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Age, Period and Cohort Effects on Social Capital

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Abstract

Researchers hypothesize that social capital in the United States is not just declining, but that it is declining across *generations* or birth cohorts. Testing this proposition, we examine changes in social capital using age-period-cohort intrinsic estimator models. Results from analyses of 1972–2010 General Social Survey data show 1) that informal association with neighbors declined across periods while informal association with friends outside of the neighborhood increased across birth cohorts; 2) that formal association was comparatively stable with the exception of relatively high levels of formal association among the early 1920s and early 1930s birth cohorts; and 3) that trust declined considerably across both periods and cohorts, though the oldest cohorts are less trusting than those born in the 1920s through the 1940s. While the results suggest that changes in social capital are more complex than the simple decline depicted by many researchers, the aspects of social capital that have declined may be essential for promoting social and political participation.

Introduction

Democratic societies flourish when there is a vibrant public sphere where citizens have a voice that is capable of exercising some influence over the political decisions that affect their lives (Habermas 1991). In the past 15 years, much scholarly attention has been paid to the decline of social capital and the accompanying detrimental effects on civil society. Social capital, defined as

the resources embedded in social networks characterized by trust and reciprocity, is pivotal to the civic health of a democratic society (Putnam 2000). Putnam (2000), for example, found that communities with high levels of social capital have more efficient political structures and political elites that are more responsive to the needs of their citizens. He also found that residents of communities that are high in social capital show greater levels of civic engagement and participation in politics. High levels of social connectedness make it easier to mobilize people to address public issues (e.g. establishing a hazardous waste facility, reducing a crime problem, or building a community park) and to make arrangements that benefit the group as a whole (e.g. a child care cooperative among low-income mothers, a micro-lending group that enables poor people to start businesses, or farmers banding together to share expensive tools and machinery; Putnam 2000; Woolcock and Narayan 2000). Given the centrality of social capital to individual outcomes, community welfare and democratic vigor, it is vital that social scientists establish if social capital is, in fact, declining.

Changes in social capital can occur across time period and/or across birth cohorts, though proponents of the decline in social capital thesis generally suggest that changes occur across birth cohorts (e.g. Brehm and Rahn 1997; Putnam 1995, 2000). This proposition comports with generational theories of social change that emphasize the role of birth cohorts in human development (Alwin and McCammon 2007). As Mannheim (1952:290) noted, “individuals who belong to the same generation, who share the same year of birth, are endowed, to that extent, with a common location in the historical dimension of the social process.” The distinct socialization processes associated with each generation promote social change (Ryder 1965), and, thus, the expectation of cohort-based changes in social capital.

While the theoretical emphasis is on cohort changes in social capital, previous research has been unable to adequately disentangle period and cohort effects (e.g. Putnam 2000; c.f. Wilkes 2011). Addressing this problem, in this article we simultaneously estimate age, period and cohort effects on three domains of social capital – informal association, formal association and trust. Our analysis replicates and extends previous research with more up-to-date data, an improved method of estimating age, period and cohort effects and a wider range of measures of social capital. This analysis addresses the theoretical expectation of across-cohort declines in social capital that previous research has been largely unable to empirically verify.

Changes in Social Capital

Although Putnam may be the most popular proponent of the decline in social capital thesis, he is not the first sociologist to examine social capital.

Coleman (1988) and Bourdieu (1986), for example, both wrote extensively about social capital, as well as other forms of capital. Similarly, though they did not employ the term social capital, Bellah and his colleagues (1985) detailed the growth of a new kind of individualism, which they say has broken down traditional forms of social interaction that were based on cooperation and dense social ties within communities. These authors argued that traditional forms of social interaction are being replaced by new ways of socializing that are more likely to be based on self-interest and individual preferences. Their argument about the causes and consequences of declines in social cohesion is fundamentally based on the same logic as Putnam's decline in social capital thesis.

While Putnam (2000) argued that social capital – operationalized through informal association (i.e., socializing with friends and relatives), formal association (i.e., voluntary organization membership) and generalized trust – is declining, there is considerable debate surrounding changes in social capital. Much of this criticism is based on the ways in which Putnam and others measure social capital (e.g. Schudson 1996; Stolle and Hooghe 2005). Some critics contend that decreases in the more commonly measured forms of social capital are offset by increases in alternative forms of social capital (e.g. Costa and Kahn 2001; Ladd 1999). For instance, while membership in traditional voluntary organizations has declined, advances in communication technology and the Internet have facilitated the creation of new types of voluntary organizations (Ray 1999). Similarly, others argue that some domains of social capital may decline while others do not (e.g. Paxton 1999; Wuthnow 2004). Consequently, Costa and Kahn (2001) concluded that the extent of decline in social capital has generally been overstated.

Periods and Birth Cohorts

Inconsistent results from analyses of changes in social capital may be partially due to the failure to simultaneously account for both period and cohort changes. Putnam (1995, 2000) and others (e.g. Brehm and Rahn 1997; Robinson and Jackson 2001) have argued that declines in social capital generally occur across generations or birth cohorts. If social capital is declining across birth cohorts, then failure to account for potential changes across cohorts may lead to biased estimates of time trends. Apparent changes over time may be underestimated or exaggerated due to the relative age of specific birth cohorts (Miller and Nakamura 1996). For instance, the disproportionately large Baby Boom generation, which is distinctive in its activities and viewpoints (Schwadel 2011), may distort apparent changes over time. Thus, analyses of changes over time that do not account for changes across cohorts may lead to misleading expectations of social change.

Putnam (2000) proposed that generations born before 1930 have considerably higher levels of social capital and civic engagement throughout their lives than do generations born since 1930. Americans who experienced the Great Depression and World War II, he says, are the most civically active. More recent generations, on the other hand, are less likely to volunteer and do not contribute to the production of social capital to the same extent as older generations. He attributed the cause of this generational shift to the increasing role played by technology in people's lives, especially the popularity of television (Putnam 1995).

Although Putnam (2000) pointed to generational differences in social capital, he acknowledged that his analysis technique could not differentiate age, period and cohort effects. Other empirical research, however, lends some support to the notion of generational decline in social capital. For instance, Robinson and Jackson's (2001) findings suggest that trust has declined across generations. Unfortunately, their study was limited to one aspect of social capital, and their "additive" model may not provide stable estimates of period and cohort effects (Glenn 1981). Wilkes (2011) employed a more appropriate modeling strategy and also found that trust declines across cohorts, though her findings are limited because she did not report uncontrolled age, period and cohort effects for individual measures of trust, and her analysis also focused on a single aspect of social capital. Avoiding the problems associated with age-period-cohort (APC) models, Rotolo and Wilson (2004) compared the voluntary behavior of two successive generations of women at the same age. Similarly, Jennings and Stoker (2004) focused on intergenerational changes in trust and civic activity with the use of longitudinal data. Though informative, these longitudinal studies are limited in their ability to estimate period-based changes. In sum, empirical evidence suggests potential across-cohort declines in social capital, but previous research is hampered by its focus on a single domain of social capital (i.e., informal association, formal association or trust) and by modeling techniques that are unable to satisfactorily disentangle period and cohort effects.

Following Putnam (2000), we expect that the "long civic generation" – the cohorts that came of age before and during the World War II period (i.e., born before 1930) – will exhibit the highest levels of social capital. The baby boomers, born between 1946 and 1964, who came of age during the politically tumultuous era of the Vietnam War and the Civil Rights Movement, should exhibit significantly lower levels of social capital than prior cohorts. We expect the decline in social capital to continue for members of Generation X (Jennings and Stoker 2004), born between 1965 and 1980, because research suggests that Generation X is relatively unengaged due to declining idealism and an increased sense of economic risk and vulnerability (Kiesa et al. 2007). Kiesa and colleagues (2007), however, observed that members of

the millennial generation, born in the 1980s and later, have exhibited higher levels of civic engagement, which might indicate a corresponding increase in social capital. They attributed this increase in civic engagement to an increase in deliberate organizing efforts by civic organizations and a more intense political environment spurred by the events of September 11, 2001. Therefore, we expect to see a steady across-cohort decline in social capital beginning with cohorts born after 1930, with the possibility of an increase in social capital among those born in the 1980s.

Despite the focus on generational declines in social capital, there are also good reasons to expect period-based changes in social capital. For instance, events that took place in the 1960s and 1970s, such as the Vietnam War, the Civil Rights Movement and Watergate, may have led to decreased levels of trust in the United States (Putnam 2000). More recently, the terrorist attacks of September 11, 2001, may have served to increase civic engagement (Kiesa et al. 2007) and social trust (Smith, Rasinski and Toce 2001). Indeed, Gross, Aday and Brewer (2004) reported a spike in social trust immediately following September 11, 2001, as well as a moderate decline in social trust the following year. Economic changes and economic inequality may also lead to period-based changes in social capital. Uslaner (2002), for example, argued that increasing levels of economic inequality over the last 30 years have made the public increasingly cynical and less trusting. Supporting this argument, Rothstein and Uslaner (2005) found that countries with the greatest levels of economic equality are disproportionately trusting. On the other hand, Dalton (2005) argued that explanations of declines in political trust that emphasize period effects are inadequate since trust in government differs by attributes that vary across cohorts – especially education – and the erosion of trust in government is greatest among young adults. Dalton's study suggests that the combination of generation-specific socialization processes and cohort changes in levels of education account for the erosion of trust.

In this article, we address the possibility of both period and cohort changes in social capital with an APC analysis. By simultaneously modeling age, period and cohort effects on social capital, we can establish if there were cohort- and/or period-based changes in trust, formal association (i.e., civic participation) and informal association (i.e. interacting with neighbors, friends and relatives). We expand upon previous research (1 by employing a recently developed analysis technique – intrinsic estimator models (Fu 2000) – for simultaneously estimating age, period and cohort effects, (2 by analyzing multiple indicators of social capital that take into account characteristics of trust, social networks and voluntary association and (3 by updating previous research on social capital with data from 1972 to 2010.

Data and Methods

We use 1972 through 2010 General Social Survey (GSS) data to analyze age, period and cohort effects on social capital. The GSS is a nationally representative survey of noninstitutionalized U.S. adults conducted annually or biennially since 1972 (Smith, Marsden and Hout 2011). The survey is primarily administered in-person though some interviews are completed over the phone. Response rates range between 70 percent and 80 percent across survey years.¹ The sample size differs across models due to variation in which dependent variables are included in each survey. All analyses are weighted to account for the subsampling of nonrespondents as well as the number of adults per household and other survey-specific sampling variations. Following previous research on social capital using GSS data (e.g. Paxton 1999), we employ measures that assess informal association activity, formal association participation and generalized trust.²

Dependent Variables

Informal association is measured with three indicators of frequency of socializing activities. Respondents are asked how often they spend a social evening with relatives, with someone who lives in their neighborhood and with friends who live outside of their neighborhood. Response options are never (1), about once a year (2), several times a year (3), about once a month (4), several times a month (5), once or twice a week (6) and almost every day (7).

A single variable, which denotes the number of different types of voluntary organizations respondents belong to, is used to assess formal association participation. The GSS asks a series of questions about membership in different types of voluntary organizations. We create a count of the number of different types of voluntary organization memberships from the following list: fraternal groups, service clubs, veterans' groups, political clubs, sports groups, youth groups, high school service groups, hobby or garden clubs, school fraternities or sororities, nationality groups, farm organizations, professional or academic societies, church-affiliated groups, literary, art, discussion, or study groups and "any other" groups.³ Because only two percent of respondents have more than six types of voluntary organization memberships, we recode the voluntary organization membership variable so it ranges from zero for no memberships to seven for seven or more types of memberships.

We use three dichotomous measures of trust. The GSS asks respondents if they believe people are helpful, people are fair and people can be trusted.⁴ Response options are agree, disagree and depends. We recode these variables so agree is coded one and disagree/depends is coded zero.

Independent Variables

Although the choice of intervals is somewhat arbitrary, 5-year birth cohorts and periods are the norm in APC analyses (Yang et al. 2008). Consequently, we code age, period and birth cohort into five-year intervals.⁵ We group respondents 80 years old or older into a single category for more stable estimates. Respondents younger than 20 years old are deleted from the sample.

Analysis Techniques

We test for APC effects with intrinsic estimator models (Fu 2000). The central problem with APC analyses using repeated cross-sectional data is the linear dependency among age, period and cohort (i.e., period = age + cohort). Age, period and cohort measures cannot be simultaneously included in a standard regression model due to this linear dependency, and cohort effects are unreliable without including age in the model. Researchers choose various methods of avoiding the linear dependency among age, period and cohort measures. These methods largely rely on subjective choices of model constraint, which can lead to divergent and even conflicting estimates depending on the assumptions made (Fu 2008).

APC intrinsic estimator models, on the other hand, allow for the simultaneous modeling of age, period and cohort effects without subjective choices of model constraint. APC intrinsic estimator models provide unbiased estimates of regression coefficients for age groups, time periods and birth cohorts (Yang, Fu and Land 2004). Unlike other techniques, the constraints imposed by APC intrinsic estimator models are unrelated to the investigators' knowledge of the subject and the variables in the model; instead, the constraints are a function of the number of periods (Fu 2008; Yang, Fu and Land 2004). The intrinsic estimator is a special form of principal components regression estimator that adjusts for the linear dependency among age, period and cohort through singular value decomposition of matrices (Yang, Fu and Land 2004). Thus, correlated variables are orthogonally transformed into linearly uncorrelated variables. As Yang and colleagues (2008:1707) note, "The basic idea of the IE is to remove the influence of the design matrix on coefficient estimates." APC intrinsic estimator models are more statistically efficient than methods that use prior information to constrain data to avoid the linear dependency problem, and they meet Glenn's (2005) criteria for an acceptable, general-purpose method of simultaneously estimating APC effects (Yang et al. 2008). Intrinsic estimator models appear to provide more methodologically accurate (Yang et al. 2008) and theoretically appropriate (Schwadel 2010) results than other methods of estimating APC effects (see Yang et al., 2008, for a detailed discussion of properties of the intrinsic estimator). A logit link function adjusts for dichotomous outcomes in the models of trust.

Results

Informal Association

Results from APC intrinsic estimator models of frequency of informal association are reported in the first three columns of **Table 1** and depicted in **Figure 1**. Age has a strong, negative effect on each of the informal association measures. The negative effect of age levels off at about 40-44 years of age for the measures of spending evenings with neighbors and relatives. On the other hand, age has a relatively linear, negative effect on spending evenings with friends outside of the neighborhood. For instance, controlling for period and cohort effects, evenings spent with friends outside of the neighborhood declines from almost five (several times a month) for the 20 to 24 years of age group to just over three (several times a year) for those 80 years of age or older.

The results in Table 1 and Figure 1 also reveal meaningful period and cohort changes in informal association. There is no period-based decline in spending evenings either with relatives or with friends outside of the neighborhood. In fact, the results suggest modest increases in spending evenings with relatives and friends across time periods. Conversely, there is a notable decline in the frequency of spending evenings with neighbors from the first period to the 1991-95 period, though there is little change from the 1991-95 period to the 2006-10 period (Figure 1b). The cohort effects also differ across measures of informal association. There is relatively little cohort-based change in spending evenings with neighbors or spending evenings with relatives. On the other hand, there is a sizable across-cohort increase in spending evenings with friends outside of the neighborhood (Figure 1c). For instance, the estimated difference between the 1902 and 1982 cohorts is more than two fifths of a standard deviation in the measure of spending evenings with friends outside of the neighborhood.

We highlight two important aspects of the informal association results. First, and most importantly, these results do not suggest overall declines in informal association. Second, there are considerable differences in period and cohort effects across the three measures of informal association. While there is a period-based decline in spending evenings with neighbors, there is a cohort-based increase in spending evenings with friends outside the neighborhood.

Formal Association Participation

Turning to formal association, results from an APC intrinsic estimator model of number of types of voluntary organization memberships are reported in the fourth column of Table 1. Age has a strong, curvilinear effect on formal

Table 1. Age-Period-Cohort intrinsic estimator models of frequency of evenings with neighbors, frequency of evenings with friends outside the neighborhood, frequency of evenings with relatives, and voluntary organization memberships.

	<i>Evenings with neighbors</i>		<i>Evenings with friends</i>		<i>Evenings with relatives</i>		<i>Voluntary organizations</i>	
	β	SE	β	SE	β	SE	β	SE
Age								
20-24	.72	.05***	1.06	.04***	.38	.04***	-.19	.05***
25-29	.23	.04***	.63	.03***	.31	.03***	-.12	.04**
30-34	.02	.04	.34	.03***	.14	.03***	.13	.04**
35-39	-.02	.04	.15	.03***	.01	.03	.25	.05***
40-44	-.10	.04**	-.01	.03	-.15	.03***	.36	.05***
45-49	-.17	.04***	-.03	.03	.00	.03	.09	.06
50-54	-.14	.04***	-.13	.03***	-.01	.04	.11	.06
55-59	-.20	.05***	-.21	.04***	.01	.04	.06	.06
60-64	-.19	.05***	-.21	.04***	.02	.04	-.19	.06***
65-69	-.03	.05	-.21	.04***	-.04	.04	-.10	.05
70-74	-.01	.06	-.34	.05***	-.18	.05***	-.18	.06***
75-79	-.01	.07	-.41	.05***	-.17	.06**	-.06	.07
80+	-.09	.07	-.63	.05***	-.32	.06***	-.16	.07*
Period								
1972-75	.29	.04***	-.07	.03*	.03	.03	.12	.04**
1976-80	.14	.04***	-.06	.03*	-.03	.03	-.02	.03
1981-85	.08	.03**	-.01	.02	-.07	.03**	-.04	.03
1986-90	-.05	.03	-.06	.02*	-.07	.03**	-.03	.03
1991-95	-.15	.03***	.05	.02*	-.04	.03	.07	.03*
1996-00	-.13	.03***	.04	.02*	-.01	.02		
2001-05	-.09	.05	.08	.04*	.10	.04**	-.09	.05
2006-10	-.09	.04*	.02	.03	.09	.03**		
Cohort								
1892	-.01	.22	-.11	.22	-.14	.21	-.37	.15*
1897	-.22	.17	-.27	.15	-.22	.14	.14	.13
1902	-.29	.11**	-.36	.09***	.03	.09	-.10	.09
1907	-.19	.09**	-.35	.07***	-.11	.08	-.15	.07*
1912	.09	.08	-.20	.07**	-.02	.07	-.05	.07
1917	.08	.07	-.03	.06	.05	.06	.08	.06
1922	.18	.06**	.00	.05	.04	.05	.20	.07**
1927	.04	.06	-.08	.05	.00	.05	.08	.07
1932	.04	.06	.01	.05	-.04	.05	.23	.07***
1937	.02	.05	.05	.04	-.04	.05	.00	.06
1942	.03	.05	.11	.04**	-.03	.04	.01	.06
1947	.05	.04	.08	.03*	-.08	.04*	.07	.05
1952	.07	.04	.13	.03***	-.03	.03	-.05	.05
1957	.04	.04	.12	.03***	.06	.03	-.13	.04**
1962	.10	.04*	.11	.03***	.00	.03	.00	.05
1967	.05	.05	.03	.04	.04	.04	.06	.06
1972	.09	.06	.19	.04***	.05	.04	-.10	.09
1977	-.10	.07	.19	.05***	.06	.05	.07	.26
1982	-.09	.10	.31	.07***	.19	.07**		
1987	.02	.14	.09	.11	.18	.11		
Constant	3.42	.02***	3.83	.02***	4.54	.02***	1.57	.02***
N	30,922		30,922		30,922		19,360	

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$ (two-tailed test)

SE = standard error.

Figure 1. Estimated age, period and cohort effects on frequency of evenings with neighbors, frequency of evenings with friends outside the neighborhood and frequency of evenings with relatives. Figure graphs results in Table 1. Height of each chart equivalent to 1.0 standard deviations in the measure of evenings with neighbors, 1.3 standard deviations in the measure of evenings with friends, and 1.2 standard deviations in the measure of evenings with relatives.

association. The number of types of voluntary organization memberships increases from 20-24 years of age to 40-44 years of age, and then decreases with additional years of age. The period effects on voluntary organization memberships are erratic, with higher than average voluntary organization membership in the 1972-75 and 1991-95 periods. Surprisingly, the number of voluntary organization memberships did not increase in the 2001-05 period (which, due to intermittent inclusion of the voluntary organization membership questions, is based solely on the 2004 GSS). This finding suggests that increases in civic participation immediately following September 11, 2001, may have been ephemeral (Gross et al. 2004). The cohort effects show that respondents born in the inter-war years, particularly the 1922 and 1932 cohorts, have relatively high numbers of voluntary organization memberships, and the 1892, 1907 and 1957 cohorts have relatively few. Overall, number of types of voluntary organization memberships varies only moderately by birth cohort and by period, and these moderate changes do not suggest declines in social capital.

Trust

Results from APC intrinsic estimator models of trust are reported in **Table 2** and depicted in **Figure 2**. As Figure 2a shows, the youngest respondents are the least likely to agree that people are helpful, people are fair and people can be trusted. Age has a relatively linear, positive effect on the view that people are helpful and fair while the view that people can be trusted peaks at 45-49 years of age. The effects of age on the view that people are helpful and fair are robust. Specifically, the probability of agreeing that people are fair ranges from .45 for the youngest respondents to more than .65 for the oldest respondents, and the probability of agreeing that people are helpful ranges from .4 for the youngest respondents to more than .55 for the oldest respondents.

The results in Table 2 and Figure 2b also show large period effects on individual trust. Controlling for age and cohort effects, the probability of agreeing that people are fair declines from a high of .62 in the 1976-1980 and 1981-85 periods to a low of about .54 in the 2001-05 and 2006-10 periods. The decline in agreeing that people can be trusted is even greater, going from a probability of .43 in the 1981-85 period to a probability of .33 in the most recent period. Conversely, though the probability of agreeing that people are helpful varies across periods, there is no suggestion of an overall decline.

The across-cohort declines in trust are even more striking than the period-based declines. As Figure 2c and the bottom portion of Table 2 show, controlling for age and period effects, there are large across-cohort declines in all three measures of individual trust. Other than a few exceptions among

Table 2. Age-Period-Cohort intrinsic estimator models of view that people are helpful, people are fair and people can be trusted.

	<i>People Helpful</i>		<i>People Fair</i>		<i>People Can be Trusted</i>	
	β	SE	β	SE	β	SE
Age						
20-24	-.37	.05***	-.49	.05***	-.34	.05***
25-29	-.27	.04***	-.25	.04***	-.25	.04***
30-34	-.19	.04***	-.25	.04***	-.19	.04***
35-39	-.07	.04	-.06	.04	.04	.04
40-44	-.08	.04*	-.02	.04	.14	.04***
45-49	.04	.04	.02	.04	.18	.04***
50-54	-.03	.04	.01	.05	.06	.04
55-59	-.06	.05	.01	.05	.04	.05
60-64	-.01	.05	.05	.05	.09	.05
65-69	.16	.05**	.13	.05*	.04	.05
70-74	.19	.06***	.18	.06**	-.02	.06
75-79	.38	.06***	.28	.07***	.10	.06
80+	.30	.06***	.39	.07***	.11	.06
Period						
1972-75	-.04	.03	.07	.03*	.19	.03***
1976-80	-.01	.03	.17	.03***	.13	.03***
1981-85	.12	.04**	.16	.04***	.22	.04***
1986-90	.02	.03	.09	.03**	-.01	.03
1991-95	-.01	.03	-.05	.03	-.15	.03***
1996-00	-.10	.03***	-.14	.03***	-.12	.03***
2001-05	.07	.05	-.16	.05***	-.09	.05
2006-10	-.05	.04	-.15	.04***	-.18	.04***
Cohort						
1892	-.03	.21	-.15	.22	-.20	.22
1897	-.16	.13	.09	.14	-.05	.13
1902	.02	.10	.11	.11	.09	.10
1907	-.08	.08	-.09	.09	-.06	.09
1912	.08	.07	.17	.08*	.05	.07
1917	-.03	.06	.12	.07	.04	.06
1922	.30	.06***	.15	.06*	.22	.06***
1927	.25	.06***	.15	.06**	.15	.06**
1932	.23	.06***	.14	.06*	.22	.06***
1937	.24	.05***	.12	.06*	.11	.05*
1942	.29	.05***	.24	.05***	.29	.05***
1947	.25	.04***	.18	.04***	.29	.04***
1952	.10	.04*	.02	.04	.15	.04***
1957	.00	.04	-.04	.04	.01	.04
1962	-.02	.04	-.07	.04	.01	.05
1967	-.15	.05**	-.11	.05*	-.10	.05*
1972	-.19	.06***	-.24	.06***	-.28	.07***
1977	-.31	.07***	-.33	.07***	-.35	.08***
1982	-.42	.10***	-.32	.09***	-.23	.11*
1987	-.37	.14**	-.16	.14	-.35	.17*
Constant	-.02	.02	.31	.02***	-.50	.02***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$ (two-tailed test)

N = 32,622; results reported in logged odds. SE = standard error.

Figure 2. Estimated age, period and cohort effects on view that people are helpful, people are fair and people can be trusted. Figure graphs results in Table 2.

the youngest two cohorts, each cohort born since the 1950s is less likely than the preceding cohort to agree that people are fair, people are helpful and people can be trusted. For instance, the probability of agreeing that people are helpful declines from between .55 and .56 for those born in the 1920s through 1940s to between .39 and .40 for those born in the 1980s. It is important to note, however, that the cohorts born before the 1920s are less trusting than those born in the 1920s through 1940s. Specifically, the probabilities of agreeing that people are helpful and that people can be trusted are notably smaller for cohorts born before the 1920s. Overall, the results show that trust in individuals, unlike informal and formal association, declined considerably across birth cohorts beginning with those born in the 1950s.

Discussion and Conclusions

The above results clarify the effects of age, period and birth cohort on key measures of social capital in the United States. Age is strongly associated with each measure of social capital. Older Americans have lower levels of informal association and higher levels of trust than do younger Americans. Age has a curvilinear effect on civic participation – the oldest and youngest adults report the fewest voluntary organization memberships. In contrast to the widespread view that social capital has declined, the results show relatively little change in either informal or formal association. While socializing with neighbors declined across periods, the frequency of socializing with friends outside of the neighborhood increased across birth cohorts. Supporting previous research on trust (e.g. Jennings and Stoker 2004; Robinson and Jackson 2001; Wilkes 2011),⁶ we find that trust declined across birth cohorts. Aside from a slight increase in trust among the 1980s cohorts, each cohort born since the 1950s is less trusting than the previous cohort. The decline in trust, however, is not solely due to differences across cohorts. There were also large period-based declines in trust. These results do not show declines in all indicators of social capital, but they do show that trust has declined considerably, and the decline in trust occurs both across cohorts and across periods.

Although the above results show that cohort changes do not always comport with theoretically motivated generations, there is considerable alignment with generational expectations. We aggregated the cohort effects reported in Tables 1 and 2 into the generations proposed by Putnam (2000) to facilitate interpretation of the results.⁷ **Figure 3** shows the number of standard deviations from the mean for each generation for continuous variables and the difference in predicted probability from the mean for each generation for dichotomous variables. While there is only moderate cohort-based variation in number of types of voluntary organization memberships (Table

Figure 3. Generational differences from mean. Figure aggregates results from Table 1 and Table 2. Figure shows number of standard deviations from mean for continuous variables (denoted by "#") and difference in probability from mean for dichotomous variables (denoted by "+").

1), Figure 3 suggests that members of the pre-boom generation belong to a relatively high number and wide range of voluntary organizations. Indeed, the 1922 and 1932 cohorts are the only two cohorts with an average number of organization memberships that is significantly greater than the mean (Table 1), and the pre-boom generation comprises the 1922, 1927 and 1932 cohorts. These results support Jennings and Stoker's (2004) comparison of cohorts using longitudinal data.

There is also relatively little cohort-based variation in the informal association measures of spending evenings with relatives and with neighbors (Table 1). Figure 3, however, suggests that members of the millennial generation are relatively likely to spend evenings with relatives. This finding should be interpreted with caution though since the 1987 cohort – one of the two cohorts that comprise the millennial generation – has a large standard error in the model of evenings with relatives, resulting in an insignificant effect. In contrast, there are large cohort effects on spending evenings with friends (Table 1), and these effects aggregate into clear growth in spending evenings with friends across generations (Figure 3). While the long civic generation falls .11 standard deviations below the mean in spending evenings with friends, the millennial generation is almost .13 standard deviations above the mean. In sum, although there are notable generational differences in formal and informal association, these changes do not suggest generational declines in social capital.

The picture is quite different when it comes to trust. As Figure 3 shows, there are considerable generational differences in trust, with the pre-boom generation being the most trusting. The probability of agreeing that people are helpful, fair and can be trusted is between .04 and .06 greater than the mean for the pre-boom generation. Members of Generation X and the millennial generation, on the other hand, report the lowest levels of trust. Specifically, their probability of agreeing that people are helpful, fair and can be trusted is between .05 and .10 below the mean. The identification of cohort-based changes in trust is pivotal for understanding changes over time. Since the baby boom generation and Generation X are far less trusting than the pre-boom generation, cohort replacement may lead to additional declines in trust in the near future (Robinson and Jackson 2001).

Putnam's thesis of the long civic generation (1995) proposes that declines in social capital occur following the generation that matured before and during the Great Depression and World War II, or what he calls the long civic generation. The above results provide mixed support for Putnam's thesis. When it comes to informal association, there is no support. In fact, contrary to Putnam's thesis, there are notable across-cohort *increases* in one of the measures of informal association. In regards to formal association, the results suggest that members of the pre-boom generation, but not the long civic generation, are relatively likely to be members of voluntary organizations. Similarly, the trust results show that the pre-boom generation, but not the long civic generation, are especially trusting. These results do support Putnam's contention that trust is declining across generations. In contrast to Putnam's thesis, however, Americans born in the years leading up to World War II are the most trusting, and those born before the pre-boom generation, including the long civic generation, are relatively untrusting and unlikely to belong to voluntary organizations. The baby boom generation is about as trusting as the long civic generation (Jennings and Stoker 2004).

Generalized trust is an attitude, an expression of confidence in one's social environment, and it reflects the belief that even though we cannot personally know everyone in our society, we can be confident that there are ties, represented by a set of shared values, norms and obligations, that bind each of us to one another (Grover 1997). Social interactions in communities and societies where generalized trust is prevalent operate more smoothly, and with less transaction cost, than when interactions are characterized by authority and suspicion (Fukuyama 1995). Generalized trust lubricates social transactions and allows actors to form the "thin" bonds that make collective problem solving possible (Putnam 2000). In heterogeneous, hierarchically stratified modern societies, the attitude that "we're all in this together" makes economic, political and social organization more manageable. As a result, the decline in trust will likely have a negative impact on the nation's

ability to collectively address a variety of important issues. Moreover, the finding that trust is declining across cohorts suggests that this trend is not easily reversible (Dalton 2005).

Although the above-mentioned findings on informal association do not suggest a decline in social capital, they do suggest potential problems for neighborhood cohesion. The period-based decrease in socializing with neighbors indicates a deterioration of social ties within neighborhoods. Such ties serve as resources that facilitate social organization in neighborhoods. Thus, a decrease in the social ties of a neighborhood leads to an increase in social disorganization, which is associated with a range of social problems. For instance, lack of social ties with neighbors is positively associated with perceived powerlessness and alienation (Geis and Ross 1998). On the other hand, the across-cohort increase in socializing with friends outside of the neighborhood has the potential to generate opportunities and resources for individuals and communities. The disproportionately high frequency of socializing with friends outside the neighborhood among younger cohorts indicates that social networks are expanding beyond neighborhoods. This has the potential to produce a different type of social capital that is a better resource in a globalized, information-driven society (Quan-Haase and Wellman 2004).

The results presented above extend our understanding of what is known about trends in social capital in three ways. First, the findings confirm that trust, but not formal or informal association, has declined, both across cohorts and across periods. Second, the low levels of trust among cohorts born before the pre-boom generation, and the low levels of trust observed in subsequent cohorts, suggest that the generation that matured in the years leading up to, during and shortly after World War II is unique in its ability to promote social capital. Third, though we have relatively little data on “millennials,” the results support recent research that suggests that Americans born since 1980 do not exhibit the same decline in social capital as do previous birth cohorts (Kiesa et al. 2007).

There are still many questions about the vitality of social capital. While our analysis shows that formal and informal association are relatively stable, we know little about the content of this association. What does the movement from interacting with neighbors to interacting with friends outside of the neighborhood mean for social capital? This change could have negative impacts on community health. Have the types of formal associations changed? And, if so, what are the implications for social capital? Some scholars argue that the growth of online and national as opposed to local organizations may be detrimental to social capital (e.g. Kraut et al. 1998; Putnam 2000), while others suggest these types of organizations provide alternative, yet useful, forms of social capital (e.g. Minkoff 1997; Wellman et al. 2001). While our analysis focuses on changes in social capital, future research can

build on these findings by exploring the factors that predict changes in social capital as well as the effects of changes in social capital. Most importantly, what are the long-term implications of the decline in trust?

Future research must address the consequences of the decline in trust for the wellbeing of individuals, communities and the nation. Americans continue to join voluntary organizations and to interact with friends and relatives, but they are less trusting of others in general. Without trust, formal and informal association may increasingly benefit only those who participate or a narrow range of beneficiaries rather than the wider community and nation.

Notes

1. Response rates based on Response Rate 5 defined by the American Association for Public Opinion Research (2008). See Smith, Marsden and Hout (2011) for more information on sampling and response rates.
2. We include an additional measure of informal association (spend evening with relatives) that Paxton (1999) does not include in her analysis.
3. We exclude unions because they do not always fit the criteria of voluntary associations. While membership in a union is often voluntary, there are some industries and regions of the United States where joining a union is not voluntary.
4. People are helpful based on the question, "Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?" People are fair based on the question, "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 can be trusted based on the question, "Generally speaking, would you say that most people can be trusted or that you can't be too careful in life?"
5. Age and period are coded into five-year intervals. The diagonal aspects of the age-by-period matrix define birth cohorts. Although this coding is not specific to theories of changes in social capital, the intervals are small enough to detect any expected changes.
6. Wilkes (2011) employs cross-classified random effects models in her analysis of trust. She also uses GSS data (1972-2008), but the only unconditional model (i.e., only age, period and cohort measures) she reports is of a trust scale rather than individual trust measures. Interestingly, Wilkes' unconditional model shows large across-cohort declines in trust, similar to our findings, but little period-based change, while we find large period-based declines in two of the three measures of trust. See Schwadel (2010) for a comparison of APC analyses using cross-classified models and intrinsic estimator models.
7. The long civic generation comprises the 1892 through 1927 cohorts, the pre-boom generation comprises the 1932 through 1942 cohorts, the baby boom generation comprises the 1947 through 1962 cohorts, Generation X comprises the 1967 through 1977 cohorts, and the millennial generation comprises the 1982 and 1987 cohorts.

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