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# **Internet, Television and Social Capital:**

## **The effect of screen time on social capital indicators**

### **Abstract**

Social capital theory as it was developed in the 1990s assumed that face-to-face interaction is a crucial requirement for the development of generalized trust and other pro-social attitudes and behaviors. Television and other electronic media were therefore dismissed as having a potentially negative impact on social capital formation. Based on an analysis of high-quality data and a rich variety of social capital indicators in the General Social Survey 2012 we assess the impact of two main kinds of screen time – internet and television – on both attitudinal and behavioral components of social capital. The results show that while watching television is either unrelated or negatively related to a range of social capital indicators, there is usually a positive relation between internet use (in various forms) and social capital indicators. The direct comparison of the impact of internet and television usage on social capital indicators in a nationally representative study challenges the expectation that television and other digital technologies would have a similar negative impact on social capital. The findings suggest that internet-based activities clearly play a role in the development of social capital despite the lack of in-person interaction, and the concluding discussion reviews avenues for future research to tease out causal mechanisms in the production of social capital in the digital age.

**Keywords:** social capital, internet use, television, General Social Survey

## Introduction

The concept of screen time suggests that various forms of electronic communication can be considered indiscriminately, as most likely they have similar effects (Sisson et al., 2010). Given the literature on social capital and social cohesion, most often it is assumed that the effects of screen time will be negative. Social capital theory as it was developed in the 1990s was strongly pessimistic about the impact of television on the presence of social capital in US society. According to Putnam (2000), the proliferation of television should be considered as one of the main causes for the decline of social capital in the United States. Since that time, the *videomalaise* argument has been much debated, and qualified to a large extent. Prior (2007) has demonstrated that watching entertainment programs in a commercially dominated high-choice television environment might be associated with negative effects, but the opposite holds for information-seeking television watching behavior. Already from the late 1990s on, however, the arguments that had been raised with regard to the impact of television, were now also applied to the use of internet. In most of the social capital literature that is inspired by the work of Putnam, the prevailing idea remains that electronic media will promote a *couch potato* syndrome, thus reducing “real”, i.e., face-to-face social contact between citizens.

A main concern regarding computer-mediated communication’s social potential in the social capital literature is that it would allow only a very limited and superficial form of human interaction. A main reason for this pessimism was the lack of rich communication cues that come along with face-to-face encounters:

‘The poverty of social cues in computer-mediated communication inhibits personal collaboration and trust, especially when the interaction is anonymous and not nested in a wider social context. Experiments that compare face-to-face and computer-mediated

communication confirm that the richer the medium of communication, the more sociable, personal, trusting, and friendly the encounter' (Putnam, 2000, 175, 176).

In most of the social capital literature, face-to-face communication is seen as a privileged form of human interaction, as this allows for the development of pro-social attitudes and behavioral patterns. In contrast, the more recent literature suggests that, in spite of the lack of face-to-face interaction, internet-based forms of communication can have very strong networking effects (Bennett & Segerberg, 2013; Kittilson & Dalton, 2011). The rapid technological and social transformation of the past decade renders it necessary to revisit the claims made in the early social capital literature with more contemporary data in order to consider fruitful avenues for future research.

As documented in a report marking the twenty-fifth anniversary of the World Wide Web (Pew Research Center, 2014), it comes as no surprise that Putnam had low expectations for the social capital capacity of the web, since only 14% of American adults were occasional users of the internet in the year that Putnam's (1995) 'Bowling alone' article began to make waves. Since this number has increased dramatically to 87% in 2014, it is clear that these early writings no longer capture developments in contemporary society.

Our main research question in this article is to determine whether, in the current digital era, media and computer-mediated forms of communication still could have a negative effect on social capital. Self-evidently, there is and has been a huge academic debate on how to define social capital (Fine, 2010). Given the scope of this article, we do not wish to enter this debate as such, and rather we have opted to follow the classic operationalization of social capital as closely as possible. As argued in the early social capital literature (Putnam 1995, 2000), the concept refers to a diverse

array of social attitudes and pro-social behaviors that convey information about social connectedness and the quality of social life within a community. A variety of subsequent studies have shown that this social connectedness—as distinct from civic membership or political involvement—does have strong positive effects on the collective efficacy of a community (e.g., Sampson & Graif, 2009). While often in the social capital literature this concept is narrowed down to just one or a number of indicators (e.g., generalized trust), in this article we aim to offer a comprehensive measurement of social capital, including indicators that have not been routinely used in this line of the literature.

In this article, we first briefly review the opposing claims that have been made about the causal relation between television and internet on the one hand, and social capital on the other. Subsequently we present the data and methods used for the analysis, and we discuss what the results imply for trends in social capital, for our theoretical understanding of the concept of social capital itself, and for future avenues for interrogating the relationship between digital media and social capital production.

### **Communication media and social capital**

Social capital can be considered as an important social resource, as the presence of trust, interaction networks and norms of reciprocity allows societies to overcome collective action problems (Putnam, 1993). Within the literature, there is a strong debate about what can be considered as the sources or determinants of social capital (Hooghe & Stolle, 2003). State-oriented theories hold that the way society and political institutions function has a strong impact on the attitudes of the population. Corrupt officials and institutions, for example, convey the message that people are not trustworthy, and that one therefore should be cautious in dealing with people in general, and not

only with bureaucrats or those in power (Uslaner, 2002). Society-oriented theories, on the other hand claim that the way citizens interact within society plays a crucial role in this regard.

Most notably, Putnam (1993) argued that the way members interact with one another in voluntary associations leads to the development of generalized trust, and in turn it is assumed that this form of trust makes it easier to cooperate with others to promote collective goods. Although there is mixed evidence about the claim that voluntary associations have this effect (Hooghe & Quintelier, 2013), it is clear that this approach builds mainly on the merits of close cooperation and face-to-face contact. Because members interact with others, they learn to cooperate, reach a compromise, and in the long run it is assumed that this experience leads to internalizing new “habits of the heart” that are conducive to pro-social behavior. The presence of social capital, therefore, can be understood as a form of “collective efficacy”: communities or neighborhoods where these resources are abundantly present will be able to deal more effectively with various challenges, like crime, unemployment, poverty and inequality (Sampson, Raudenbusch & Earls, 1997). There is indeed a whole research tradition showing that the presence of social capital is associated with positive outcomes with regard to mental health, school attendance, healthy behavior and even economic performance (Glaeser, Laibson & Sacerdote, 2002; Portes & Vickstrom, 2011). Given all this evidence, it is clear that communities and societies prosper more abundantly given the presence of social capital.

At the time Putnam wrote his seminal works internet usage had not yet become widespread, and in most of his writings he deals mainly with the effect of television. For both media, however, the same causal logic is invoked. In *Bowling Alone*, Putnam named television as one of the main culprits for the erosion of social capital:

“it is precisely those Americans most marked by this dependence on televised entertainment who were most likely to have dropped out of civic and social life – who spent less time with friends, were less involved in community organizations, and were less likely to participate in public affairs (...) At the very least, television and its electronic cousins are willing accomplices in the civic mystery we have been unraveling, and more likely than not, they are ringleaders” (Putnam, 2000, 246).

Putnam here assumes that the new “electronic cousins” of television will have the same, negative effect on social capital, mostly because the causal mechanisms that are at play can be assumed to operate in the same manner.

Three mechanisms stand out in this regard: time-replacement, individualization and socialization (Putnam, 2000, 237). The most obvious and intuitively appealing mechanism is one based on time replacement. Actors spend a substantial part of their leisure time on screen time, and this time is no longer available for social activities that are assumed to have a positive effect on the development of social capital (Hooghe, 2002; Shah, 1998). Those who spend extended periods of time in front of their television set will have less spare time available for activities that build social capital, such as community involvement or social activities. Second, television can have an individualizing effect, as most television watching takes place at home, with limited interaction with others. Therefore, television can contribute to the cultivation of a “mean world syndrome”, in which everything that happens outside the private individual lifeworld is seen as a potential source of threat (Gerbner, 1998). This could induce especially heavy viewers to avoid further contact with the outside world, which is seen as an increasingly hostile environment. Third,

the content of television too, is presumed to have a socializing effect. While entertainment programs can alienate actors from society, information programs can be a source of socially and politically relevant information that, in turn, can lead to various forms of civic engagement (Prior, 2007). However, even if we just focus on information programs, the precise content and the framing of the information too, can have an effect: as mainstream media depict an ever more cynical portrait of political life, the assumption is that this kind of media information will have a negative effect on attitudes like political trust, and may also adversely impact generalized trust and other components of social capital (Iyengar & Kinder, 2010; Mutz, 2007).

All three mechanisms can also be applied to the internet. Especially among young age groups, a huge amount of time is spent on various forms of web-based activities and there is some concern that this time will no longer be available for other forms of leisure activity (Bouliane, 2009; Robinson & Martin, 2009; Sinkkonen, Puhakka & Meriläinen, 2014). Second, internet applications allow users to select the information to which they are exposed, which may have an individualizing effect by limiting exposure to diverse orientations. Sunstein (2003) most notably expressed concern about the fact that actors will no longer be exposed to countervailing information, but that they would mainly seek information that reinforces their pre-existing attitudes and preferences (Warner, 2010). Finally, it has been noted that while some groups of the population use the internet mainly to retrieve information and to become informed, for a vast majority of users the internet is first and foremost a source of entertainment (van Dijk, 2005). For this focus on entertainment too, the expectation is that it will not stimulate various forms of civic engagement.

The pessimistic claims in the original social capital literature received support in early empirical studies (Nie, 2001; Nie and Erbring, 2002), but in the later literature most of these initial concerns were qualified. The concerns about a “digital divide” between those who have access to

information and those who have not have greatly decreased as access to computers and the internet has become widespread. In the General Social Survey of 2012, 80.5 per cent of all respondents reported to have personally used a computer in any location, and an additional 14.9 per cent of all respondents reported accessing the internet in their home through mobile devices. Nevertheless, it is important to note that with regard to socio-economic status internet activism is even more strongly stratified than offline forms of participation (Oser, Hooghe & Marien, 2013).

Critical claims in the social capital literature about the negative effect of media did not go unchallenged at the time (e.g. McLeod, Scheufele & Moy, 1999), and have received increased critique in recent years. An early study led by Kraut (Kraut et al., 1998) that posed the paradox that the internet seemed to be a social technology that reduced social connectivity was contradicted by a follow-up study that included panel data on the same respondents (Kraut et al., 2002). More recent studies on the relationship between various kinds of internet use and social capital have tended to find a positive relationship (Dalton & Kittilson, 2012; Ellison, et al. 2007; Robinson & Martin, 2010; Shah et al. 2002; Shah et al. 2001). It seems that the internet can be a very strong mobilization tool (Mesch & Talmud, 2010; Valenzuela, Arriagada & Scherman, 2014). Indeed, a comprehensive meta-study of the effect of internet use on participation levels shows no general negative effect (Boulianne, 2009). Scholarship that focuses specifically on social media use suggests that to some extent, even the opposite phenomenon seems to occur, as Facebook and other social media have proven to be effective tools for political communication and mobilization (Bennett, Breunig, & Givens, 2008; Bimber, 2012; Gil de Zúñiga, Jung & Valenzuela, 2012; Gil de Zúñiga, Molyneux & Zheng, forthcoming ; Robinson & Martin, 2010). Bennett and Segerberg (2013) have strongly argued that the internet does not just function as a mobilization tool for

traditional forms of participation, but also should be taken seriously as a new, ‘connective’ form of engagement and community.

Despite this largely optimistic research on the potential positive impact of specific social media applications, research on other social impacts of internet usage has tended to highlight the negative impact of ‘screen time’ in general. The proliferation of internet usage, as well as the supply of digital media and television content has changed in various ways that have garnered public concern. The negative social and public health impacts of screen time – measured as the amount of time that one spends engaging with television and varied digital media – has gained attention in public health research on topics as varied as neurological development, adolescent social development, attention deficit disorders, aging and obesity (Banks, 2011; Council on Communications and Media, 2013). The concept of screen time considers television and digital media to be interchangeable time units with equally nefarious effects, and has gained popular attention by social media leaders such as Arianna Huffington (2014) in her call for the need for periodic ‘digital detoxes’. The popularly discussed guidelines from the American Academy of Pediatrics that warn parents of young children to limit screen time do not differentiate between whether this screen is a television screen that lacks user interaction, or whether it is an interactive screen that serves as a portal for interaction with others (Carey, 2011).

Recent societal trends and public health research therefore support the analogy suggested by Putnam that television and digital media should be considered as ‘electronic cousins’ with similar negative impacts on varied measures of social health. It is time, therefore, to ascertain whether the more pessimistic claims of the social capital literature are still valid in the current era. In contrast to a number of recent studies, we do not limit the analysis to specific social media use, but we cover the time spent on all forms of internet usage. The ambition of this manuscript,

however, goes further than just updating an analysis of two decades ago. It has been stated that face-to-face interaction is essential to build trust among interaction partners (Campellone & Kring, 2013). If the current analysis would show that the internet does not inhibit the development of social capital, and even might have a positive effect on it as some authors have argued, this would imply that physical proximity is not a necessary condition for the creation of social capital, and that other causal mechanisms need to be investigated further.

In line with the original literature of the 1990s, the basic hypotheses leading our analysis is that both watching television and being active on the internet will have similar negative effects on the attitudinal and behavioral components of social capital.

### **Data and Operationalization**

One of the key challenges for social science research on the internet's social impact is the limitations of data quality for measuring specific online activities (Karpf, 2012). It is not surprising therefore that research on social media use has often taken advantage of student samples in single geographic locations that are not generalizable to the American population as a whole (Ellison et al. 2007; Pasek et al. 2009; Valenzuela et al. 2009). While these studies provide important insights on social media usage among specific populations, they cannot be used for the more global research focus of the present study.

The General Social Survey (GSS) of 2012 is a uniquely rich dataset for testing our hypothesis since it includes a number of extensive batteries of questions on behavioral and attitudinal measures of social capital. Since the GSS is a standard-bearer for high-quality, nationally representative survey (Marsden, 2012) this 2012 battery of questions provides a timely opportunity to investigate the contemporary relevance of classic social capital theory. In addition

to measures of different aspects of social capital, the GSS 2012 also includes information on the amount of time respondents devote to internet usage and to television viewing, estimated in hours per week. Although more detailed measures of the nature of internet usage and the content of television viewing are not available, these data provide a unique opportunity for assessing whether respondents' amount of internet usage and television watching can be considered 'electronic cousins' in terms of their overall relationship with levels of social capital. An additional advantage of these data for investigating determinants of social capital is that they serve as an ideal basis for comparison with the *Bowling Alone* argument, which also took advantage of GSS data for examining social capital (Putnam 2000, 419-424).

Three main aspects of social capital were examined in a series of questions in the GSS 2012: generalized trust, socializing, and generosity or pro-social behavior. These three series of indicators representing different aspects of social capital have internal consistency appropriate for use as three separate dependent variables in multivariate regressions. Generalized trust is the most frequently used indicator for the attitudinal component of social capital (van Deth, 2008; van Ingen & Bekkers, forthcoming). Generalized trust can be characterized as the expectation that most others that one encounters in daily life can be seen as trustworthy, and this assumption enables actors to cooperate with others (Putnam 1993, 172). Socializing refers to "schmoozing" behavior (Putnam 2000, 93), while actors spend time in various forms of informal face-to-face interaction. The expectation is that this form of informal socializing leads to the development of stronger community ties (Uslaner, 2002, 119). Finally we include a scale with various forms of pro-social behavior, ranging from offering a seat to a stranger to giving money to the homeless. In this scale we limit ourselves to self-reported behavior, and we do not make any theoretical claims about the motivation for this behavior.

This comprehensive operationalization of social capital follows the line of Putnam's original measurement which included a wide variety of actions: "Altruism, volunteering, and philanthropy – our readiness to help others – is by some interpretations a central measure of social capital (...). Thus any assessment of trends in social capital must include an examination of trends in volunteering, philanthropy, and altruism" (Putnam, 2000, 116, 117). While Putnam measured these indicators independently, in this analysis we will take the step to ascertain whether these behaviors respond to one latent factor, and fit the notion of pro-social behavior that is generally used in developmental psychology (Eisenberg, 1982). On theoretical grounds, one could debate whether the acts that are included in this scale should be labeled as altruism or as forms of reciprocity. Most likely looking after the pet of the neighbors includes an element of reciprocity, but for most people giving money to the homeless amounts to altruism, without any expectation of reciprocal behavior from the recipient. These acts clearly refer to forms of pro-social behavior (Eisenberg, Cameron, Tryon & Dodez, 1981; Frey & Meier, 2004) or generosity in daily interaction, regardless of the broader theoretical debate about the reasons that motivate the activity. Furthermore, it can be observed that all these actions form one scale with quite strong internal coherence (Cronach's alpha: .71), so that we can validly construct a scale of the various manifestations of pro-social or generous behavior. Table 1 details the construction of these three scales (see Appendix for full survey question text).

[Table 1 About Here]

Screen time is measured by three distinct questions in the GSS: amount of time per week on email; amount of time per week on the Web in addition to emailing; and amount of time per

day watching television. All three of these measures have a similar functional form that is highly skewed due to a relatively large number of respondents who invest little or no time in these activities, along with a relatively large group of “super-users” who invest many hours in digital technologies. In the subsequent analyses, these items are therefore recoded into five-categorical variables (see Appendix for frequencies).

A number of standard control variables are used in the analyses (Putnam 2000, 419): gender (0=male, 44.9%; 1=female, 55.1%); age, in years ( $M=48.2$ , range 18 to 89); years of education ( $M=13.5$ ,  $S.D.=3.13$ , range 0 to 20), income (25 categories, ranging from those earning \$1,000 per year to those earning more than \$150,000 per year,  $M=\$30-35,000/\text{yr}$ ); religious service attendance (0=none or less than once a month, 53.8%; 1=once a month or more, 45.8%); and size of location (logged form of a continuous measure of the number of inhabitants in respondents' location). The GSS 2012 total sample size is 1,974 but the sample size for each analysis differs since the three different versions of the questionnaire did not all include a full battery of the social capital and digital technology indicators, which requires the use of split samples for a number of analyses.

## **Results**

The bivariate relationships between the various digital technologies and the social capital measures, without controls, suggest that greater internet usage is generally associated with higher levels of social capital, whereas longer hours of television watching is generally associated with lower levels of social capital. In tables 2 through 4 it is shown that in the ordinary least squares regression analyses with appropriate controls, the relationship between digital technologies and

social capital is not always statistically significant.<sup>1</sup> The findings indicate, however, that watching television and internet usage certainly cannot be summarized under the general notion of screen time.

[Table 2 About Here]

Regarding generalized trust, the findings in Table 2 suggest that when the relationship between internet usage and generalized trust is significant, the evidence indicates that greater internet usage is generally associated with higher levels of generalized trust. In contrast, when the relationship between generalized trust and television watching is significant, those who watch more television have lower levels of generalized trust.<sup>2</sup> The results are in line with earlier findings, as they show that the highly educated and older respondents in general have higher levels of trust.

[Table 3 About Here]

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<sup>1</sup>. When combined in the same model, the digital technology indicators have high levels of multicollinearity, and are therefore included in separate models.

<sup>2</sup>. Kernel density plots of the generalized trust mean scale measure indicate deviation from normality that may be better analyzed through ordinal logit. An additional ordinal logit analysis was conducted for generalized trust in which the dependent variable was coded as a summary measure of the dichotomous trust variables (0=no; 1=yes). The substantive findings are consistent with the OLS findings presented in Table 2, and are available from the authors.

Regarding socializing, the findings also suggest a positive relationship between internet usage and this indicator for social capital. Table 3 shows that when the relationship between socializing and internet usage is significant, greater internet usage is associated with greater socializing, whereas TV has no significant relationship with socializing. This finding challenges concerns that those who are most active online are “tuning out” from face-to-face social engagement, and instead suggest that online communication and internet usage are consonant with being socially engaged with family, friends and neighbors. Those who are using internet more than two hours a day, in fact even prove to be the most avid socializers, also in the “offline” world. Here it can be observed that younger respondents apparently are more eager to socialize than the older respondents.

[Table 4 About Here]

Regarding pro-social behavior as a dependent variable, the findings in Table 4 show that with proper controls there is no significant relationship between internet usage and pro-social behavior, whereas longer hours of television watching are associated with lower levels of pro-social behavior. Concern about the eroding effects of television on basic civility is clearly supported here. The analysis furthermore shows that this form of behavior is more prevalent among older and religious respondents.

In sum, the findings show that internet usage and television watching do not have the same consistent relationship with various measures of social capital. In general, the relationship between various measures of social capital and digital technologies is fairly weak, and not consistently statistically significant. The relatively weak relationship between the digital technologies and

social capital in these analyses is evident when comparing the explained variance of the models with socio-demographic controls only (noted below Tables 2-4) with the explained variance of the models that include the various forms of digital technology. To summarize: for generalized trust, the R-squared for the model with socio-demographic controls only is 0.171, while models with digital technology range between 0.175 and 0.181; for socializing, the R-squared for the model with socio-demographic controls only is 0.124, while models with digital technology range between 0.127 and 0.130; and for pro-social behavior, the R-squared for the model with socio-demographic controls only is 0.064, while models with digital technology range between 0.066 and 0.082.

Clearly the relationship between digital technologies and elements of social capital is not a powerfully strong relationship that could justify naming any of these media as “ringleaders” in their effect on social capital. However, it is noteworthy that when the relationship between digital technologies and social capital is significant, the findings suggest that greater internet usage is associated with *higher* levels of social capital, whereas more time spent watching television is associated with lower levels of social capital. Not for a single indicator is there a significant negative relationship between internet use and social capital indicators.

While in general the results of these analyses are clear, as a caveat it should be mentioned that the measurement of digital technology usage is limited in the General Social Survey. For television, the GSS measurement allows for a control of overall time measurement, but not for viewing content. Also for web use, the GSS only allows for a control of overall time investment, even though there are huge differences with regard to the way people actually spend their time online. Yet, the findings indicate that even with this blunt measure, those who are using the web for longer hours seem to be using it in ways that foster social connectivity. This finding is in line

with recent research that uses more fine-grained indicators of internet usage to identify the connective capabilities of internet use, particularly if used in intentionally interactive ways. Bode (2012) for example, has shown that specific forms of using the social network site Facebook are positively related to community engagement. Gibson and McAllister (2013), furthermore, have shown that internet networks with actors that one also knows on a face-to-face basis tend to promote various forms of political participation.

### **Discussion**

This article aims to present new insights on the proposed importance of in-person interaction for social capital, in light of the current study's findings regarding the positive relationship between internet usage and social capital. Our results should serve as a caution not to use older writings to assess the current social impact of internet use, as during the past decade the increased prevalence of internet usage has dramatically changed Americans' daily lives. In the GSS, 20% of all respondents spend 24 hours or more per week on the internet, including email use; and an additional 20% are spending between 11 and 23 hours a week. The results, however, indicate that this massive time investment in internet use does not have any detrimental effects on conventional social capital indicators. On the contrary, as our results suggest, when there is a significant relationship between internet use and elements of social capital, it is a positive relationship. This finding implies that those using the internet the most intensively seem to devote some of their web time to activities that foster social networks. This is almost self-evident for emailing where one needs to have an interaction partner with whom to correspond. But also for other forms of internet

use, we did not find any negative relationship with elements of social capital; to the contrary, when a relationship does exist, it is a positive one, albeit fairly small in magnitude.

The findings in this article make it clear that the bold claim that electronic activity is the “ringleader” in a mystery of declining social capital is not supported. To what degree online interactivity may foster social capital requires further research. In a subsequent essay, Sander and Putnam (2010) acknowledge changes in forms of civic engagement, but they remain skeptical about the social relevance of new social networking tools like Facebook: “Measured against the arc of history, such technological civic invention is in its infancy. In a world where Facebook ‘friendship’ can encompass people who have never actually met, we remain agnostic about whether Internet social entrepreneurs have found the right mix of virtual and real strands to replace traditional social ties” (2010, 15). Based on the results of our analysis, we can confidently say that in the United States in 2012, those who spend more time using the internet seem to be finding a virtual mix that is supportive of social capital. In sum, the specter of isolated nerds who are tied to their electronic devices, and thus are disconnected from the real world, is obviously not as widespread as is often feared.

It is worth emphasizing the contribution of the current study’s use of a high-quality, nationally-represented survey to investigate the classic empirical operationalization of social capital, particularly in light of the burgeoning trend in the literature to home in on increasingly specific internet platform usages among unrepresentative samples. It is almost self-evident that social media use is related to other forms of social activity, due to the nature of this form of interaction. In the current study, we include all forms of internet use, also those forms that do not directly lead to interaction with others. At the same time, it is worth repeating that the General Social Survey’s measurement of the independent variables was rather limited. Given the broad

measurements of internet use in the survey and the ubiquity of internet usage in contemporary American society, it is all the more impressive that this measure is associated with a positive effect on social capital. An additional insight from the present study based on the fact that television watching does not have this same positive effect is that there is no exogenous ‘screen time’ effect at play, by which those who spend time in the glow of media screens of any kind have a positive social capital payoff. The findings in the present study provide evidence in support of the finding that internet usage, broadly defined, is positively associated with social capital measures for American society as a whole. These findings therefore emphasize the importance of future research using survey data with more extended measurements in order to use rigorous empirical methods to identify what causal mechanisms are at play in the relationship between internet usage and social capital.

In light of the empirical findings reviewed above we proceed to discuss theoretically-grounded insights on scholarship regarding the importance of face-to-face and electronic networks for the development of social capital. One of the perennial forms of critique against the social capital literature is that it is essentially outdated. Most of the indicators used in the *Bowling Alone* volume refer to quite traditional activities, like family dinners, joining local voluntary associations, or activity in religious groups. This had led to the criticism that the early social capital literature was overly concerned with a “world we have lost”. In this lost world, there is a distinct preference for face-to-face interaction, and other kinds of connectedness are quite easily dismissed. The current analysis suggests that internet-mediated forms of interaction through email and the web are important sources of interpersonal engagement, and that face-to-face contact is not the only way to foster social capital. This can explain the difference we observed between television and

the internet: while internet usage is positively related to some forms of connectedness, this is not the case for television. Or to put it differently: not all 'screen time' has the same effect. Technological evolutions apparently have reduced the need for physical proximity, without any negative effects on trust or engagement. Numerous people use the internet to stay informed about what happens in the community, to stay in contact with friends and family members that do not live close by, or to express their opinion on topics important to them. While all of these activities in the past might have required a physical presence or closeness, this is no longer the case.

In future research, it is important to include more information on the precise activity that respondents perform on the internet. Email correspondence, for example, seems to have an equally strong positive effect on social capital as general web use. Theoretically this is a relevant finding, because it provides supporting evidence for the fact that social capital is increased by interpersonal communication, and the trusting relations embedded in these networks. As the interactive capacities of the internet continue to become more refined and more widely used, it is possible that television and digital medias (at least in some form) will no longer be considered even 'distant relatives' in terms of their potential impact on social capital. More generally, there is no good theoretical reason to express a preference for a specific form of, or medium for, the network, as this can evolve over time, depending on technological and structural changes in society. While half a century ago, meeting in locally-based voluntary associations was maybe the most important form of networking, in the current era various other forms of networking have become available and they might have exactly the same effects.

The current developments with regard to internet based communication pose a number of additional challenges for future research on this topic. First, it will be important to investigate how much of respondents' online usage is taking place on different kinds of devices, such as computers

versus mobile phones. For example, research on social capital in Japan (Ikeda, Richey, & Teresi 2013) suggests that computer use (with much more information being processed) is positively related to political participation, while there is a negative relation with use of mobile devices, which tends to be more limited with regard to information transfer. This study on social capital in Japan suggests that future research on the device through which people access the internet may yield greater insight into the relationship between digital technologies and social capital in the United States. An advantage might be that smartphone use seems to be limiting the digital divide for a number of groups that are traditionally low in their online usage but are quickly gaining access through their smartphones: low-income, non-white, young, and less-educated citizens (Duggan & Smith, 2013).

Second, a connected avenue of research is to investigate how exactly internet users' technological focus on creating, maintaining, and/or strengthening relationships impacts on social capital. On the one hand internet usage can help to consolidate already existing bonding networks, most likely with other actors who largely have the same background characteristics, e.g., with regard to education or professional class. On the other hand, however, it is also likely that new technologies facilitate the construction of broader and more diverse networks, including interaction partners that one normally would not encounter on a routine basis.

These avenues of research may even strengthen the social capital argument by making sure it is no longer connected to one specific, and maybe to some extent outdated, form of network formation. The way in which we create networks is obviously no longer the same as the inhabitants of the city-state of Firenze did during the Renaissance, or as the generation of our parents did a few decades ago. It seems plausible that what matters most for the production of social capital are interpersonal networks, regardless of how high-tech this production may be, as some of the older

theoretical literature on social capital would have predicted (Ahn & Ostrom, 2008; Coleman, 1988). As screen time continues to gain a negative connotation in popular culture, the present study supports the need for rigorous and creative research designs to investigate the complex relationship between the person viewing the screen, and the potential networks this person may create, maintain, or strengthen by engaging with the connected world beyond the screen's surface.

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**Table 1.** Operationalization of Measures of Social Capital**(1) Generalized trust**

People are not trustworthy (1); Depends (2); People are trustworthy (3)

<i>Indicators (n=1314)</i>	<i>Means</i>
-People are fair	2.10
-People are helpful	2.00
-General trust	1.69

Cronbach's alpha: .686

Mean generalized trust scale:  $M=1.93$ ,  $SD=0.75$ , range 1 to 3**(2) Socializing**

How often: (1) = never (7) = almost every day

<i>Indicators (n=1294)</i>	<i>Means</i>
-Go to a bar or tavern	2.36
-Spend a social evening with friends who live outside your neighborhood	4.02
-Spend a social evening with someone who lives in your neighborhood	3.27
-Spend a social evening with relatives	4.56

Cronbach's alpha: .505

Mean socializing scale:  $M=3.55$ ,  $SD=1.13$ , range 1 to 6.75**(3) Pro-social Behavior**

Frequency in past year: (1) = not at all (6) = more than once a week

<i>Indicators (n=1244)</i>	<i>Means</i>
-Carried strangers' belongings	1.88
-Let a stranger cut ahead of you in line	3.23
-Has given directions to a stranger	2.97
-Gave blood	1.17
-Gave charity	2.68
-Gave food or money to homeless person	2.51
-Offered seat to a stranger	1.95
-Looked after plant or pet of others	2.07
-Helped someone outside of household with housework or shopping	2.59
-Helped somebody to find a job	2.16
-Returned money after getting too much change	1.63

Cronbach's alpha: 0.713

Mean generosity scale:  $M=2.25$ ,  $SD=0.61$ , range 1 to 4.9

*Note:* Principal component analyses and scree plots for each battery of indicators support the construction of a single scale for each of these measures of social capital.

*Source:* General Social Survey 2012.

**Table 2.** Digital Technologies and Generalized Trust

	(1) Email	(2) Web	(3) TV
<b>Email usage/week</b>			
1 hour	0.242** (0.114)		
2 hours	0.041 (0.129)		
3-8 hours	0.142 (0.095)		
9 hours+	0.139 (0.104)		
<b>Web usage/week</b>			
1-2 hours		0.171 (0.112)	
3-6 hours		0.142 (0.107)	
7-14 hours		0.145 (0.118)	
15 hours+		0.199* (0.107)	
<b>TV viewing/day</b>			
2 hours			0.011 (0.089)
3 hours			-0.032 (0.104)
4 hours			0.023 (0.127)
5 hours+			-0.213* (0.119)
Gender (1=female)	0.013 (0.068)	0.029 (0.068)	0.037 (0.066)
Age	0.009*** (0.002)	0.010*** (0.002)	0.008*** (0.002)
Education	0.061*** (0.014)	0.058*** (0.013)	0.067*** (0.013)
Income	0.016** (0.006)	0.020*** (0.006)	0.017*** (0.006)
Religious attendance	-0.032 (0.067)	-0.038 (0.069)	-0.026 (0.066)
Location size (log)	0.030** (0.015)	0.035** (0.016)	0.025 (0.015)
Constant	0.209 (0.200)	0.110 (0.207)	0.266 (0.215)
Observations	571	554	598
R-squared	0.175	0.180	0.181

*Note:* Dependent variable: mean scale of generalized trust. Ordinary least squares regression, unstandardized regression coefficients, standard errors in parentheses. Reference categories for email use, web use and TV watching are the first quintile for each variable. R-squared for model with socio-demographic controls only: 0.171. Sig: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3.** Digital Technologies and Socializing

	(1) Email	(2) Web	(3) TV
<b>Email usage/week</b>			
1 hour	0.093 (0.122)		
2 hours	0.206 (0.128)		
3-8 hours	0.260** (0.112)		
9 hours+	0.235** (0.114)		
<b>Web usage/week</b>			
1-2 hours		0.247** (0.122)	
3-6 hours		0.269** (0.130)	
7-14 hours		0.079 (0.136)	
15 hours+		0.294** (0.130)	
<b>TV viewing/day</b>			
2 hours			0.021 (0.097)
3 hours			0.093 (0.113)
4 hours			0.114 (0.112)
5 hours+			-0.105 (0.123)
Gender (1=female)	-0.082 (0.073)	-0.060 (0.073)	-0.066 (0.070)
Age	-0.020*** (0.002)	-0.020*** (0.002)	-0.022*** (0.002)
Education	0.030** (0.015)	0.035** (0.015)	0.043*** (0.014)
Income	-0.009 (0.008)	-0.008 (0.008)	-0.007 (0.007)
Religious attendance	0.027 (0.073)	0.018 (0.072)	0.032 (0.071)
Location size (log)	-0.028 (0.018)	-0.029 (0.019)	-0.027 (0.018)
Constant	4.302*** (0.225)	4.155*** (0.234)	4.275*** (0.242)
Observations	1,105	1,071	1,154
R-squared	0.128	0.130	0.127

*Note:* Dependent variable: mean scale of socializing. Ordinary least squares regression, unstandardized regression coefficients, standard errors in parentheses. Reference categories for email use, web use and TV watching are the first quintile for each variable. R-squared for model with socio-demographic controls only: 0.124. Sig: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 4.** Digital Technologies and Pro-social Behavior

	(1) Email	(2) Web	(3) TV
<b>Email usage/week</b>			
1 hour	0.051 (0.099)		
2 hours	0.172 (0.126)		
3-8 hours	-0.014 (0.080)		
9 hours+	0.135 (0.096)		
<b>Web usage/week</b>			
1-2 hours		0.032 (0.117)	
3-6 hours		-0.050 (0.116)	
7-14 hours		-0.042 (0.127)	
15 hours+		-0.016 (0.117)	
<b>TV viewing/day</b>			
2 hours			-0.012 (0.085)
3 hours			-0.085 (0.082)
4 hours			-0.203** (0.090)
5 hours+			-0.161 (0.108)
Gender (1=female)	-0.077 (0.062)	-0.069 (0.062)	-0.075 (0.058)
Age	-0.005*** (0.002)	-0.005** (0.002)	-0.005*** (0.002)
Education	0.021 (0.013)	0.025** (0.012)	0.021* (0.012)
Income	-0.001 (0.007)	-0.000 (0.007)	-0.001 (0.006)
Religious attendance	0.196*** (0.060)	0.202*** (0.061)	0.180*** (0.057)
Location size (log)	0.019 (0.016)	0.023 (0.016)	0.024 (0.015)
Constant	2.092*** (0.212)	2.081*** (0.239)	2.192*** (0.221)
Observations	534	517	556
R-squared	0.078	0.066	0.082

*Note:* Dependent variable: mean scale of pro-social behavior. Ordinary least squares regression, unstandardized regression coefficients, standard errors in parentheses. Reference categories for email use, web use and TV watching are the first quintile for each variable. R-squared for model with socio-demographic controls only: 0.064 Sig: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix

### GSS 2012 Survey questions

#### Digital Technology Usage

<i>Indicator</i>	<i>Survey text</i>
Email usage	“About how many minutes or hours per week do you spend sending and answering electronic mail or e-mail?”
Web usage (in addition to email)	“Not counting e-mail, about how many minutes or hours per week do you use the Web? Include time you spend visiting regular web sites and time spent using interactive Internet services like chat rooms, Usenet groups, discussion forums, bulletin boards, and the like.”
TV watching	“On the average day, about how many hours do you personally watch television?”

#### *Frequencies of Digital Technology Indicators:*

Email usage	Freq.
0 hour	478
1 hour	186
2 hours	106
3-8 hours	240
9 hours+	233
<i>Total</i>	<i>1,243</i>

Web usage	Freq.
0 hours	274
1-2 hours	215
3-6 hours	271
7-14 hours	209
15 hours+	235
<i>Total</i>	<i>1,204</i>

TV watching	Freq.
0-1 hour	345
2 hours	325
3 hours	238
4 hours	171
5 hours+	219
<i>Total</i>	<i>1,298</i>

## **Social capital indicators**

Note: all indicators recoded for analyses so that higher categories are higher in social capital.

### **(1) Generalized Trust**

<i>Indicator</i>	<i>Survey text</i>
People are fair	“Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?”
People are helpful	“Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?”
General trust	“Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?”

### **(2) Socializing**

“Tell me which answer comes closest to how often you do the following thing...”

Categories: (1) Almost every day (2) Once or twice a week (3) Several times a month (4) About once a month (5) Several times a year (6) About once a year (7) Never

#### *Indicator*

“Go to a bar or tavern?”

“Spend a social evening with friends who live outside your neighborhood?”

“Spend a social evening with someone who lives inside your neighborhood?”

“Spend a social evening with relatives?”

### **(3) Pro-social Activities**

“During the past 12 months, how often have you done each of the following things?”

Categories: (1) More than once a week (2) Once a week (3) Once a month (4) At least 2 or 3 times in the past year (5) Once in the past year (6) Not at all in the past year.

#### *Indicators*

“Carried a stranger's belongings, like groceries, a suitcase, or shopping bag?”

“Allowed a stranger to go ahead of you in line?”

“Given directions to a stranger?”

“Donated blood?”

“Given money to a charity?”

“Given food or money to a homeless person?”

“Offered your seat on a bus or in a public place to a stranger who was standing?”

“Looked after a person's plants, mail, or pets while they were away?”

“Helped someone outside of your household with housework or shopping?”

“Helped somebody to find a job”

“Returned money to a cashier after getting too much change?”