

Theory and Measurement in Social Capital Research

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Abstract In 1988, James Coleman observed that “social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure.” If one looks at the state of social capital research, it is clear that this is truer than ever before. This paper seeks to help researchers overcome the major challenges of social capital research, namely, measuring a concept that is notoriously difficult for measurement and choosing among the exhaustive list of direct, casual and consequential measures. It does so by arguing for a typology of social capital that considers five major types of social capital and then reviewing a diverse selection of data available from national surveys. This provides a resource for scholars wishing to pursue large-scale social capital research. Additionally, it draws six lessons from this body of theory and measurement to improve the study of social capital.

Keywords Social capital · Measurement

1 Introduction

Social capital has become the *notion de jour* having found a prominent place in the most cited texts in a wide range of disciplines including economics (Christoforou and Davis 2014; Fukuyama 1995; Knack and Keefer 1997; Woolcock 1998), sociology (Coleman

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1988; Portes 1998, 2014; Putnam 2000), political science (Fine 2001; Nannicini et al. 2013; Putnam et al. 1994; Rothstein 2001) and other disciplines (Croninger and Lee 2001; Cook 2005; Gil de Zúñiga et al. 2012) over the last two decades. While the conceptual origin of social capital is hotly contested (Farr 2004), most of this recent scholarship traces its roots to Coleman's (1988) treatise on *Social Capital in the Creation of Human Capital*. In it, Coleman (1988, p. 98) defines social capital as "the aspects of the social structure that facilitate certain actions of actors within the structure... Making possible the achievement of certain ends that, in its absence, would not be possible".

Given the breadth of this definition, social capital has come to mean many things to many people. Beginning with Coleman's work, but really taking off with the publication of Robert Putnam's *Bowling Alone* in 2000, there has been an explosion in both the conceptual understanding and the diverse quantification of the concept. A Library of Congress key word search of social capital produces an almost exponential growth curve in scholarly articles (Fig. 1). While there have been a number of sound studies that have attempted to explore the conceptualization and measurement of social capital (Lochner et al. 1999; Paldam 2000; Putnam 2001), most articles that address both the conceptualization and measurement have been written prior to the dramatic growth of social capital research. Those few articles that address both conceptualization and measurement that have been published in the last decade have been international in scope (Ács et al. 2014; De Silva et al. 2006; Lin and Erickson 2008).

Consequently, this article builds on an already rich tradition by examining recent measures of social capital beginning with Putnam's work in the Saguaro Seminar with the Social Capital Benchmark Study (Rogers and Gardner 2012) and proceeding through a wide range of government and academic studies. Our study confines itself to studies of social capital that meet two criteria: (1) the geographic focus of the study is the United States of America and (2) the nature of the study must be national in nature. Consequently studies that involve case studies or social network analysis of local jurisdictions are excluded from this article. With this method and without a claim of being exhaustive, we attempt to classify the major measures of social capital and their underlying constructs. The study begins with a brief overview of the conceptual and measurement challenges of social capital and then proceeds to identify five major bodies of social capital research and

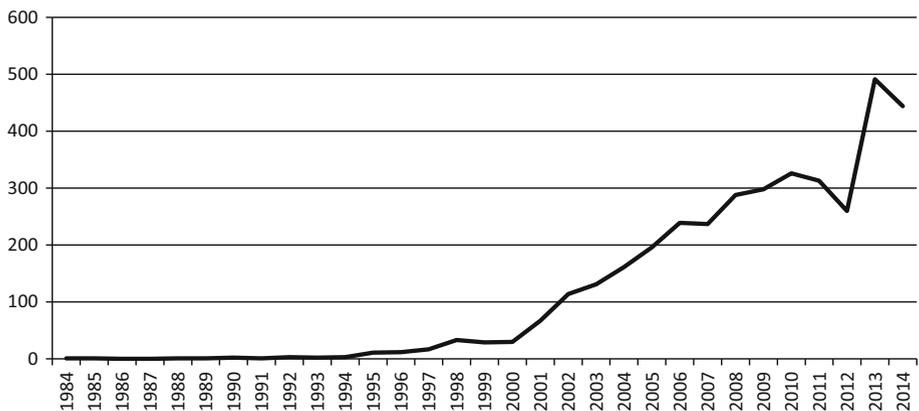


Fig. 1 Social capital articles by year. *Source:* Authors' analysis of Library of Congress catalog abstracts

their underlying data sources. The study concludes with lessons learned and a discussion of the challenges to future social capital research.

1.1 Theory and Measurement in Social Capital

This widespread interest in Social Capital stems from a diverse literature that identifies a broad range of both positive and negative impacts of social capital. Positive effects range from improved health outcomes (d'Hombres et al. 2010) to economic development (Engbers et al. 2013). Likewise Portes (2014) highlights the many downsides to social capital ranging from economic bubbles (Levine et al. 2014) to social stratification (Walldinger 1995).

Drawing from this literature, there are any number of social capital papers that have attempted to classify different types of social capital. Probably the most basic and often cited is the distinction between bridging and bonding social capital (Coffé and Geys 2007; Ellison et al. 2007; Putnam 2000). The theoretical simplicity and the ability of the concepts to reflect both the importance of loose and tight bonds has made the distinction widespread in the academic literature. However, given the diffusion of the social capital concept, it fails to reflect the entirety of how social capital gets studied.

A more comprehensive approach to social capital is found in Woolcock's (1998) work on economic development. Woolcock describes four types of social capital that are best illustrated by a 2×2 table with a micro and macro dimension of embeddedness and autonomy. Social capital at the micro level consists of intracommunity ties (embeddedness) or as extra-community networks (autonomy). At the macro level, social capital can be thought of as states' responsiveness to society (embeddedness) or the institutional capacity of a community (autonomy). The advantage of this perspective is that it recognizes both the formal and informal nature of social capital as well as the idea that social capital has both individual and communal characteristics.

A full exploration of the different typological approaches to describing social capital is beyond the scope of any short-form article, but these examples are given to show that no existing typology encompasses all the uses of social capital. For the purposes of this study, we are going to use a modified form of the social capital categorization used by the Social Capital Benchmark Study (Rogers and Gardner 2012; Saguaro Seminar 2001). It has the advantage of being developed by a panel of scholars as opposed to a single author and having a broad range of conceptualizations of social capital. The four categories include: (1) social trust; (2) formal membership and group participation; (3) altruism; and (4) informal interaction among individuals (Saguaro Seminar 2001). The theory does not limit social capital to either an individual or societal concept. Likewise, it reflects a wider range of concepts than the simple bridging versus bonding distinction. A fifth major category of social capital concepts that lies outside of the Saguaro Benchmark study categories is shared norms (Adler and Kwon 2002; Fukuyama 2001; Ostrom 2000, 2014). With this addition, this paper will consider five major categories of social capital theory.

The measurement of social capital is far from simple. As Herbst (2008) notes, there is "a discrepancy between the theoretical insight about social capital, and the weakness of empirical conceptualization of the concept" (as quoted in Markowska-Przybyla 2012, p. 97). The problem with measuring social capital is plagued by two major problems. The first is that the complexity of social capital is poorly suited for the traditional techniques of quantitative analysis (Markowska-Przybyla 2012). Econometric analysis inherently involves reductions and assumptions that mask the intricacy of social capital relationships.

A second issue of measurement is the tendency of scholars to differ in the degree to which they measure causes, effects or social capital itself (Markowska-Przybyła 2012). The lack of agreement on social capital's conceptualization leads to a wider range of measures. Consider for example the common measurement of group membership. On one hand, group membership serves as a cause of social capital. Those who join groups develop social capital that is useful in other aspects of their life (Goette et al. 2006). On the other hand, the traditional Putnam (1995) conceptualization of group membership is a *consequence* of social capital. As individuals lose social ties to others, this decreases their involvement in traditional civic groups. While this is just one example, it is emblematic of a general uncertainty of what to measure and the use of proxies in contrast to direct measures.

Lastly, measuring social capital struggles from the lack of consistency on the unit of aggregation—notably whether social capital is an individual or social phenomenon. Some research focuses on social capital at the community level (Engbers et al. 2013) while others examine social capital at the individual level (Foley et al. 2001; Agarwal et al. 2011). This latter approach tends to view the individual's social capital independent of the context in which it exists. The tables below include the smallest level of aggregation in order to help researchers determine their best measure given the needs of their study.

Each of these measurement issues effects the outcome of social capital research. Yet despite these challenges, there is no shortage of social capital research. Each of the measures discussed below confronts these measurement uncertainties in its own way. Researchers should consider these challenges in their interpretation of the studies below. We now turn to a concept-by-concept examination of social capital and many of its common measures.

2 Social Capital and Its Measures

What follows is a summary of social capital concepts and potential measures of social capital. As previously stated, this review focuses on large sample datasets that enable comparative claims of social capital within the United States. While the measurement focus is on social capital in the United States, some of the studies in the theoretical discussion are international but are included to better clarify the range of concepts that have come to be encompassed by the concept of social capital. The choice to focus on the United States is justified based on three criteria: (1) the logistical challenge of reviewing international literature that may be less available as a result of either language or access barriers; (2) the motivating desire to provide a resource of data sets for use by American scholars; and (3) to control for cultural differences in social capital (Ji et al. 2010).

A crucial disclaimer is that, although the way in which each concept and measure is presented is meant to reflect the usage by the cited authors, liberties are taken to illustrate the range of usage within a particular concept. This section will begin with social capital as a measure of trust and proceed to discuss formal membership and participation, altruism, informal interaction and shared norms.

2.1 Trust

A key category of possible measures of social capital center around the concept of trust and this includes the perceptions that residents of a particular locality have of the benevolence

of the people with whom they work and interact. Generalized trust assesses the extent to which local residents trust other people (Kawachi et al. 1997; Robbins and Pettinicchio 2012). Given the widespread availability of social trust measures on national surveys such as the General Social Survey and the American National Election Study, trust as a social capital concept has become one of the most used measures.

While some have focused on generalized trust among individuals, others have focused on trust in institutions (Rothstein and Stolle 2008). Institutionalized trust is more structural and considers levels of trust in key institutions like the armed forces, the press, labor unions, police, parliament, and civil services (Doh and McNeely 2012). These measures are based on a logic that public institutions help build and destroy social capital and consequently trust in these institutions is necessary for understanding the social capital dynamics of a community (Rothstein and Stolle 2008).

This is not to say that social capital does not exist at both individual and institutional levels. Rather, that most empirical studies of social capital tend to conceptualize trust as either individual (Chang and Chuang 2011; Moore et al. 2011) or institutional (Jones et al. 2011; Morris and Klesner 2010). Even among the relatively few studies that examine individual and institutional trust simultaneously most still focus on one over the other—for example Hakhverdian and Mayne (2012) focus on institutional trust as their key dependent variable, while controlling for individual-level social trust.

In addition to self-reported measures of trust in individuals and institutions, there are a number of proxy measures of trust that have been utilized in the literature.¹ Engbers et al. (2013) use crime levels as a proxy for trust given the logic that there is a direct negative relationship between crime and trust. Others have measured the extent to which people comply or default on their taxes. The assumption is that tax compliance is an indicator of institutional trust in political actors and government institutions (La Porta et al. 2000). In summary, fruitful metrics of social capital may be developed from the following measures (Table 1).

2.2 Formal Membership and Participation

Group memberships and participation have become a major concept of social capital at both the individual level and community level. At the community level, civic engagement through the number of organizations within a community can be a strong measure of social capital as it signals opportunities for creating both strong bonds and numerous low-cost relationships (Cassar and Wydick 2010; Hudoyo 2009; Putnam 2000; Rupasingha et al. 2002). Scholars have considered a wide range of organizations from traditional civic groups such as the *Knights of Columbus* or the *Rotary* to less structured groups such as *Alcoholics Anonymous*. Perhaps the most important distinction that has been made with regard to using group membership as a social capital concept is between “Putnam-type” (social and civic) organizations and “Olson-type” (rent-seeking) organizations. While both are thought to be a source of social capital, some have speculated that they differ in terms of their effect (Rupasingha et al. 2002).

In addition to membership groups, Sorenson et al. (2006) speculate that there may be social capital effects based on proximity to institutions of cooperative learning like universities and research institutes or even community centers. These institutions often have

¹ The number of lawyers has been presented theoretically as a potential measure of trust (Putnam 2001) but we are unaware of any study to yet use this measure.

Table 1 Common survey measures of social trust

Construct	Measure	Measurement	Unit	Source ^a
Criminal activity	Rate of personal crime	Interval	County	UCF
Criminal activity	Rate of property crime	Interval	County	UCF
Generalized trust	Level of dishonesty that others assume about yourself	Ordinal/likert	National/ regional	SCBC
Generalized trust	Trust of others in neighborhood	Ordinal/likert	National/ regional	SCBC
Generalized trust	Trust of coworkers	Ordinal/likert	National/ regional	SCBC
Generalized trust	Trust of people at place of worship	Ordinal/likert	National/ regional	SCBC
Generalized trust	Trust of workers in shopping locations	Ordinal/likert	National/ regional	SCBC
Generalized trust	Belief that most people can be trusted or distrusted	Bivariate	State	ANES
Institutional trust	Trust in local news media	Ordinal/likert	National/ regional	SCBC
Institutional trust	Trust in local police	Ordinal/likert	National/ regional	SCBC
Institutional trust	Trust in federal government	Ordinal/likert	State	ANES
Institutional trust	Confidence in local institutions (various)	Ordinal/likert	State	CPS- CE
Racial trust	Confidence in racial groups (various)	Ordinal/likert	National/ regional	SCBS

^a For the sake of space, each table has been condensed for publication. A full list of question items is available upon request of the authors. The excerpted articles were included based on the criteria of survey instrument and survey question diversity. The sources in the tables have been abbreviated as follows: *ACS* American Community Survey (US Census), *ANES* American National Election Study, *ARDA* Association of Religion Data Archives, *CBP* County Business Patterns, *CDC* Center for Disease Control National Vital Statistics, *CPS-CE* Current Population Survey Civic Engagement Supplement (US Census), *CPS-V* CPS volunteer supplement (US Census), *CQ* CQ voting and elections collection, *Leip* Dave Leip's Atlas of US presidential elections, *MRI* Mediamark Research Inc., *NAAL* National Assessment of Adult Literacy, *NCCS* National Center for Charitable Statistics, *PTO* Patent Trademark Office, *SCBC* Social Capital Benchmark Study or Saguaro Seminar Study at Harvard University, *TPS* The Trust for Public Land; *UCF* Uniform Crime Statistics (US Federal Bureau of Investigation), *Walk Score* Walk Score Data Services

public events through which local residents can share ideas, but are minimally a place for establishing and developing connections.

Moving beyond the community level, individual social capital is often measured by personal membership in community groups. As opposed to the community measure in which the number of institutions per community is the basis for judging social capital, these measures count the number of organizations in which an individual is active or the level of activity (either in the form of hours or roles) within organizations (Paxton 1999; Putnam 2000; Galston 2007). In this sense, the number of organizational members or the level of activity is demonstrative of the social capital that an individual possesses.

Table 2 Common survey measures of formal membership and participation

Construct	Measure ^a	Measurement	Unit	Source ^b
Group membership	Number of nonprofit organizations	Interval	County	NCCS
Group membership	Service on committee for local organization	Bivariate	State	Roper
Group membership	Service as officer for club or organization in the last year	Bivariate	State	Roper
Group membership	Member of club or organization	Bivariate	State	MRI
Organizational concentration	Number of organizations: civic, bowling, golf, fitness, sports, religious, political, labor, business or professional	Interval	County/zip code	CBP
Organized group involvement	Membership in religious or spiritual community?	Bivariate	National/regional	SCBS
Organized group involvement	Membership in each of listed organizations (see list below)	Bivariate	National/regional	SCBS
Organized group involvement	Frequency of activity in organizations (see list below)	Bivariate	National/regional	SCBS
Organized group involvement	Type of activity in organizations (see list below)	Bivariate	State	CPS-V

List of organization types: Charity or welfare organization/Professional, trade, farm or business association/Hobby Investment or Garden Club/Youth Organization/Neighborhood Association/Literary, art or musical group/Service or fraternal organization/Self-help program/Parent association or other school support group/Political group/Seniors groups/Sports club, league or outdoor activity club/Ethnic nationality or civil rights organization/Organization affiliated with religion/Church Member/Other kinds of clubs or organizations/Veterans group/Labor Union/Group that meets over the internet

Types of activity: Coach, referee, or supervise sports teams/Tutor or teach/Mentor youth/Collect, prepare, distribute, or serve food/Collect, make or distribute clothing, crafts, or goods other than food/Fundraise or sell items to raise money/Provide counseling, medical care, fire/EMS, or protective services/Provide general office services/Provide professional or management assistance including serving on a board or committee/Engage in music, performance, or other artistic activities/Engage in general labor; supply transportation for people/Be an usher, greeter, or minister

^a Measures are for within the last 12 months unless noted otherwise

^b See Table 1 footnote

Based on this theory, a tremendous number of measures have been advanced and a sampling can be found in Table 2.

2.3 Altruism and Political Engagement

Social capital may be thought of not only as the presence and involvement in the organizations and institutions mentioned above but also the motivational constructs that underlie much of participation—altruism and psychological engagement. While the Saguaro Seminar has tended to focus this construct on a more narrow set of indicators associated with altruism and pro-social behavior, we have included political engagement

because it may share a common commitment to social improvement (Fowler and Kam 2007).

In terms of altruism, we are unable to identify any study of social capital that measures it directly. Rather, it is traditionally measured by proxy through involvement in volunteerism or philanthropy. Adeponu (2013) developed an index measure of community commitment that assesses particular roles in volunteer activities rather than simply attending an event, attending multiple events or organizing an event. Others have used more direct measures of hours volunteered or dollars donated (Costa and Kahn 2001). Putnam defends this measure of social capital based on the ideal that “people who give blood, give money, and have volunteered their time are people who are more connected. By far the best predictor of philanthropy, for example, is not how much money you have, but how many clubs you go to or how often you go to church. There is a very strong affinity between social connectedness and altruism (2001, p. 7).”

As opposed to altruism, others have speculated that cognitive engagement is an important form of social capital. Sabitini (2007) explains that people who read local news are more likely to know about the local community’s problems and events and to become involved. The extent to which they actively use local media outlets and information sources can serve as proxies of social cohesion or cognitive engagement (Gil de Zúñiga et al. 2012; Sabitini 2007; Serra 2001). These would include the number of local newspapers, as well as the number of local television stations and radio channels and the extent to which these are supported by residents. Likewise, Serra (2001) also points out that having higher levels of literacy fosters a sense of collective identity.

One form of engagement that has received greater attention than others is political involvement. Unlike civic volunteerism that is often associated with altruistic tendencies, political participation is linked to either socialization or rent seeking behaviors (La Due Lake and Huckfeldt 1998; Brehm and Rahn 1997). Nonetheless, political participation is often considered a common measure of social capital because it is seen as both a potential source of social capital as individuals develop connections through their political participation and as a consequence of social capital as social networks serve to mobilize individuals to political action (Brehm and Rahn 1997; McClurg 2006).

Some broad possible measures of social capital used to measure altruistic, psychological engagement or political participation are included in Table 3.

2.4 Informal Interaction

While the majority of social capital research has tended to focus on civic and institutional measures, there is nothing inherently altruistic or formalized about social capital. With this in mind, there is a wide range of measures that have been considered to reflect a person’s social network, community ties or level of interaction. These are based on the conceptualization of social capital as social ties that facilitate action regardless of how institutionalized it may be. For purposes of simplicity and clarification, this section will consider 3 types of social networks: economic, infrastructural, and place-based.

2.4.1 Economic

Given the widespread interest in social capital’s relationship to economic development, many economic measures of social capital have been proposed. These measures share a connection to innovation and occupation but demonstrate linkages among people. For example, the geographic proximity between shared and cited patent holders can be used as

Table 3 Common survey measures of altruism and political participation

Construct	Measure ^a	Measurement	Unit	Source ^b
Civic participation	Number of non-political civic activities: wrote something published, addressed public meeting, engaged in fund-raising, actively worked as volunteer	Interval	State	MRI
Civic volunteerism	Volunteer work in civic organization (see list below)	Bivariate	National/ regional	SCBS
Civic volunteerism	Participation in civic organization (see list below)	Bivariate	State	CPS- CE
Civic volunteerism	Number of organizations in which volunteered (through/for)	Interval	State	CPS-V
Civic volunteerism	Number of weeks performed volunteer activities for particular organization	Interval	State	CPS-V
Civic volunteerism	Number of hours per week performed volunteer activities?	Interval; Ordinal/likert	State	CPS-V
Civic volunteerism	Volunteer work outside the US or any of its territories?	Bivariate	State	CPS-V
Civic volunteerism	Work with other people from neighborhood to fix a problem or improve a condition in your community or elsewhere?	Bivariate	State	CPS-V
Civic volunteerism	Number of times volunteered	Interval; ordinal/likert	National/ regional	SCBS
Media engagement	Individual literacy examinations based on reading comprehension	Interval; ordinal/likert	County	NAAL
Media engagement	View/listen/read to learn more about political campaigns via television, radio or newspaper	Bivariate	State	ANES
Philanthropy	Monetary contribution to charities, religious and non-religious organizations/causes	Ordinal/likert	National/ regional	SCBS
Philanthropy	Monetary contribution to political party/PAC/ Individual Candidate during election year	Bivariate	State	ANES
Philanthropy	Donation of money, assets, or property with a combined value of more than \$25 to charitable or religious organizations	Bivariate	State	CPS-V
Philanthropy	Monetary contribution to organization (see types below)	Bivariate	State	MRI
Political participation	Number of days in the past week you read a daily newspaper	Interval; ordinal/likert	National/ regional	SCBS
Political participation	Level of interest in politics and national affairs	Ordinal/likert	National/ regional	SCBS
Political participation	Vote in last presidential election	Bivariate	National/ regional	SCBS
Political participation	Completion of political activity (see list below)	Bivariate	National/ regional	SCBS
Political participation	Participation in political meetings	Bivariate	State	ANES
Political participation	Discussion of politics with family or friends	Bivariate; ordinal/likert	State	ANES
Political participation	Frequency of voting in local election	Ordinal/likert	State	CPS- CE
Political participation	Contacted or visited a public official to express opinion	Bivariate	State	CPS- CE

Table 3 continued

Construct	Measure ^a	Measurement	Unit	Source ^b
Political participation	Boycott a certain product or service because of the social or political values of provider company	Bivariate	State	CPS-CE
Political participation	Use of internet to express opinion about political or community issue	Bivariate	State	CPS-CE
Political participation	Attended public meetings with discussion of community affairs	Bivariate	State	CPS-V
Political participation	Performed a political activity (see list below)	Bivariate	State	MRI

List of SCBS abbreviations: Civic organizations: place of worship, health care or organization fighting disease, school or youth programs, organization to help the poor or elderly, arts or cultural organizations, neighborhood or civic group. Political Activities: Have you signed a petition, Attended a political meeting or rally, Worked on a community project, Participated in any demonstrations, protests, boycotts, or marches

List of CPS-CE civic organizations: school group, neighborhood, or community association, service or civic organization, sports or recreation organization, religious institution or organization (excluding worship attendance), other type of organization

MRI Abbreviations: Organizations for Philanthropic Giving: Public Broadcasting Service, National Public Radio, Religious Organization, Arts/Cultural Organization, Education, Environment, Health Organization, Political Organization, Social Service Organization, Other non-religious organization. Political activities: voted federal, state, or local election, wrote to an editor of a magazine or newspaper, wrote or telephoned a radio or television station, wrote to an elected official about a matter of public business, visited an elected official to express a point of view, actively worked for a political party or candidate, signed a petition

^a Measures are for within the last 12 months unless noted otherwise

^b See Table 1 footnote

a measure of the social network among innovators (Agrawal et al. 2008). Likewise, given the often-cited belief that entrepreneurship requires greater levels of social capital, entrepreneurial measures of social capital can be used as a proxy for community stocks of social capital. Lastly, the popularity of Michael Porter's (2008) work on clusters has resulted in many studies that use industrial composition as a basis for understanding social capital (Inkpen and Tsang 2005; Staber 2007). The logic of these measures are that those communities which have industrial compositions that are homogeneous or that feed into each other are more likely to have shared professional networks and increased information sharing.

2.4.2 Infrastructure

There has been a lot of discussion about the degree to which roads and other infrastructure serve to support or diminish social capital. Putnam points to an inverse relationship between roads and commuting time and involvement in community groups (Putnam 2000). Conversely, a number of scholars have suggested that a strong transportation infrastructure is important to sustaining connections among people (Locher et al. 2005; Smith 2005). Two measures of a community's institutional capacity that have received increasing attention are the *Walk Score* (Burns 2010) and land usage for parks (Wood et al. 2005). The *Walk Score* is a proprietary measure that represents walking access to a variety of community amenities. The logic is that locations with higher *Walk Scores* stimulate social

capital as walking individuals are exposed to more connections than those who are driving. Land usage for parks likewise serve as a place to build social connections. The concept suggests that communities with more robust park systems foster social capital more than those communities that lack public gathering spaces (Rogers et al. 2011).

2.4.3 Place-Based

The last set of concepts and measures related to social networks include a wide range of connections based on residency and interaction. The most commonly used among these measures are those that ask whether individuals have either engaged in informal interaction such as playing cards or eating dinner or they ask about the number of informal friends that an individual has with a select group of people (e.g. neighbors or minority members).² This produces a blunt measure of a person's informal social network. An alternative approach is to look at connectedness with a community. This is usually measured through geographic mobility (David et al. 2010; Schiff 1992) or through homeownership (DiPasquale and Glaeser 1999; Glaeser et al. 2002). There has also been some suggestion that formal relationships can be used as a guide for the number of informal connections. In particular, Putnam (1995) points to his findings that being married, employed or having children expands a person's social capital by exposing individuals to social networks that they would otherwise not have.

Overall, the above ideas inform the following broad measures (Table 4).

2.5 Shared Norms

As was previously mentioned, a common definition of social capital is the degree to which individuals in a community share common norms. Given the difficulty of measuring shared norms, scholars have tended to default to measures of homogeneity and conversely diversity. This includes direct measures of belief such as measures of partisan voting or religiosity, but more often than not has tended to focus on demographic homogeneity as a proxy for shared norms. This would include measures of economic inequality (Kaldaru and Parts 2005; Rupasingha et al. 2002) or demographic similarity in terms of race, household status, or cultural or linguistic background (Costa and Kahn 2003). Demographic factors like race and ethnicity and household composition can have a strong impact on social capital since they affect social cohesion due to segregation between groups and the extent to which people live and work as families or individuals (La Porta et al. 2000). These measures are described in Table 5.

3 Discussion and Conclusion

The above illustration of concepts and measures of social capital illustrates a number of lessons that scholars of social capital need to consider for advancing research within the field. These lessons are both theoretical and methodological and point to where large-sample social capital research has progressed, as well as highlights strategies for the future.

² Inkeles (2000) has also measured social isolation through the proxy of community levels of suicide.

Table 4 Common survey measures of informal interaction

Construct	Measure ^a	Measurement	Unit	Source ^b
Community ties	Status of home by member of household: own, pay mortgage, rent, or occupy without rent	Nominal	County	ACS
Community ties	Occupy this dwelling 1 year ago	Bivariate	County	ACS
Industrial clusters	Percent of employees by industry (3-digit NAICS)	Interval	County	Moody's
Informal interaction	Number of times participated in social activity (see list below)	Interval	National/ regional	SCBS
Informal interaction	How often see or hear from friends or family	Ordinal	State	CPS-CE
Informal interaction	How often talk to neighbors	Ordinal	State	CPS-CE
Informal interaction	How often neighbors do favors for each other (see list below)	Ordinal	State	CPS-CE
Informal interaction	How often eat dinner with any of the other members of household	Ordinal	State	CPS-CE
Social interaction	Proportion of land use accessible by walking in urban areas	Interval	County	Walk Score
Social interaction	Percentage of land dedicated to public parks for cities	Interval	County	TPS
Social network	Geographic distance between holders of related/cited patents	Interval	County	PTO
Social network	Geographic distance between holders of the same patent and thus collaborators	Interval	County	PTO
Social network diversity	Have personal friend who is manual worker	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who has been on welfare	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who owns a vacation home	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is of different religious orientation	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is white	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is Latino or Hispanic	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is Asian	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is Black/African-American	Bivariate	National/ regional	SCBS

Table 4 continued

Construct	Measure ^a	Measurement	Unit	Source ^b
Social network diversity	Have personal friend who is Gay/Lesbian	Bivariate	National/ regional	SCBS
Social network diversity	Have personal friend who is community leader	Bivariate	National/ regional	SCBS
Social support	Suicide rate	Interval	County	CDC
Social ties	Marital status	Nominal	County	ACS

List of social activities (SCBS): played cards or board games with others, Visited relatives in person or had them visit you, Had friends over to your home, Socialized with coworkers outside of work, Hung out with friends at a park, shopping mall, or in other public place

Sample favors with neighbors (CPE-CE): watching each other's children, helping with shopping, house sitting, lending garden or house tools and other small things to help each other

^a Measures are for within the last 12 months unless noted otherwise

^b See Table 1 footnote

Table 5 common survey measures of shared norms and homogeneity

Construct	Measure	Measurement	Unit	Source ^a
Denominational membership	Congregational membership by denomination	Interval	County	ARDA
Religious homogeneity	Proportion of plurality number of adherents for the most popular major religion over the second most popular major religion (see list of major religions below)	Interval	County	ARDA
Demographic homogeneity	Marital status (plurality)	Nominal	County	ACS
Demographic homogeneity	Race/ethnicity (plurality)	Nominal	County	ACS
Demographic homogeneity	Age (plurality or distribution)	Interval	County	ACS
Demographic homogeneity	Language other than English spoken at home	Bivariate	County	ACS
Demographic homogeneity	Citizenship status (plurality or distribution)	Bivariate	County	ACS
Economic inequality	Gini coefficient based on all major income sources	Interval	County	ACS
Political homogeneity	Proportion of plurality votes for the winning political party over the second most popular party	Interval	County	CQ
Political homogeneity	Proportion of plurality votes for the winning political party over the second most popular party	Interval	County	Leip

List of major religions compiled from ARDA: among Mainline Protestant, Evangelical Protestant, Black Protestant, Catholic, Muslim, Jewish (all four major sects) and Mormon (Latter Day Saints)

^a See Table 1 footnote

3.1 Lesson 1: Theoretical Diffusion

The historical origin of the theory of social capital has been the subject of much debate, including attribution to Durkheim and other early sociologists (Portes 1998), but in a contemporary context, most scholars attribute its modern popularity to Bourdieu (1980; translated in 1985) with greater recognition brought on by Coleman (1988). Bourdieu (1985, p. 248) described social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition.” Bourdieu goes on to clarify that social capital refers to the benefits of group membership that accrue to individuals.

In examining the theories presented above, it should be clear, that there has been a tremendous loss in theoretical purity from Bourdieu’s time. The boundaries of social capital have become both more narrowly- and broadly-focused. Consider the trust tradition within social capital that aligns trust with social capital (Kawachi et al. 1997; Robbins and Pettinicchio 2012). In its most commonly used measurement form—“Would you say most people can be trusted or that you can’t be too careful with people”—trust is equated with social capital. This suggests that trust has no meaning independent of its ability to facilitate social relationships. As has been shown, trust is a psychological disposition independent of the relationship context. Consider findings that suggest that individuals have differing levels of trust with machines (Muir 1987).

At the same time, there has been extensive broadening of the meaning of social capital. Consider again the trust tradition of social capital. Many scholars of social capital have focused their research on trust in institutions (Doh and McNeely 2012; Rothstein and Stolle 2008). This research breaks the focus on individuals and their interpersonal groups to address more structural considerations such as trust in business, security forces, and government actors among others. Similarly, the research on group membership (Hudoyo 2009; Putnam 2000; Rupasingha et al. 2002) moves the theory’s focus beyond the individual’s connections to the institutions that facilitate social capital. Nearly every measure discussed above deviates from early definitions by either expanding or narrowing the concept.

3.2 Lesson 2: Proxy Dependence

The second lesson that becomes clear is that the field has become heavily dependent on proxies for the measurement of social capital. This dependence on proxies is a fact consistently bemoaned by even the most recent research (Fenenga et al. 2015; Lins et al. 2015). The quality of these proxies varies tremendously. Some proxies are merely correlational such as the use of crime rates to measure trust or measures of demographic diversity to measure shared norms. Others are more widely accepted and theoretically robust such as the use of group memberships to account for the size or nature of a person’s social network.

The dependence on proxies for large scale research is perhaps inevitable given the constraints of time and money in survey research, but it is noteworthy that there has been no large-scale systematic attempt to measure social relationships directly such as is commonly done in case study research. Consider Tsai and Ghoshal’s (1998) study of 15 work units within a multinational corporation. Tsai and Ghoshal ask respondents to report their interactions with each work unit, the nature of the interaction and their levels of trust of each unit. By directly measuring the polyadic relationships, they are able to provide a

more robust explanation of the organization's social capital and its effect on resource exchange and product innovation. This type of research allows scholars to move beyond supposition to answer questions about network centrality, cognitive evaluation, homogeneity and other factors relevant to expanding our understanding of social capital.

Some of the better research on social capital with regard to the avoidance of proxies comes from the area of informal interaction. Research that uses patents allows the examination of direct experiences of collaboration (Agrawal et al. 2008). Likewise, research that asks individuals to think "about everyone that you would count as a personal friend" requires respondents to focus on specific relationships and the social capital benefits that accrue from those relationships (Son and Lin 2008). More research is needed that directly measures one's relationships and the benefits that accrue from them.

3.3 Lesson 3: Uneven Operationalization

In addition to the heavy reliance on proxies, a survey of past research points to a disparity in the number of measures associated with each social capital construct. Social Capital is used as an umbrella term that reflects a wide range of underlying constructs. The third lesson is that some constructs have been operationalized extensively while others are limited and in need of additional strategies. Tables 1, 2, 3, 4 and 5 above show the proliferation of measures for altruism and political participation (27 measures) and informal interaction (24). Social trust (13), formal membership and participation (9) and homogeneity (9) have notably fewer documented measures.

Measures of altruism and political participation are likely over-represented for several reasons. First, the construct is broader than many of the other social capital constructs reflecting both: (1) a range of psychological dispositions like altruism and curiosity and (2) behavioral measures drawing from different forms of political participation, volunteerism, media consumption and charitable giving. Second, this construct interests a wider academic community including political scientists, psychologists, sociologists and economists. Third, this construct along with formal group membership has received the most scholarly attention. This is likely the result of the heavy focus placed on these measures by Putnam (2000).

In contrast, norms represent a form of social capital that is narrower and more difficult to measure. As originally conceived, norms are an important source of social capital because they facilitate the proliferation of obligation and expectation (Coleman 1988). However, the commonality of what is needed to achieve these obligations and expectations is often very complex (Pretty and Ward 2001). As a result, the construct either remains understudied or becomes dependent on proxies such as a lack of demographic diversity. One strategy to rectify this problem would be the use of a Shannon evenness index to measure the dispersion of group membership across a spatial unit (Oka and Wong 2015). This would enable scholars to identify the consistency of categories of demographics, attitudes and beliefs across geography. These evenness scores can then be indexed to create a measure of sameness that reflects the commonalities that lead to norms.

Another area for future measurement is with regard to the intensity of formal membership and participation. While there are many existing measures of formal participation that exist in large-sample studies, these tend to focus on binary measures of participation. These measures fail to get at the depth of social capital and tend to treat high participation and low participation equally. There is a need to add interval measures that address differences in the intensity of participation.

3.4 Lesson 4: Combining Similar Measures for Efficiency

Many variables that measure social cohesion fit the broad rubric of social capital and this presents two key challenges to researchers attempting to prepare efficient models that may predict key outcomes of interest. The first challenge is that several measures may relate to a similar concept. For example, economic inequality can be measured by the Gini coefficient or the income ratio of workers at the 90th percentile relative to workers at the 10th percentile. Political participation can be measured by voter turnout or by participation in political events. Institutional trust can be determined through reported levels of trust in local police or perceived dishonesty of government officials. While sound theory may justify multiple measures for each concept, quantitative models cannot efficiently accept multiple measures due to high levels of multicollinearity. The second challenge is that different concepts of social capital may be associated with each other in ways that are not immediately obvious but may better inform our interpretation of their complementary effects. For example, regions that have highly diverse ethnic populations are also very likely to have high levels of international immigrants and a wider variety of languages spoken at home. These different concepts are thus highly interrelated and should be considered jointly.

An underused solution to efficiently condensing multiple measures of social capital is exploratory factor analysis. For studies with many variables, this strategy is ideal at examining the variance and covariance between all variables to determine latent factors that are associated with some constructs more than others. This method finds factors of similarity among the variables and assigns factor-loading scores to show how each variable is positively or negatively associated or relatively unassociated with each factor. A recent example of this approach (Thompson and Slaper 2016) used this strategy to condense 25 different measures of social capital into seven key factors that explain growth in worker compensation and GDP growth per worker among US metropolitan statistical areas (MSAs) between 2007 and 2013. Among them, the authors identified a ‘gentrification’ factor that simultaneously considers high inequality, the ability to live alone or in households of few children in dense urban settings. While each of the constituent measures had contrasting impacts on economic development the gentrification factor as a whole explained economic development with a more cogent narrative: gentrification increases GDP growth per worker but reduces average worker income (Thompson and Slaper 2016).

Among the current variables discussed in this article, there are repeated instances where multiple measures are used for the same construct. For example the construct for generalized trust has seven possible measures (see Table 1) and civic volunteerism has eight (Table 3). While we may be tempted to simply construct an index that combines all the measures for each construct, such index measures may have clustered, instead of even, distributions and are likely to be highly correlated. Moreover, the construct for civic volunteerism may be conceptually related to other variables like civic participation and philanthropy within the ‘altruism and political participation’ category or even political homogeneity within the ‘shared norms and homogeneity’ category. Factor analysis would confirm whether there could be an overarching concept that indicates that these diverse constructs work jointly in their influence on economic development outcomes.

3.5 Lesson 5: Plurality Measures and Homogeneity

While measures of political affiliation, religion and ideology may be important indicators of social capital, it can be more useful or accurate to assess the plurality—the size of the majority within a community—rather than simply the affiliation to any constituent group or even overall levels of diversity. Take political affiliation for example. While there may be coherent theories that a particular political party may be more likely to foster bonds of community and social cohesion, it is likely that the attributes of these political parties may differ from region to region or even at different points in time. Grofman et al. (1999) document the wide ideological differences between members of the Democratic Party in the south compared to other parts of the United States. Similarly, theories that propose that a particular religious sect, say mainline Protestants are more likely to foster economic activity than Catholics would only have limited validity since practice and membership of these religious groups may vary tremendously in different parts of the US. For example, Reimer (2011) finds clear ideological differences among Protestants not simply based on membership in Episcopal, United Methodist and Assemblies of God affiliations, but within each denomination based on location and even between different congregations.

Plurality measures are thus important to understanding cultural components of social capital since they allow us to measure levels of homogeneity reflected by the level of consensus among residents. Homogeneity via plurality measures can thereby be a more reliable and useful measure than tracking attitudes and mores that could be intangible and fluid across regions. Index measures are more appropriate to measuring economic and demographic diversity where constituent measures are more rigid and less subject to interpretation—economic measures could reflect earnings or even be adjusted to inflation while demographic characteristics like age are fixed or others like race and sex are socially subscribed and difficult to reinterpret.

Constructs for religious homogeneity and political homogeneity summarized in Table 5 are particularly well suited for plurality measures. Protestants may be the most popular religion across many southern US counties and Mormons (members of the Church of Jesus Christ of Latter Day Saints) may comprise the majority in counties within Utah. As a result, it can be more useful for measures of social capital to know the size of the majority to assess levels of social cohesion rather than impute differences in cultural norms between Protestants and Mormons per se. Similarly, it can be more useful to attribute higher levels of social division in counties that have nearly equal proportions of voting Republicans and Democrats than counties that have an overwhelming majority claiming support of one party or the other. Such a strategy would avoid the potential mistake of assuming uniform substantive differences in ideology between the parties, regardless of geography.

3.6 Lesson 6: Longitudinal Consistency in Social Capital Measurement

What is perhaps most surprising is that given 20 years of rapid growth in social capital research that there has not been much evolution in measurement of social capital. This presents a tremendous advantage in social capital research. The use of consistent measures over time both fosters trust in the validity of measures and enables current researchers to build on the work of past scholars. This is true for longitudinal studies such as the General Social Survey and the Current Population Survey Volunteer Supplement that have often been used to track social capital over time giving us access to changes in social capital based on consistent measures and survey techniques. It is also true for divergent

researchers who are conducting independent studies with the same measures. The consistent use of social capital measures enables the comparison and sometimes combination of data in building the body of social capital research.

Despite these advantages, it is nonetheless surprising that there have not been more evolutions in measurement. For example, the most traditional measure of trust mentioned earlier—“Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”—was used prior to 1995 including its use by Putnam (1995). This measure continues to be used consistently and internationally through the present day regardless of the fact that there is no specific reference to social capital and it is being used outside of its origin in the General Social Survey (Twenge et al. 2014; Walsh et al. 2015). Likewise, measures of social capital designed to get a gauge on group membership that ask questions such as “Are you a member of (insert group of interest)” date back to the 1970s (Downing 1978) but continue to be popular today (Saha and Banerjee 2014; Heaney and Rojas 2014).

This is not to say that there have been no new evolutions in measurement. One area that has shown innovation has been in the measurement of mass social capital. The use of the *Walkscore* for understanding how urban design is related to social capital is particularly promising (Zhu et al. 2014). Likewise, the increasing use of patent data and other ‘flow of knowledge’ measures to measure real relationships on a mass scale is also promising (Agrawal et al. 2008; Yli-Renko et al. 2001). Rather, the goal of this lesson is to serve as a call to arms to think creatively about new methods of measuring mass social capital.

4 Conclusion

In 1988, James Coleman observed that “social capital is defined by its function. It is not a single entity, but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure (p. S98)”. If one looks at the state of social capital research, it is clear that this is truer than ever before. This paper seeks to help researchers overcome the major challenges of social capital research, namely: measuring a concept that is notoriously difficult to measure and choosing among the exhaustive list of direct, causal and consequential measures. It does so for by arguing for a typology of social capital that considers five major types of social capital and then reviewing a diverse selection of nationally-available data. This provides a resource for scholars wishing to pursue large-scale social capital research.

Additionally, this compilation of theory and data helps identify lessons that scholars should consider in their future research. It particular, it demonstrates that in the face of theoretical diffusion, some constructs of social capital are understudied while others have extensive choices in terms of accepted measures. Likewise, it encourages scholars to move beyond proxy dependence and to entertain strategies such as factor analysis and plurality measures to find more robust ways to quantify social capital.

The study of social capital does not appear to be abating. Rather, the concept is increasingly being used for practical applications such as fostering economic development. In an age of ever-tighter budgets and declining funds for public resources, a better understanding of social capital is necessary to justify support for community enrichment programs. Better understanding social capitals measurement helps in this and other applied cases.

References

- Ács, Z. J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, *43*(3), 476–494.
- Adeponu, H. R. (2013). *Social capital and economic development: A case study of Martinsville, Illinois*. Masters Thesis, Western Illinois University, Macomb, IL.
- Adler, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, *27*(1), 17–40.
- Agarwal, S., Chomsisengphet, S., & Liu, C. (2011). Consumer bankruptcy and default: The role of individual social capital. *Journal of Economic Psychology*, *32*(4), 632–650.
- Agrawal, A., Kapur, D., & McHale, J. (2008). How do spatial and social proximity influence knowledge flows? Evidence from patent data. *Journal of Urban Economics*, *64*(2), 258–269.
- Bourdieu, P. (1980). Le capital social: Notes provisoires. *Actes de la Recherche en Sciences Sociales*, *31*, 2–3.
- Bourdieu, P. (1985). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood.
- Brehm, J., & Rahn, W. (1997). Individual-level evidence for the causes and consequences of social capital. *American Journal of Political Science*, *41*(3), 999–1023.
- Burns, W. B. (2010). *Creating healthy communities: An examination of the relationship between land use mix, neighborhood public realm engagement and neighborhood social capital*. Doctoral dissertation, University of Central Florida Orlando, Florida.
- Cassar, A., & Wydick, B. (2010). Does social capital matter? Evidence from a five-country group lending experiment. *Oxford Economic Papers*, *62*(4), 715–739.
- Chang, H. H., & Chuang, S. S. (2011). Social capital and individual motivations on knowledge sharing: Participant involvement as a moderator. *Information & Management*, *48*(1), 9–18.
- Christoforou, A., & Davis, J. B. (2014). *Social capital and economics: Social values, power, and social identity* (Vol. 20). New York: Routledge.
- Coffé, H., & Geys, B. (2007). Toward an empirical characterization of bridging and bonding social capital. *Nonprofit and Voluntary Sector Quarterly*, *36*(1), 121–139.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American journal of sociology*, *94*, S95–S120.
- Cook, K. S. (2005). Networks, norms, and trust: The social psychology of social capital* 2004 cooley mead award address. *Social Psychology Quarterly*, *68*(1), 4–14.
- Costa, D. L., & Kahn, M. E. (2001). *Understanding the decline in social capital, 1952–1998* (No. w8295). National Bureau of Economic Research.
- Costa, D. L., & Kahn, M. E. (2003). Civic engagement and community heterogeneity: An economist's perspective. *Perspective on Politics*, *1*(01), 103–111.
- Croninger, R., & Lee, V. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *The Teachers College Record*, *103*(4), 548–581.
- David, Q., Janiak, A., & Wasmer, E. (2010). Local social capital and geographical mobility. *Journal of Urban Economics*, *68*(2), 191–204.
- De Silva, M. J., Harpham, T., Tuan, T., Bartolini, R., Penny, M. E., & Huttly, S. R. (2006). Psychometric and cognitive validation of a social capital measurement tool in Peru and Vietnam. *Social Science and Medicine*, *62*(4), 941–953.
- d'Hombres, B., Rocco, L., Suhrcke, M., & McKee, M. (2010). Does social capital determine health? Evidence from eight transition countries. *Health Economics*, *19*(1), 56–74.
- DiPasquale, D., & Glaeser, E. L. (1999). Incentives and social capital: Are homeowners better citizens? *Journal of Urban Economics*, *45*(2), 354–384.
- Doh, S., & McNeely, C. (2012). A multi-dimensional perspective on social capital and economic development: An exploratory analysis. *The Annals of Regional Science*, *49*(3), 821–843.
- Downing, J. R. (1978). *Factors influencing the variability in social capital*. Doctoral dissertation, University of Central Florida Orlando, Florida.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends”: Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, *12*(4), 1143–1168.
- Engbers, T. A., Rubin, B., & Aubuchon, C. P. (2013). Social capital and metropolitan economic development. Available at SSRN.
- Farr, J. (2004). Social capital a conceptual history. *Political Theory*, *32*(1), 6–33.

- Fenenga, C. J., Nketiah-Amponsah, E., Ogink, A., Arhinful, D. K., Poortinga, W., & Hutter, I. (2015). Social capital and active membership in the Ghana National Health Insurance Scheme—a mixed method study. *International Journal for Equity in Health*, 14(1), 118–130.
- Fine, B. (2001). *Social capital versus social theory: Political economy and social science at the turn of the millennium* (Vol. 5). Oxfordshire: Psychology Press.
- Foley, M. W., Edwards, B., & Diani, M. (Eds.). (2001). Social capital reconsidered. In *Beyond Tocqueville: Civil society and the social capital debate in comparative perspective* (pp. 266–280). Hanover, NH: University Press of New England.
- Fowler, J. H., & Kam, C. D. (2007). Beyond the self: Social identity, altruism, and political participation. *Journal of Politics*, 69(3), 813–827.
- Fukuyama, F. (1995). Social capital and the global economy. *Foreign Affairs*, 74(5), 89–103.
- Fukuyama, F. (2001). Social capital, civil society and development. *Third World Quarterly*, 22(1), 7–20.
- Galston, W. A. (2007). Civic knowledge, civic education, and civic engagement: A summary of recent research. *International Journal of Public Administration*, 30(6–7), 623–642.
- Gil de Zúñiga, H., Jung, N., & Valenzuela, S. (2012). Social media use for news and individuals' social capital, civic engagement and political participation. *Journal of Computer-Mediated Communication*, 17(3), 319–336.
- Glaeser, E. L., Laibson, D., & Sacerdote, B. (2002). An economic approach to social capital*. *The Economic Journal*, 112(483), F437–F458.
- Goette, L., Huffman, D., & Meier, S. (2006). The impact of group membership on cooperation and norm enforcement: Evidence using random assignment to real social groups. *The American Economic Review*, 4(1), 212–216.
- Grofman, B., Merrill, S., Brunell, T. L., & Koetzle, W. (1999). The potential electoral disadvantages of a catch-all party ideological variance among republicans and democrats in the 50 US States. *Party Politics*, 5(2), 199–210.
- Hakhverdian, A., & Mayne, Q. (2012). Institutional trust, education, and corruption: A micro-macro interactive approach. *The Journal of Politics*, 74(03), 739–750.
- Heaney, M. T., & Rojas, F. (2014). Hybrid activism: Social movement mobilization in a multimovement environment I. *American Journal of Sociology*, 119(4), 1047–1103.
- Herbst, M. (2008). Kraina nieufności: kapitał społeczny, rozwój gospodarczy i sprawność instytucji publicznych w polskiej literaturze akademickiej. In P. Swianiewicz, M. Herbst, M. Lackowska, & A. Mielczarek (Eds.), *Szafarze darów europejskich. Kapitał społeczny a realizacja polityki regionalnej w polskich województwach* (pp. 20–53). Warszawa: Wydawnictwo Scholar.
- Hudoyo, A. (2009). *The production of social capital and its impact on income: Using ZIP code areas as a unit of analysis in rural area Kentucky*. Ph.D. dissertation, University of Kentucky: Lexington, KY.
- Inkeles, A. (2000). Measuring social capital and its consequences. *Policy Sciences*, 33(3–4), 245–268.
- Inkpen, A. C., & Tsang, E. W. (2005). Social capital, networks, and knowledge transfer. *Academy of Management Review*, 30(1), 146–165.
- Ji, Y. G., Hwangbo, H., Yi, J. S., Rau, P. P., Fang, X., & Ling, C. (2010). The influence of cultural differences on the use of social network services and the formation of social capital. *International Journal of Human-Computer Interaction*, 26(11–12), 1100–1121.
- Jones, N., Evangelinos, K., Gaganis, P., & Polyzou, E. (2011). Citizens' perceptions on water conservation policies and the role of social capital. *Water Resources Management*, 25(2), 509–522.
- Kaldaru, H., & Parts, E. (2005). *The effect of macro-level social capital on sustainable economic development*. Tartu: Tartu University Press.
- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health*, 87(9), 1491–1498.
- Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, 112(4), 1251–1288.
- La Due Lake, R., & Huckfeldt, R. (1998). Social capital, social networks, and political participation. *Political Psychology*, 19(3), 567–584.
- La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. (2000). Trust in large organizations. In P. Dasgupta & I. Serageldin (Eds.), *Social capital: A multifaceted perspective*. Washington, DC: The World Bank.
- Levine, S. S., et al. (2014). Ethnic diversity deflates price bubbles. *Proceedings of the National Academy of Science*, 111, 18524–18529.
- Lin, N., & Erickson, B. H. (Eds.). (2008). *Social capital: An international research program*. Oxford: Oxford University Press.
- Lins, K. V., Servaes, H. & Tamayo, A. (2015). Social capital, trust, and firm performance during the financial crisis. *CEPR discussion paper no. DP10399*. Available at SSRN: <http://ssrn.com/abstract=2562924>

- Locher, J. L., Ritchie, C. S., Roth, D. L., Baker, P. S., Bodner, E. V., & Allman, R. M. (2005). Social isolation, support, and capital and nutritional risk in an older sample: Ethnic and gender differences. *Social Science and Medicine*, *60*(4), 747–761.
- Lochner, K., Kawachi, I., & Kennedy, B. P. (1999). Social capital: A guide to its measurement. *Health & Place*, *5*(4), 259–270.
- Markowska-Przybyla, U. (2012). Social capital as an elusive factor of socio-economic development. *Journal of Leadership, Accountability and Ethics*, *9*(3), 93–103.
- McClurg, S. D. (2006). The electoral relevance of political talk: Examining disagreement and expertise effects in social networks on political participation. *American Journal of Political Science*, *50*(3), 737–754.
- Moore, S., Bockenholt, U., Daniel, M., Frohlich, K., Kestens, Y., & Richard, L. (2011). Social capital and core network ties: A validation study of individual-level social capital measures and their association with extra-and intra-neighborhood ties, and self-rated health. *Health & Place*, *17*(2), 536–544.
- Morris, S. D., & Klesner, J. L. (2010). Corruption and trust: Theoretical considerations and evidence from Mexico. *Comparative Political Studies*, *43*(10), 1258–1285.
- Muir, B. M. (1987). Trust between humans and machines, and the design of decision aids. *International Journal of Man-Machine Studies*, *27*(5), 527–539.
- Nannicini, T., Stella, A., Tabellini, G., & Troiano, U. (2013). Social capital and political accountability. *American Economic Journal: Economic Policy*, *5*(2), 222–250.
- Oka, M., & Wong, D. W. (2015). Spatializing segregation measures: An approach to better depict social relationships. *Cityscape: A Journal of Policy Development and Research*, *17*(1), 97–113.
- Ostrom, E. (2000). Social capital: A fad or a fundamental concept? In P. Dasgupta & I. Serageldin (Eds.), *Social capital: A multivaceted perspective* (pp. 172–214). Washington, DC: The World Bank.
- Ostrom, E. (2014). Collective action and the evolution of social norms. *Journal of Natural Resources Policy Research*, *6*(4), 235–252.
- Paldam, M. (2000). Social capital: One or many? Definition and measurement. *Journal of Economic Surveys*, *14*(5), 629–653.
- Paxton, P. (1999). Is social capital declining in the United States? A multiple indicator assessment 1. *American Journal of Sociology*, *105*(1), 88–127.
- Porter, M. E. (2008). *On competition*. Boston: Harvard Business Press.
- Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, *24*, 1–24.
- Portes, A. (2014). Downsides of social capital. *Proceedings of the National Academy of Sciences*, *111*(52), 18407–18408.
- Pretty, J., & Ward, H. (2001). Social capital and the environment. *World Development*, *29*(2), 209–227.
- Putnam, R. D. (1995). Tuning in, tuning out: The strange disappearance of social capital in America. *PS: Political Science & Politics*, *28*(04), 664–683.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York City: Simon and Schuster.
- Putnam, R. (2001). Social capital: Measurement and consequences. *Canadian Journal of Policy Research*, *2*(1), 41–51.
- Putnam, R. D., Leonardi, R., & Nanetti, R. Y. (1994). *Making democracy work: Civic traditions in modern Italy*. Princeton: Princeton University Press.
- Reimer, S. (2011). Orthodoxy niches: Diversity in congregational orthodoxy among three protestant denominations in the United States. *Journal for the Scientific Study of Religion*, *50*(4), 763–779. doi:10.1111/j.1468-5906.2011.01598.x.
- Robbins, B., & Pettinicchio, D. (2012). Social capital, economic development, and homicide: A Cross-national investigation. *Social Indicators Research*, *105*(3), 519–540.
- Rogers, S. H., & Gardner, K. H. (2012). Measuring social capital at the neighborhood scale through a community based framework. In J. M. Halstead & S. C. Deller (Eds.), *Social Capital at the Community Level: An Applied Interdisciplinary Perspective*. New York: Routledge.
- Rogers, S. H., Halstead, J. M., Gardner, K. H., & Carlson, C. H. (2011). Examining walkability and social capital as indicators of quality of life at the municipal and neighborhood scales. *Applied Research in Quality of Life*, *6*(2), 201–213.
- Rothstein, B. (2001). Social capital in the social democratic welfare state. *Politics & Society*, *29*(2), 207–241.
- Rothstein, B., & Stolle, D. (2008). The state and social capital: An institutional theory of generalized trust. *Comparative Politics*, 441–459.

- Rupasingha, A., Goetz, S. J., & Freshwater, D. (2002). Social and institutional factors as determinants of economic growth: Evidence from the United States counties. *Papers in Regional Science*, 81(2), 139–155.
- Sabitini, F. (2007). The empirics of social capital and economic development: A critical perspective. In M. Osborne, K. Sankey, & B. Wilson (Eds.), *Researching social capital, lifelong learning regions and the management of place: An international perspective* (pp. 76–95). New York: Routledge.
- Saguaro Seminar. (2001). *The social capital community benchmark survey*. Cambridge: John F. Kennedy School of Government, Harvard University.
- Saha, M., & Banerjee, S. (2014). Training and development of employees of SMEs: A social capital perspective. *Review of HRM*, 3, 196.
- Schiff, M. (1992). Social capital, labor mobility, and welfare. *Rationality and Society*, 4(2), 157–175.
- Serra, R. (2001). Social capital: Meaningful and measurable at the state level? *Economic and Political Weekly*, 36(8), 693–704.
- Smith, S. S. (2005). “Don’t put my name on it”: Social capital activation and job-finding assistance among the black urban poor. *American Journal of Sociology*, 111(1), 1–57.
- Son, J., & Lin, N. (2008). Social capital and civic action: A network-based approach. *Social Science Research*, 37(1), 330–349.
- Sorenson, O., Rivkin, J. W., & Fleming, L. (2006). Complexity, networks and knowledge flow. *Research Policy*, 35(7), 994–1017.
- Staber, U. (2007). Contextualizing research on social capital in regional clusters. *International Journal of Urban and Regional Research*, 31(3), 505–521.
- Thompson, M. F., & Slaper, T. F. (2016). Social capital and regional economic performance: A study across US metropolitan statistical areas. In H. Westlund & J. P. Larsson (Eds.), *Edward Elgar handbook on social capital and regional development*. Cheltenham: Edward Elgar.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41(4), 464–476.
- Twenge, J. M., Campbell, W. K., & Carter, N. T. (2014). Declines in trust in others and confidence in institutions among American adults and late adolescents, 1972–2012. *Psychological Science*. doi:10.1177/0956797614545133.
- Waldinger, R. (1995). The other side of embeddedness: A case study of the interplay between economy and ethnicity. *Ethnic Racial Studies*, 18(3), 555–580.
- Walsh, D., McCartney, G., McCullough, S., van der Pol, M., Buchanan, D., & Jones, R. (2015). Comparing levels of social capital in three northern post-industrial UK cities. *Public Health*, 129(6), 629–638.
- Wood, L., Giles-Corti, B., & Bulsara, M. (2005). The pet connection: pets as a conduit for social capital? *Social Science and Medicine*, 61(6), 1159–1173.
- Woolcock, M. (1998). Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and Society*, 27(2), 151–208.
- Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic Management Journal*, 22(6–7), 587–613.
- Zhu, X., Yu, C. Y., Lee, C., Lu, Z., & Mann, G. (2014). A retrospective study on changes in residents’ physical activities, social interactions, and neighborhood cohesion after moving to a walkable community. *Preventive Medicine*, 69, S93–S97.