions from scholars working on societies outside the U.S. So far, works about civic engagement, Internet and social capital done on the U.S. predominate.

Social capital as “networks, norms, and trust” has been shown to be important for a democratic and healthy society (Putnam, 1993, 2000; Berkman and Kawachi, 2000). Putnam, following de Tocqueville, highlights the role of participation in voluntary associations in creating generalised trust in citizens. For him, voluntary associations, though ‘without reference to political object’, are arenas where people are enabled to sow and tend the seeds of generalised trust. Such associations, among other things, instill in their members or volunteers trust in people beyond their limited groups. Such trust is essential, in particular, in civic and political life. People with generalised trust or those who trust other people in general are more likely to vote in democratic election or to write to their local representative in efforts to improve local civic life. By joining voluntary associations, trust tend to be created which in turn is instrumental for political life beyond the associations. Following the majority of this literature, I refrain from discussing the expressive effect of voluntary activities.

The effect of voluntary associations on trust, though well-known, is not without its critics. Uslaner for instance argue that certain kind of people are predisposed to be both active volunteer and generally trusting (Uslaner, 1999, 2002, 2004b,a). Such positive predisposition manifests in a positive effect of voluntary association on trust. But this does mean that voluntary associations necessarily lead to generalised trust. Voluntary associations do not create nor maintain social capital. In fact, Uslaner argues the opposite: trusting people tend to be engaged in more voluntary associations. Both Putnam and Uslaner can be right of course. We are probably looking at a virtuous cycle between civic engagement and trust (Brehm and Rahn, 1997).

Uslaner also claims that trust, as a moral resource, is primarily the product of nurture. “Children develop trust in others by learning from – and emulating– their parents” (Uslaner, 2004b, :240). In another place he writes, “your trust depends upon how much your parents trusted others and,

more generally, how nurturing your home environment was” (Uslaner, 2002, :77). Generalised trust is instilled or nurtured during childhood. Nurture is the key that started the engine of the virtuous cycle of trust and voluntary engagement.

2.1 Civic engagements: not a school for democracy?

The Tocquevillian perspective that civic associations are “school for democracy” is one of the major attractions of social capital theory. Putnam is credited to bring this notion to prominence in public discourse although he is more nuanced in his expositions. In his influential work, *Bowling Alone* [:137], he writes,

The causal arrows among civic involvement, reciprocity, honesty, and social trust [generalised trust] are as tangled as well-tossed spaghetti. Only careful, even experimental, research will be able to sort them apart definitely. For present purposes, however, we need to recognize that they form a coherent syndrome.

This exposition however has not prevented the majority of empirical works on the relation between civic engagement and trust to adopt the school for democracy perspective as the hypothesis: civic engagement leads to trust. There is “a spill-over effect from one’s membership in organizations to the development of cooperative values” write Stolle and Hooghe (2004). This effect need not arise simply from formal organisation but also from informal engagement. Formal and informal engagement in civic activities elicit trust from its participants.

But often one problem is noted with the perspective: even if members (compared to non-members) tend to trust more generally, they may constitute a self-selecting group. Such group are made up of people who both are keen to join and are more trusting. Civic engagement is endogeneous to trust. Critics often attribute the lack of robust evidence for the school of democracy perspective to this endogeneity problem. Such absence could be explained in terms of socialisation perspective that is often proposed to

enrich school for democracy. For adults, regular civic engagements tend to be short-lived and more importantly happen at the stage in life when certain individual values and norms (including trust) are already well-formed. Experiences gained in associations therefore tend to be ineffective in shaping values such as trust. The message is an important one: values, that are systematically related to both engagement and trust, are relatively constant for adults since these were formed during childhood and adolescence. This stability is emphasised by Uslaner who presents both values of optimism and control as primary examples of stable values which are related to both engagement and generalised trust.

Uslaner, in many places, notes another problem with the school for democracy perspective: people tend to associate with similar people. Like-minded, and often demographically similar, people are involved together in pursuit of common goal. Engagement with mostly similar kinds of people is unlikely to engender generalised trust because such trust by definition extends to strangers, spills over to people unlike the members. This leads Uslaner to suggest the opposite view: generalised trust leads to civic engagement. To bring in the point of socialisation emphasised by Stolle and Hooghe, by the time socialisation congeal, certain values and attitudes including trust are already formed. In turn, trust leads people to get engaged in various civic and other activities.

The two perspectives together form a virtuous cycle as both Putnam and Uslaner note. However, it is clear for Uslaner that childhood is a crucial stage where the engine of this cycle is started. In support, he alludes to Glen Loury's conception of social capital which makes this life stage integral to the concept of social capital.

Although the explorations about the desirable processes initiated during childhood are only at the beginning, an example is given. Sport involvement by parents is a potentially positive mechanism. Not only sports, especially team sports, expose children to other people, sports also instill in participants at least three values. Participants (versus mere spectators) gained the most. Although spectator sports is a known phrase, spectating does not convey the same amount of benefit as actually participating. Next, partic-

ipants adhere to externally imposed yet internally accepted common rules. The majority of formal and informal civic associations generally function better with commonly accepted rule. Lastly, win or lose is the name of the game in sports. This is probably not too far from the fact of life in purposeful civic associations and this is certainly the fact of democratic life where a party can win or lose the vote or confidence of its constituency. Another social activity that may shape such desirable values ‘on the sly’ is visits to art museums (Uslaner, 1999, :146).

The virtuous cycle between civic engagement and trust is appealing and is the subject of empirical studies by Uslaner (2002) and Brehm and Rahn (1997) among others. Brehm and Rahn (1997) in their attempt to bolster the case for social capital as a solution to the collective action problem, examined the reciprocal relationships between civic engagement, social capital and confidence in government at the individual level. Inspired by the account in Putnam (1993), they pool data from the U.S. General Social Survey 1972-1994 and use membership in a range of civic and political organizations to derive level of civic engagement. They also use a set indicators of trust to derive level of generalised trust. Although confidence in government is very much part of their investigation, it is less relevant to our discussion here. Feeding the covariance matrix of these variables, and not the individual observations, into simultaneous equation model, the authors estimate the reciprocal relationships between civic engagement and generalised trust. They find that both civic engagement and trust are mutually reinforcing; positive and significant coefficients are reported for both equations. These relationships, however, are noted for their asymmetry (page 1014):

Respondents who participate extensively in their communities are likely to have highly positive beliefs about the helpfulness, trustworthiness, and fairness of other. The coefficient on the civic engagement to interpersonal trust is one of the strongest relationships of the entire model. The effect of trust in others on levels of civic engagement is considerably weaker.

Civic engagement in cyberspace? Empirical research on the virtuous cycle between civic engagement and trust receives significant boost in the last decade due to accumulating technological innovations. New and ongoing innovations around the Internet have fueled interest in these links. Uslaner and Putnam began to look at the role of technology in eliciting and facilitating civic engagement from the point of view of social capital creation. On this, their views are closer than on civic engagement in general. That is, it is yet hard to attribute the creative effect of Internet participation on trust. This absence of convincing evidence is also related to the constant threat of endogeneity of engagement both off-line as discussed above, and on-line. A recent work by Mossberger et al. (2008, :56, 57, 62) is a tangential attempt using two-step estimation to deal with endogeneity when examining the effect of Internet use, among the young, on political discussion which they label civic engagement (somewhat at odds with de Tocqueville's use)..

In summary, four points need to be made in studying whether civic engagement (including via the Internet) leads to generalised trust. First, the link can be part of a virtuous cycle although my focus here is only on the effect of engagement on social capital. This virtuous cycle in itself does not preclude policy oriented or more circumscribed study which focus on one direction or the other. As discussed above, de Tocqueville (1863) can be read as emphasising the direction from civic engagement to trust. Moreover, empirical evidence presented by Brehm and Rahn (1997) shows the strength of this direction. Second, endogeneity, brought about by unobserved values, that drives both involvement and trust is a real possibility. Investigation of this link has a better chance of finding a true effect if a suitable endogeneous treatment model is used. The word treatment is perhaps rather appropriate where civic engagement is the main concern or the treatment variable. The school for democracy perspective posits that treating people with more engagement in civic associations brings about the desired outcome of increased trust. Unlike the case explicated in Heckman (1978) where treatment is binary, here the Internet use is a count. An overdispersed Poisson model will be developed. Third, such heterogeneity of values is seen as constant during adulthood. Once the endogeneity is accounted for, civic engagement should

be independent of trust. Lastly, such considerations apply equally to engagement via the Internet. Not only the optimists, often unobserved, tend to trust strangers and tend to get involved in civic activities, they also tend to embrace innovations enabled by the Internet.

3 Data

Taking Part surveys collect information about various forms of engagement with specific details on the arts and sports. Three cross-sectional waves have been fielded so far (2005-2006, 2006-2007, and 2007-2008), unfortunately the first wave did not ask question on generalised trust. Two features of the surveys are worth highlighting: rich information on participations including sports and Internet use, and individual observations are nested in neighbourhoods. Participation in sports and the arts, as Uslaner points out, can create positive values ‘on the sly’ (Uslaner, 1999, :146). The dependent variable is ordered generalised trust (most people can be trusted, depends, cannot be too careful). The main covariate is number of Internet use. Internet uses here cover those not particularly related to political activities. They include online access to museum, library, heritage websites, concerts, archive, sporting events, gambling, and uses of the Internet for other leisures. Clearly these are all ‘without reference to political object’.

The idea of using non-political use of the Internet in this study lies at the heart of the venerable tradition of social capital theory: de Tocqueville writes about associations not ostensibly political, Putnam writes about social capital benefiting bystanders and Uslaner writes about positive values created ‘on the sly’. This is the characteristic that qualifies social capital as a solution to collective action problem. Otherwise, social capital theory would not be as much fun.

Second, the fact that individuals are nested in neighbourhoods present a well known estimation problem often requiring multilevel modelling (Goldstein, 2003). And I shall build a new model capable of dealing with this problem while simultaneously solves the more vexing problem of the endogeneity of engagement in explaining social capital. The neighbourhood here

is defined as the middle super output area, a geographical unit purposefully designed for social research and comprises an area with population of about 7,200. For comparison, physician’s general practice has a catchment area with a mean population of 5,600 (Department of Health, 2006). More information about the surveys are available (Aust and Vine, 2007; Bunting et al., 2007).

4 Multilevel endogeneous treatment model

Often in cross-section survey, such as the Taking Part surveys used here, measures of nurture or moral values (e.g. optimism or control) are not available. Yet this drives civic engagement, Internet use or digital citizenship (the right hand side), and social capital (the left hand side). Digital citizenship is therefore endogeneous. Endogeneous treatment model (Heckman, 1978) solves this problem.

The first feature of this study that requires extension to Heckman model is due to the nesting structure of the data. Surveys are increasingly available with neighbourhood identifiers to allow the effects of neighbourhood factors to be gauged. This has two significance: analysts can make use of multilevel model to get better inference. Also, analyses can reflect more accurately theoretical claims about the effect of neighbourhood factors. Arguably neighbourhood physical and social conditions may enable residents to be more engaged in social activities and may induce trust in people in general. Both significance can be accommodated in a multilevel setting.

The second feature arises from the count scale of digital citizenship or Internet use (variable net below). In such cases, a common approach is to use Poisson model: $\Pr(\text{net}, \mu) = \frac{\mu^{\text{net}} \exp(-\mu)}{\text{net}!}$ where the expectation μ is given by $\log(\mu) = X'\beta$. However due to overdispersion in the data, I consider a random intercept Poisson model to capture this.¹ The full model is as follows.

¹Other options would be to use zero-inflated Poisson or two-part model but there is little substantive theory as a guide to suggest two kinds of endogeneity.

$$y^* = \mu_1 X_1 + \lambda \eta + \nu_j + \varepsilon_1 \quad (1)$$

$$y = \begin{cases} -1 & \text{if } -\infty < y^* \leq \kappa_1; \\ 0 & \text{if } \kappa_1 < y^* \leq \kappa_2; \\ 1 & \text{if } \kappa_2 < y^* \leq \infty \end{cases} \quad (2)$$

$$\Pr(\text{net}, \mu_2) = \frac{\mu_2^{\text{net}} \exp(-\mu_2)}{\text{net}!} \quad (3)$$

$$\log(\mu_2) = \beta X_2' + 1\eta + 1\nu_j + \zeta \quad (4)$$

where y : trust; net: digital citizenship; X : exogeneous covariates which include social class, gender, income, marital status, age and constants; η : nurture/optimism; ν : neighbourhood variance; $\zeta \sim N(0, \sigma_{\text{net}}^2)$; and ε : residual variance.

Exclusion restrictions Two variables make up the exclusion restriction for identification: neighbourhood deprivation (measured using index of multiple deprivation) and urban indicator since urban areas may have better access to high-speed Internet infrastructure. Deprived neighbourhoods may have less access to high quality public service including high-speed Internet infrastructure. Since social capital is hypothesised to be primarily formed during childhood, current neighbourhood deprivation is excluded from the social capital equation.

5 Result

Details of the analytical sample can be read from Table 1 where it shows that there are about two in five who trust in strangers, about two kinds of Internet uses are engaged in over the last year, slightly more women in the sample, and half of the sample gained A level education or more (equivalent to post-secondary college). The magnitude of the variance of the digital citizenship (Internet use) shows overdispersion, and this is accounted for above. I pool the two waves since this improves fit and a wave 2 indicator

is included to capture period shocks.

Table 1: Description of analytic sample: pooled Taking Part waves 2 and 3

Variable/categories	percent/mean	variance
Trust		
Cannot be too careful	50.3	
Depends	9.1	
Most people can be trusted	40.6	
Digital citizenship	1.7	3.1
Female	55	
A level/college +	50	
Age		
16 — 30	22.4	
31 — 60	60.5	
61 — 70	17.1	
Single	34	
Married	47	
Divorced/separated	19	
Salariat/professionals	30	
Intermediate	23	
Manual workers	47	
Meet friends		
Never — most days	2.2 — 30.2	
Neighbourhoods	$N = 3, 175$	
Observations	$N = 10, 196$	

The most important result from Table 2 relates to total Internet activity to capture the idea of digital citizenship. Recall that this variable measures an array of participations using the Internet. Digital citizenship is the most effective (0.2026) in creating social capital or generalised trust. This result is robust to endogeneity since model for digital citizenship is simultaneously estimated below.

Men compared to women reported significantly more social capital. Age does not have an independent effect. Education, specifically going to college (A level or more), is significantly associated with more social capital. Marital status matters only in the difference between married couple and the rest. Like most resources in Britain, social capital is also distributed unequally

across the different classes. In fact, there is a gradient in class distribution of social capital. The intermediate class have more than the manual class; in turn, the salariat or professionals and managers have even more. Active in sports and museum visits appear to produce the expected effect since both are positively and significantly associated with more social capital. One social activity, meeting friends, has a high and positive effect on social capital.

Because the effect of digital citizenship is endogeneous, treatment model is required and is given in the bottom part of Table 2. Men use the Internet more, compared to women. Age is, as is well known, non-linearly related to Internet participation. As people age, Internet participation increases; beyond certain age, participation declines. Education is positively related to Internet participation and by far this is the strongest effect (0.4077). Marital status is related to Internet participation where both the married couples and singles tend to use the medium more than the divorcees. Echoing the finding above, and broadly mirroring divisions in British society, there is a clear class inequality in Internet participation. In fact this is the second strongest effect after education (0.3776). Unsurprisingly, a gradient is also found. The manual class participate less than the intermediate class and the salariat participate the most. Visits to museum and activities in sport are positively related to digital citizenship. These perhaps reflect the increasing provision of information about and access to these venues via this medium. The choice of the exclusion restrictions seem warranted. Residents in deprived neighbourhood participate less through the Internet, although there is no evidence of urban-rural divide in digital access.

The variances at the bottom of the table shows that there is enough neighbourhood variations (positive σ_{η}^2) to justify random neighbourhood effects, also enough residual unobserved heterogeneity or ‘optimism’ (positive σ_o^2) to justify simultaneous estimation of digital citizenship and social capital using endogeneous treatment model. Lastly, the number of Internet participation (as a measure of digital citizenship) is a count that is not distributed according to a standard Poisson distribution. An overdispersed Poisson distribution is fitted therefore and the overdispersion parameter is

found to be positive and significant. Unsurprisingly, ignoring such overdispersion result in less adequate fit. This and other results from the model with multilevel endogeneous treatment without overdispersion are given in the appendix.

It is notable that the estimates across the pooled and (two) non-pooled samples are broadly comparable. This comparability increases confidence in the results given the well known difficulty in numerically estimating the standard endogeneous treatment model even in single level setting (Freedman and Sekhon, 2010). The results here are stable across a range of samples and a wide range of starting values.

6 Discussion and conclusion

To redress the balance between the causes and consequences of social capital I focus on the factors that create or maintain social capital.² Studies on the creation of social capital follow a venerable tradition originated in the classic of de Tocqueville's writing on American democracy in the 19th century. Civic engagements, we are told, is a school for democracy. Fast forward two centuries later, new forms of civic engagement enabled by the ubiquitous Internet revisit and sharpen the classic question: do new forms of (Internet-based) engagement create social capital? The answer in Britain today is affirmative.

The debate on the effect of civic engagement on social capital has produced much illumination and no less heat. We are now led to accept that social capital is materially created by government actions (Cohen, 1999; Hall, 1999) and also by institutional set up enabling individual choices (Schneider et al., 1997).³ But the positive effect of civic engagement is highly con-

²I do not pursue here the further question on the consequences of social capital (as they are created via the new media) on democracy for three reasons. First, a choice of focus; second, the model of multilevel endogeneous overdispersed treatment model is complicated enough as it is (Freedman and Sekhon, 2010); lastly, the data do not have information of voting, for instance.

³The results of Schneider and colleagues suffer from the endogeneity problem as discussed extensively by Freedman (2005, :185-189). Standard endogeneous treatment model should solve this problem (Heckman, 1978)

tentious. In fact, Uslaner claims that unobserved value such as optimism drives both civic engagement and social capital. And it is likely that social capital leads to civic engagement.

I find that the de Tocquevillian perspective updated for the 21st century (substituting internet engagements for civic associations) remain powerful. The effect of multiple Internet engagement stands even after controlling for observed value creation through sports and visits to museums (not to mention the standard controls employed by Putnam, Uslaner, Brehm and Rahn) and for various forms of unobserved heterogeneity. In fact, the effect of multiple forms of Internet use is the strongest, even stronger than those of education, marital status, and remarkably for Britain, social class (in most specifications). Sociability, measured by frequency of meeting friends, is also positively associated with social capital (on this association Uslaner (2002, :124) and Putnam (2000, various pages) hold two opposite views).

Updating de Tocqueville's perspective to the 21st century Britain is not straightforward. Putnam (2000, :176) tells us, "the poverty of social cues in computer-mediated communication inhibits interpersonal collaboration and trust, especially when the interaction is anonymous and not nested in a wider social context"; while Uslaner (2004b, :240) reminds us, "the Internet is not a threat to our society or its moral fiber. It is nor a panacea"; and finally Sunstein (2001, :8,16) warns us,

the most striking power provided by [the Internet]: the growing power of consumers to filter. . . Individuals restrict themselves to opinions and topics of their own choosing and mainly listen to louder echoes of their own voices.

One can be sanguine about the effect of Internet participation, *pace* Putnam, Uslaner and Sunstein. Despite the limited evidence so far, one can begin to envisage an idea of digital citizenship where information access and political participation are meaningfully conducted through the new media.

If one were to share in this optimism, how would it look like? Would it be like other forms of access and participation in British society that are unequally distributed? Along what lines? Two major cleavages are not

surprising: education followed by social class. Though not surprising, this is no less important. Engagement in various forms of civic and political activities, when conducted through the Internet, presupposes a certain level of information literacy. Such form of literacy means conversant with the symbols and meanings (or syntax and semantics) deployed in any interaction with the Internet (Warschauer, 2003). Education, especially contemporary education, (should?) prepares the citizens to acquire this literacy.

Unfortunately, the affirmative answer to the main question on the effect of digital citizenship on social capital must be tempered by the persistence of class gradient in digital citizenship. One may counter by saying: if the class gradient is ultimately reflected in increased trust, surely this is a good thing overall. My concern arises from the counter potential. Class gradient in digital citizenship may lead to inequality in voice. Some groups are thus more effective in voicing their interests even or especially using the new media reflecting this evident social class gradient. The ultimate effect of digital citizenship on British democracy may be the balance between social capital creation and unequal voice distribution it enables. This surely is an important research and political question.

Table 2: Digital citizenship and social capital, Britan 2006-2008

term	Pool			Wave 2			Wave 3		
	coef	s.e.	p	coef	s.e.	p	coef	s.e.	p
Social capital									
Net	0.2026	0.0892	0.023	0.1833	0.0935	0.050	0.2010	0.0905	0.026
Male	0.1438	0.0565	0.011	0.1106	0.0540	0.041	0.1394	0.0619	0.024
Age	-0.0035	0.0069	0.61	-0.0051	0.0088	0.56	-0.0035	0.0088	0.69
Age ²	0.0002	0.0001	0.061	0.0002	0.0001	0.12	0.0002	0.0001	0.10
A level+	0.1603	0.0633	0.011	0.1475	0.0661	0.026	0.1441	0.0687	0.036
Single	0.0234	0.0493	0.64	0.0144	0.0624	0.82	0.0142	0.0628	0.82
Married	0.1859	0.0755	0.014	0.1851	0.0832	0.026	0.1444	0.0719	0.045
Salariat	0.1934	0.0747	< 0.01	0.2038	0.0854	0.017	0.1411	0.0720	0.050
Intermed	0.1031	0.0513	0.045	0.0890	0.0573	0.12	0.0972	0.0604	0.11
Museum	0.0181	0.0097	0.062	0.0124	0.0109	0.26	0.0177	0.0125	0.16
Sport	0.0209	0.0115	0.071	0.0268	0.0146	0.065	0.0106	0.0137	0.44
Friend	0.1759	0.0636	< 0.01	0.1616	0.0635	0.011	0.1539	0.0568	< 0.010
Wave 2	0.1222	0.0545	0.025						
Digital citizenship									
Male	0.2666	0.0125	< 0.01	0.2693	0.0189	< 0.01	0.2621	0.0166	< 0.01
Age	0.0220	0.0029	< 0.01	0.0221	0.0044	< 0.01	0.0221	0.0039	< 0.01
Age ²	-0.0004	0.0000	< 0.01	-0.0004	0.0000	< 0.01	-0.0004	0.0000	< 0.01
A level+	0.4077	0.0146	< 0.01	0.4203	0.0217	< 0.01	0.3966	0.0195	< 0.01
Single	0.0800	0.0213	< 0.01	0.1278	0.0325	< 0.01	0.0407	0.0282	0.15
Married	0.1265	0.0183	< 0.01	0.1832	0.0279	< 0.01	0.0798	0.0241	< 0.01
Salariat	0.3776	0.0161	< 0.01	0.3708	0.0242	< 0.01	0.3821	0.0215	< 0.01
Intermed	0.2933	0.0169	< 0.01	0.3030	0.0252	< 0.01	0.2820	0.0226	< 0.01
Museum	0.1090	0.0025	< 0.01	0.1121	0.0038	< 0.01	0.1061	0.0033	< 0.01
Sport	0.0416	0.0035	< 0.01	0.0421	0.0051	< 0.01	0.0405	0.0048	< 0.01
Friend	0.0093	0.0070	0.18	-0.0039	0.0106	0.71	0.0206	0.0093	0.027
Deprivation	-0.0101	0.0005	< 0.01	-0.0094	0.0008	< 0.01	-0.0109	0.0007	< 0.01
Urban	-0.0168	0.0158	0.29	-0.0530	0.0239	0.027	0.0114	0.0209	0.59
η	-0.0499	0.0292	0.087	-0.1252	0.0605	0.038	-0.0514	0.0337	0.13
o	-0.1093	0.0724	0.13	-0.1241	0.1043	0.23	-0.1503	0.1180	0.20
Wave 2	-0.0964	0.0121	< 0.01						
Variances									
σ_{η}^2	0.5684		0.0048	0.5561		0.0083	0.6002		0.0046
σ_o^2	1.2814		0.060	1.0276		0.13	1.1114		0.084
σ_{net}^2	0.1297		< 0.01	0.1702		< 0.01	0.0856		< 0.01
R^2	0.38			0.32			0.34		

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Table 3: Appendix: Digital citizenship and social capital, standard Poisson treatment

term	coef	s.e.	<i>p</i>
Social capital			
Net	0.1496	0.0250	< 0.01
Male	0.0748	0.0192	< 0.01
Age	-0.0029	0.0041	0.48
Age ²	0.0001	0.0000	< 0.01
A level+	0.0789	0.0230	< 0.01
Single	0.0120	0.0295	0.69
Married	0.1065	0.0243	< 0.01
Salariat	0.0986	0.0257	< 0.01
Inntermed	0.0514	0.0240	0.032
Museum	0.0057	0.0053	0.28
Sports	0.0100	0.0059	0.094
Meet friend	0.1068	0.0103	< 0.01
Wave 2	0.0782	0.0195	< 0.01
Digital			
Male	0.2663	0.0125	< 0.01
Age	0.0220	0.0029	< 0.01
Age ²	-0.0004	0.0000	< 0.01
A Level+	0.4097	0.0146	< 0.01
Single	0.0807	0.0213	< 0.01
Married	0.1260	0.0182	< 0.01
Salariat	0.3800	0.0161	< 0.01
Intermed	0.2929	0.0168	< 0.01
Museum	0.1087	0.0025	< 0.01
Sports	0.0416	0.0035	< 0.01
Friend	0.0094	0.0070	0.17
Deprivation	-0.0102	0.0005	< 0.01
Urban	-0.0180	0.0156	0.25
Wave 2	-0.0972	0.0121	< 0.01
η	-0.0821	0.0388	0.034
o	-0.9810	0.2161	< 0.01
Variances			
σ_{η}^2	0.3426		< 0.01
σ_o^2	0.3824		< 0.01
R^2	0.24		