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Short report

Social capital, ideology, and health in the United States

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ABSTRACT

Research from across disciplines has demonstrated that social and political contextual factors at the national and subnational levels can impact the health and health behavior risks of individuals. This paper examines the impact of state-level social capital and ideology on individual-level health outcomes in the U.S. Leveraging the variation that exists across states in the U.S., the results reveal that individuals report better health in states with higher levels of governmental liberalism and in states with higher levels of social capital. Critically, however, the effect of social capital was moderated by liberalism such that social capital was a stronger predictor of health in states with low levels of liberalism. We interpret this finding to mean that social capital within a political unit—as indicated by measures of interpersonal trust—can serve as a substitute for the beneficial impacts that might result from an active governmental structure.

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The social context in which the individual is embedded is an important predictor of individual health and well-being (Helliwell & Putnam, 2004). Contextual predictors of well-being include both economic and sociopolitical constructs (Inglehart, 2000; Inglehart, Foa, Peterson, & Welzel, 2008). Recently, social capital has emerged as a sociopolitical variable that has received considerable attention in the literature (e.g. Helliwell, 2006; Kawachi, Subramanian, & Kim, 2008; Rostila, 2007, 2013; Yip et al., 2007). While there has been some disagreement regarding the mechanisms linking social capital and health (see Szreter & Woolcock, 2004), research has consistently identified positive associations between social capital and individual-level well-being and health across both national (e.g. Helliwell, 2006; Helliwell & Putnam, 2004) and sub-national units (e.g. Subramanian, Kawachi, & Kennedy, 2001). One important cognitive indicator of social capital is interpersonal trust (Harpham, Grant, & Thomas, 2002) which is associated with well-being and health outcomes (Helliwell & Wang, 2010; Subramanian, Kim, & Kawachi, 2002).

Increasingly, research has also begun to examine whether political and policy-related factors are important contextual predictors of well-being (see Bambra, 2007; Eikemo, Bambra, Judge, & Ringdal, 2008; Esping-Andersen, 1990; Navarro, 2008; Navarro & Shi, 2001). In general, this research suggests that national-level

politics and policy impact health outcomes measured at the national level. In particular, evidence has begun to suggest that a governing philosophy which emphasizes the adoption of public policies that support health and well-being of individuals can help improve the health of citizens (Chung & Muntaner, 2006; Navarro, 2008; Navarro et al., 2006). Indicative of the increased awareness of the link between politics and health, a debate has recently emerged regarding the utility of “political epidemiology” in informing specific policies that foster health and well-being (see Mackenbach, 2013; Mackenbach, Hu, & Looman, 2013; Pega, Kawachi, Rasanathan, & Lundberg, 2013).

The purpose of the present manuscript is to extend research on the contextual predictors of well-being and health by simultaneously investigating social capital and political factors as predictors of health outcomes in the United States. We examine how social and ideological indices at the society level independently and interactively relate to individual health. To our knowledge, this has not been examined in any past research. Leveraging the variation across the 50 states in the U.S., we utilize state-level measures of social capital (as indicated by interpersonal trust) and politics (as indicated by a standard measure of state liberalism) to predict a variety of individual-level health outcomes measured through the 2010 Behavioral Risk Factor Surveillance System (BRFSS). In doing so, this manuscript contributes to theoretical discussions regarding the relationship between social capital and governance, as well as to practical discussions regarding the role of voluntary associations and governmental institutions in promoting health in the American context.

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Social capital, state liberalism, and health

Social capital and health

Social capital, defined by Coleman (1990) as the social structures, institutions, and information channels that facilitate collective action, can be measured in a number of ways (Lochner, Kawachi, & Kennedy, 1999). Social capital has been associated with improved health outcomes in a variety of contexts (Giordano, Björk, & Lindström, 2012; Han, 2013; though see Kennelly, O'Shea, & Garvey, 2003; Veenstra, 2000). While the mechanisms linking social capital and health are complex (Kawachi & Berkman, 2000; Szreter & Woolcock, 2004), these observed relationships may be due to the fact that the structural components of social capital (e.g. voluntary associations) are in place in a society, thus providing the institutions and social networks that promote the health of individuals living in that locality. Notably, the cognitive components of social capital (the perceptions people have of the existing social capital in their society; Harpham et al., 2002) have also been found to be positively related to health (Subramanian et al., 2002). These findings suggest that individual-level perceptions of social connectedness, perhaps indicative of actual experience with social connectedness, are associated with improved health.

One of the key cognitive components of social capital is social trust. Social trust has the potential to impact health in two ways (Rostila, 2007). First, trust might have compositional effects, where individuals who are trusting and who participate in social activities report higher levels of health. Second, trust might work through contextual effects, as individual-level trust impacts the socio-political environment, thereby indirectly impacting the health of individuals. In the U.S., research has shown that social trust can indeed impact health. Kawachi, Kennedy, and Glass (1999) examined trust as one component of social capital, and found that states with lower levels of trust have higher rates of self-reported poor health. Subramanian et al. (2002) similarly found that higher levels of community trust were associated with lower rates of poor health, though this relationship was attenuated by individual-level indicators of trust. In sum, these results are suggestive of a relationship between social capital—as indicated by trust—and health.

State liberalism and health

Because research has demonstrated that economic factors can impact health and well-being (e.g., Ecob & Davey Smith, 1999), researchers have sought to determine whether social programs that transfer resources to those in need are effective at reducing health disparities. Indeed, a considerable body of literature has examined the relationship between governmental policies and health. Primarily conducted using comparisons among European and North American nations (see also Abdul Karim, Eikemo, & Bambra, 2010), researchers have created typologies of welfare states to determine which types of policy regimes are associated with higher levels of health (Bambra, 2007; Eikemo et al., 2008; Esping-Andersen, 1990, 1999). This research has demonstrated that welfare state typologies can explain a considerable portion of variation in health outcomes at the national and individual levels.

Within the U.S., it may be possible to test whether these lessons can be applied at the state level. The federal nature of government in the U.S. is such that both states and the federal government have broad authority to develop policies with the potential to impact the health and well-being of individuals under their jurisdiction. Therefore, while the federal government may adopt policies to impact the well-being of individuals in all 50 states, the states are

free to develop social programs that go above and beyond federal programs in the promotion of health. Given that there is wide variation between the states in their ideological makeup and approach to governance, this inevitably means that some states will be more likely than others to adopt policies that utilize public resources to promote the general well-being of the individual and society. In the American lexicon, states with a citizenry that favors social spending on these programs—and that elects state and federal representatives who also favor such programs—are labeled liberal, or progressive. Often, these states elect members of the Democratic Party to office. Scholars of American state politics have developed indices that measure the extent to which state citizenries elect officials who favor the use of public resources to contribute to health and well-being (e.g. Berry, Ringquist, Fording, & Hanson, 1998). Using these indicators, research has shown that states that elect greater proportions of Democrats are more likely to adopt socially-directed policies such as health insurance programs (Volden, 2006), minimum wage laws (Whitaker, Herian, Larimer, & Lang, 2012), and anti-smoking policies (Shipan & Volden, 2006). To date, however, little research has examined the relationship between state-level ideology and health outcomes in the U.S. This stands in stark contrast to the sizable body of literature examining the effects of welfare policy in Europe (Eikemo et al., 2008; Esping-Andersen, 1990).

Hypotheses

In this manuscript, we propose that social capital and state ideology are separate non-overlapping predictors of health outcomes in the U.S. We pose two specific hypotheses regarding the main effects of these variables. First, consistent with past findings (Helliwell & Wang, 2010; Rostila, 2007, 2013; Subramanian et al., 2002; Yip et al., 2007), we hypothesize that high levels of social capital at the state level will lead to reports of better health at the individual level. Second, drawing on previous work (e.g. Navarro et al., 2006) we hypothesize that citizens in states with high levels of liberalism—as indicated by the number of elected Democrats and the propensity of those elected officials to support social democratic policies—will report higher ratings of health. We propose that both contextual effects will be present in predicting health even when accounting for the counterpart effect.

Investigating the independence of the effects of social capital and liberalism is critical because although these two factors have been shown to predict health and well-being when considered independently, they may well operate via overlapping mechanisms. For example, increases in social capital may provide the building blocks necessary to develop a liberal, more expansive government that is capable of crafting policies that enhance health and well-being (Hetherington, 2005). Conversely, active, liberal governments may generate a context capable of fostering greater social capital among their citizens (see, Bachmann & Inkpen, 2011).

However, in the American context, the relationship between social capital and liberalism may be somewhat unique at the state level, as structural components of social capital and social democratic ideals work to offset one another. Thus, we go beyond establishing the independence of the effects to also examine the interactive effects of social capital and ideology upon health. This is an important contribution because it may be that social capital and liberalism operate such that in the absence a liberal government, the structural components of social capital are able to achieve many of the same goals of a liberal government through the development of private, voluntary associations that promote health. In such instances, the impact of social capital may be enhanced in societies with low levels of liberalism and where social democratic policies are less likely to be adopted.

Data and method

Data

The dependent variables for this analysis were taken from the 2010 BRFSS. The BRFSS is conducted annually and surveys individuals in each of the 50 states on a wide range of health-related issues. Data from the BRFSS have been widely used in public health research (e.g., [Chen & Crawford, 2012](#); [Fujishiro, 2009](#); [Kawachi et al., 1999](#); [McGeary, 2013](#); [Roberts, 2012](#); [Subramanian et al., 2001](#)). The median response rate for the 2010 BRFSS was 54.6%, with a low of 39.1% in Oregon and a high of 68.8% in Nebraska. For the purposes of this manuscript, we focused on a limited number of questions within the survey. First, we examined a single question about general health: “Would you say that in general your health is: 1 = poor; 5 = excellent.” This general question of self-rated health is similar in content to questions used in previous inquiries of the contextual predictors of health ([Chen & Crawford, 2012](#); [Eikemo et al., 2008](#)).

Next, we examined three questions about the number of days in the last month that one experienced poor health: “How many days in the past 30 days was your physical health not good?”; “How many days during the past 30 days was your mental health not good?”; and “During the past 30 days, about how many days did poor physical or mental health keep you from doing your usual activities such as self-care work or recreation?” While these questions also pertain to self-rated health, they are slightly more objective in nature given that they ask respondents to actually assign a number to the number of days with poor health.

Finally, we used two measures of health risk. First was a self-report of the frequency with which one smokes cigarettes (1 = never; 3 = every day). Smoking frequency is a common measure of health risk (e.g. [Macy, Chassin, & Presson, 2013](#)), and serves as a useful indicator of health risk for our predictive models. Second was the body mass index (BMI) computed by the BRFSS. The measure represents a respondent’s bodyweight in kilograms by body height in meters squared (kg/m^2). This measure has been used previously in studies of health risk (e.g. [Chen & Crawford, 2012](#); [Kim, Subramanian, Gortmaker, & Kawachi, 2006](#)).

Together, this set of dependent variables provides an integrative picture of health: (a) a general self-evaluation of health; (b) specific aspects of physical and mental health operationalized as sick days; (c) behavioral risk measures (i.e., smoking) and outcomes (i.e., BMI). Further, we have a range of subjective measures to indicators of health risk that approach objectivity. The range of health indicators provides a more stringent test of our hypotheses than a single outcome which is generally accepted in past studies on this topic. The varying measurement scales of the dependent variables also provides a benefit, as three outcomes constitute count variables while the other three consist of ordinal variables. Thus, two different estimation procedures are utilized thereby further diversifying the test of our hypotheses.

We sought to examine the cognitive aspects of social capital. Therefore, we developed a state-level measure of trust to test the contextual effects of social capital upon individual health. To do so, we drew on the Gallup Healthways survey from 2009 aimed at representing 98% of the adult population within the United States. This survey was administered daily to no fewer than 1000 individuals throughout 2009 thus providing a rolling measure of interpersonal trust that spanned the entire year within each state. The sampling methods used to survey individuals yields a representative sample of each states’ population. Consequently, when aggregated up to the state level, it represents a highly valid indicator of the interpersonal trust within a state. Interpersonal trust was measured with a specific behavioral indicator: “If you lost a

wallet or a purse that contained two hundred dollars, and it was found by a neighbor, do you think it would be returned with the money in it, or not?” (yes = 1; no = 0). This measure of interpersonal trust is different from measures that ask about generalized trust (e.g., “Do you think that most people can be trusted?”) as it identifies neighbors from a locality as the source of trust and focuses on a specific behavior, whereas generalized trust may be more dispositional in nature stemming from ideas about how trustworthy people are in general regardless of the external setting. This measure of interpersonal trust has been used to assess social capital and interpersonal trust in other studies ([Helliwell & Wang, 2010](#); [Stolle, Soroka, & Johnston, 2008](#)) and is arguably preferable to others used in the literature (e.g. [Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997](#)). While the question asks respondents about their trust at the neighborhood level, the question yields a valid measure of state trust when all such responses are aggregated across a state. Based on previous research on the relationship between social capital and health (e.g. [Helliwell & Wang, 2010](#); [Subramanian et al., 2002](#)), we expected citizens in states with higher levels of aggregate interpersonal trust to report better overall health, fewer days with health problems, to smoke with less frequency, and to have lower BMI.

State ideology was measured with a widely-used indicator of state-level liberalism in 2010. Developed by [Berry et al. \(1998\)](#), the ideology measure draws on a variety of data sources to develop a state-level index of liberalism: interest group ratings of congressional members, an estimated ideology score of congressional incumbents and electoral challengers, and election results from congressional races within a state. These congressional-district level components are averaged to create a state-level estimate of the overall liberalism/conservatism of each of the 50 states. As this description indicates, the index is designed to indicate the extent to which members of the Democratic Party are elected within a state, as well as the extent to which those members favor socially liberal policies. The measure ranges from 0 to 100 with higher numbers representing higher levels of liberalism. The validity of this measure was established by [Berry et al. \(1998\)](#); see also [Berry, Ringquist, Fording, Hanson, & Klarner, 2010](#)). Research has shown that the measure can be used to predict the adoption of a wide array of social democratic programs at the state level including anti-smoking policies ([Shipan & Volden, 2006](#)), health insurance programs ([Volden, 2006](#)), and minimum wages ([Whitaker et al., 2012](#)). Given that more liberal governments in the U.S. are likely to adopt socially-directed policies ([Erickson, Wright, & McIver, 1993](#); [Wright, Erikson, & McIver, 1994](#)), we expected that citizens in states with more liberal governments to report better overall health, have fewer reported days with health problems, to smoke with less frequency, and to have lower BMI.

To account for the potential effects of other contextual variables upon health, we included two state-level variables in the predictive models. Specifically, we controlled for poverty rates (the percentage of the population under the poverty line) and education (the percentage of the population with a bachelor’s degree). Both variables were derived from the U.S. Census Statistical Abstracts. Together, the measures provide a representation of the resources available to a state to devote to social policies. Drawing on previous research (e.g. [Helliwell, 2003](#)) we expect that higher levels of poverty will be associated with lower levels of health, and higher levels of education to be associated with better reports of health.

In addition to the health-related questions included on the BRFSS, we utilized demographic data as individual-level control variables: age, sex, income, and education ([Ecob & Davey Smith, 1999](#); [Hiza, Casavale, Guenther, & Davis, 2013](#); [Kennedy, Kawachi, Glass, & Prothrow-Stith, 1998](#)). The final sample size for the study was 451,075; all study variables are presented in [Table 1](#).

Method

Due to the nature of the data (individuals nested within states) hierarchical linear modeling was used. That is, Level 1 variables (age, gender, income, education) and Level 2 variables (state poverty, state education, state liberalism, and state interpersonal trust) were used to predict a series of Level 1 outcome variables. The interaction term consisted of a multiplicative term between two Level 2 variables (liberalism*trust). BRFSS questions regarding general health, smoking frequency, and BMI were all normally distributed. Therefore, linear hierarchical modeling was used to predict these outcomes and the results of these analyses are presented together. Because questions regarding the number of days with physical health problems, mental health problems, and number of days with poor health were all count variables, Poisson regression was used to model these outcomes and the results of these analyses are also grouped together.

Results

Table 2 contains the results of the first set of predictive analyses. The results show that social capital and liberalism were both positive predictors of general health, while the interaction term yielded a significant negative coefficient. Each of the Level 1 variables was a significant predictor of general health, as was state-level education. Smoking frequency was also predicted by social capital and liberalism, such that each reduced the reported frequency of smoking. Again, the interaction term was significant with a positive coefficient. All four Level 1 variables were significant predictors; again, state-level education was also significant in the expected direction. Social capital, ideology and the interaction between the two variables were also significant predictors of BMI; the Level 1 variables and state-level education were also significant predictors.

To better interpret the interaction between social capital and liberalism, we plotted the interaction terms as shown in Fig. 1. In states with high levels of liberalism, social capital yielded only a minimal effect upon self-reported general health. However, in states with low levels of liberalism, the impact of social capital was much greater such that as interpersonal trust increased, so did self-reported health. A similar effect was observed in the graph predicting smoking frequency where state-level social capital appeared to have little impact upon smoking frequency in liberal states, but appeared to have a strong, negative impact on smoking frequency in less liberal states.

The next set of analyses is presented in Table 3. The results showed that social capital and state liberalism were both negative predictors of self-reported physical health problems and number of days with poor health. Liberalism was not, however, a significant predictor of mental health problems. The social capital*liberalism interaction term was a significant predictor of both physical health problems and number of days with poor health. Once again, the Level 1 variables exerted a significant impact on the various health outcomes; state-level education was a significant negative predictor of physical health problems and number of days with poor health.

The interaction effects are presented in Fig. 2. It can be seen that social capital had a minimal impact upon reports of physical health and poor health in states with high levels of liberalism. Consistent with the relationships observed above in Fig. 1, the impact of social capital was greater in those states with low levels of liberalism. In both cases, social capital exerted a negative influence on reports of poor health in states with low levels of liberalism.

Table 1
Descriptive statistics and correlations for study variables.

Level	#	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	1	2	3	
Individual	1	Age	56.79	16.49														
	2	Sex	1.62	0.48	0.035**													
	3	Income	5.58	2.19	-0.176**	-0.114**												
	4	Education	4.81	1.08	-0.112**	-0.036**	0.485**											
	5	General Health	3.40	1.11	-0.202**	-0.009**	0.394**	0.312**										
	6	Smoking Frequency	1.59	0.86	-0.303**	0.045**	-0.187**	-0.160**	-0.098**									
	7	BMI	27.72	5.99	-0.040**	-0.057**	-0.097**	-0.228**	-0.096**	-0.086**								
	8	Poor Physical Health	4.46	8.98	0.123**	0.035**	-0.273**	-0.163**	-0.535**	0.067**	0.122**							
	9	Poor Mental Health	3.44	7.80	-0.090**	0.064**	-0.203**	-0.105**	-0.287**	0.166**	0.085**	0.347**						
	10	Poor Health	5.22	9.38	0.094**	-0.019**	-0.270**	-0.151**	-0.432**	0.081**	0.104**	0.572**	0.328**					
State	1	Trust	0.79	0.05	-0.007**	-0.025**	0.070**	0.055**	0.071**	-0.025**	-0.018**	-0.043**	-0.037**	-0.050**				
	2	Poverty	14.51	3.68	0.015**	0.028**	-0.119**	-0.087**	-0.091**	-0.091**	0.035**	0.052**	0.036**	0.059**	-0.695**			
	3	Education	27.17	4.73	-0.034**	-0.020**	0.129**	0.114**	0.096**	-0.066**	-0.054**	-0.049**	-0.025**	-0.051**	-0.281**	-0.619**		
	4	Ideology	47.43	15.47	-0.015**	-0.011**	0.070**	0.077**	0.059**	-0.054**	-0.037**	-0.022**	-0.005**	-0.022**	0.034	-0.317*	0.564**	

Note. Sex: 1 = Male, 2 = Female; Individual income measured in \$10,000 increments; Education: 1 = Never attended school or kindergarten, 6 = College 4 years or more (College graduate); State poverty is the percentage of individuals below poverty line; State education is the percentage of individuals with at least a bachelor's degree. n = 451,075.
*p < .05; **p < .01.

Table 2
HLM predicting general health, smoking frequency and BMI.

		General health		Smoking frequency		BMI	
		Coefficient	p-Value	Coefficient	p-Value	Coefficient	p-Value
Individual	Intercept	0.886	0.080	3.261	<0.001	37.675	<0.001
	Age	-0.009	<0.001	-0.018	<0.001	-0.021	<0.001
	Sex	0.089	<0.001	0.036	<0.001	-0.770	<0.001
	Income	0.153	<0.001	-0.068	<0.001	-0.220	<0.001
	Education	0.152	<0.001	-0.073	<0.001	-0.349	<0.001
State	Trust	2.665	<0.001	-1.475	0.002	-9.739	0.011
	Poverty	-0.003	0.470	-0.006	0.239	-0.015	0.584
	Education	0.014	<0.001	-0.011	0.005	-0.055	0.006
	Ideology	0.030	<0.001	-0.017	0.008	-0.147	0.021
	Trust × Ideology	-0.035	0.002	0.019	0.010	0.176	0.024
Variance	<i>u</i>	0.004	<0.001	0.003	<0.001	0.152	
	<i>r</i>	0.991		0.643		35.211	

Note. General Health: “Would you say that in general your health is:” 1 = Poor; 5 = Excellent; Smoking Frequency: “Do you smoke cigarettes every day, some days, or not at all? (3-every day; 2-some days; 1-every day)”; BMI: Body Mass Index.

Discussion

The analyses presented here provide consistent evidence that measures of the ideological makeup of a state are predictive of a variety of health outcomes. As such, the results of this study contribute to the burgeoning field of “politics and health” in the U.S. context, as well as the broader study of the contextual predictors of well-being. Notably, the analyses demonstrate that the presence of a more liberal government is related to a higher rate of reported health, a lower rate of reported smoking, lower BMI, and fewer

numbers of days with poor health. In short, it appears that the presence of a liberal government—more elected Democrats who favor socially-directed policies—is associated with improved health and reductions in health risks. One potential explanation of this effect would be that the existence of liberalism is an indication that social policies designed to improve the health and well-being of citizens are more likely to be adopted. Such policies in turn are likely to help improve the health of citizens (Navarro et al., 2006).

Broadly, these findings may contribute to the literature on welfare politics and health by providing evidence that different

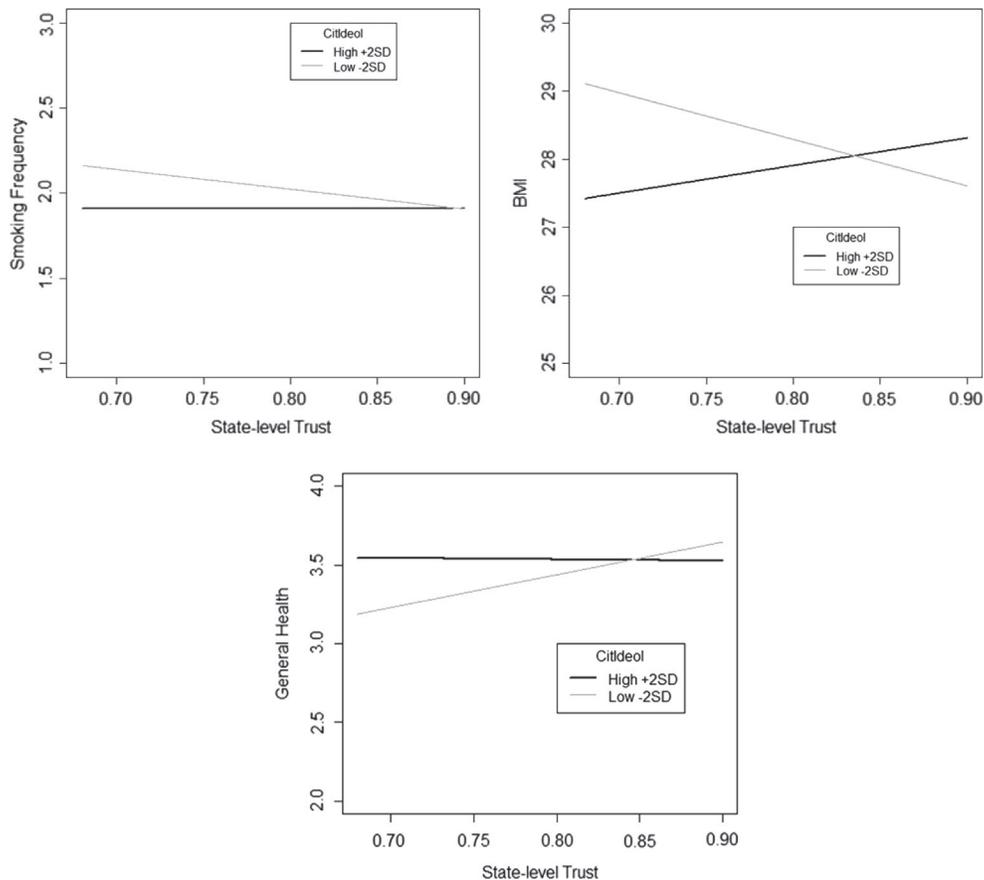


Fig. 1. Interactions between social capital, liberalism, and health.

Table 3
HLM predicting physical health, mental health, and poor health.

		Physical health		Mental health		Poor health	
		Coefficient	<i>p</i>	Coefficient	<i>p</i>	Coefficient	<i>p</i>
Individual	Intercept	3.791	<0.001	3.554	<0.001	4.014	<0.001
	Age	0.010	<0.001	-0.015	<0.001	0.006	<0.001
	Sex	0.013	0.196	0.247	<0.001	-0.153	<0.001
	Income	-0.206	<0.001	-0.188	<0.001	-0.190	<0.001
	Education	-0.069	<0.001	-0.045	<0.001	-0.046	<0.001
State	Trust	-2.683	0.001	-2.853	0.011	-2.833	0.002
	Poverty	0.004	0.506	0.001	0.870	0.008	0.239
	Education	-0.013	0.002	-0.007	0.140	-0.012	0.005
	Ideology	-0.028	0.008	-0.024	0.111	-0.032	0.008
	Trust × Ideology	0.034	0.008	0.031	0.093	0.039	0.010
Variance	<i>u</i>	0.009	<0.001	0.012	<0.001	0.010	<0.001

Note. Physical Health: “How many days during the past 30 days was your physical health not good?” (range 0–30); Mental Health: “How many days during the past 30 days was your mental health not good?” (range 0–30); Poor Health: “During past 30 days, about how many days did poor physical or mental health keep you from doing your usual activities such as self-care work or recreation?” (range 0–30).

ideological predispositions within American states can impact the health of individuals. Presumably, the policies adopted by such governments have the intended effect of improving the health of citizens. As such, the results suggest the presence of different types of welfare/policy regimes (Eikemo et al., 2008; Esping-Andersen, 1990, 1999) within states that contribute to the health of individuals. This possibility holds potentially important lessons regarding the study of politics and health in the U.S., particularly as debates over the applicability of political epidemiology continue (Bambra, 2007; Mackenbach, 2013; Mackenbach et al., 2013; Pega et al., 2013).

As expected, the present study also points to a positive impact of social capital upon health outcomes. The findings are consistent with previous examinations of the relationship between social capital and well-being (Rostila, 2007, 2013) and help validate existing studies that have used other measures of social capital to model individual health in the U.S. (e.g. Subramanian et al., 2002). The presence of cognitive aspects of social capital—as indicated by interpersonal trust—may signal the presence of social support networks visible to an individual. More broadly, the measure of trust used in this study may also signal the presence of voluntary organizations such as charities and foundations that exist to support the health and well-being of citizens in a geographic area (Newton, 2001). In addition, the presence of trust may also be indicative of a greater social support network for individuals, which

research has consistently been identified as a strong predictor of health and well-being (Cohen, Gottlieb, & Underwood, 2000; Cohen & Wills, 1985).

Importantly, we also found that there were interactive effects of liberalism and social capital on health suggesting that the impact of social capital is greater in states where liberalism is low, and where public institutions designed to enhance health and well-being are perhaps scarce. Conversely, the interactive effects provide evidence that the importance of social capital is reduced in those areas where government is predisposed to adopt policies which utilize public resources to enhance the health and well-being of individuals.

In sum, the results of this analysis hold important implications for the study of politics, social capital, and health. At the broadest level, this study adds to our practical understanding of the interplay of public institutions, private institutions, and health. Specifically, the results regarding social capital add credence to the argument that voluntary associations—perhaps in the form of private non-profit institutions—may be effective at improving the health of citizens (e.g., DeHaven, Hunter, Wilder, Walton, & Berry, 2004). At the same time, results provide further evidence that the existence of liberal governments help promote the health of citizens in a state, potentially via their emphasis on public policies designed to promote the welfare of individuals. Thus, the health of individuals may be bolstered in areas that have either high levels of social capital or more active government. However, this means that

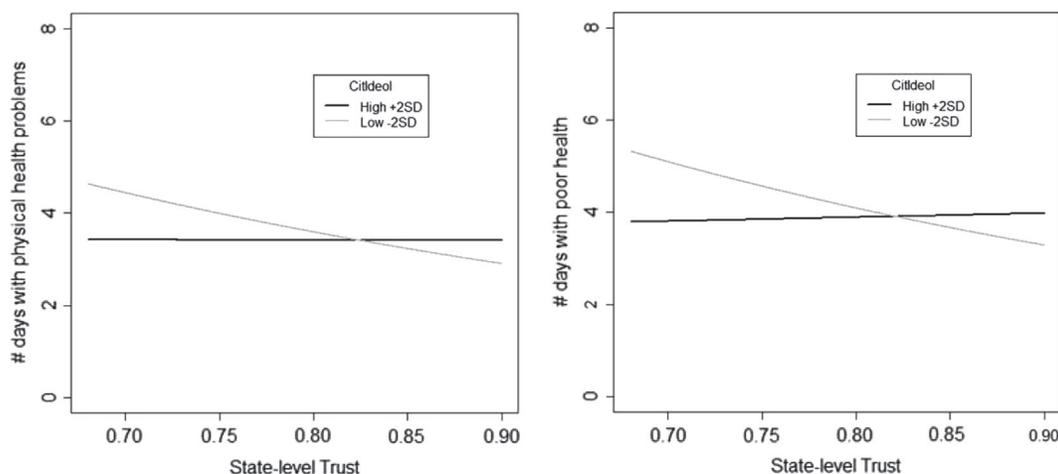


Fig. 2. Interactions between social capital, liberalism, and health.

individuals in areas with low levels of social capital and where governments may not be disposed to adopt social policies designed to improve health may be more likely to report reduced health due to the lack of public and private institutions designed to promote health. From a public health standpoint, it may be important to identify those geographic areas where liberalism and social capital are relatively low, closely monitor the health of individuals in those areas, and implement targeted health promoting interventions among those populations.

Limitations

This study utilized a widely-used, validated measure of ideology and a reliable measure of social capital from different sources to predict health outcomes at the individual level. Consequently, this study represents a rigorous test of our hypotheses. Nonetheless, this study contains a number of limitations that must be acknowledged. First, the cross-sectional data prevents us from decisively concluding that social capital or governmental liberalism directly improve health. Future longitudinal analyses will be important for answering such causal questions. Second, the self-reported nature of the outcome variables represents a potential weakness in the measurement of important health behaviors. While previous studies linking contextual factors to health have also utilized self-reported measures of health (Kawachi et al., 1999; Subramanian et al., 2002; Yip et al., 2007), future studies should seek to incorporate objective measures of health and health risks as outcome variables. Third, with regard to survey methodology, it is possible that non-respondents to the BRFSS are those that are less trusting of others. Consequently, it is possible that the BRFSS responses used as outcome variables in this study are biased toward more trusting individuals. Fourth, we relied upon a self-reported measure of interpersonal trust to measure the cognitive components of social capital present in a society. While we know that interpersonal trust can have contextual impacts on a society (Rostila, 2007) and is a predictor of health outcomes (Kawachi et al., 1999; Subramanian et al., 2002), future studies should seek to develop an even more refined indicator of state-level social trust and social capital. Fifth, the analyses presented here incorporated a limited number of contextual variables into the analyses. Thus, a variety of potential confounding variables were not included in the study. Future studies should attempt to account for a wider variety of the structural indicators of social capital at the state level, and should attempt to control for particular state-level policies in existence. Finally, the limitations of the state-level analyses presented here are recognized. It is quite possible that measures of social capital and ideology will vary considerably within some states. Future studies may provide a more granular examination by seeking to measure variables at the sub-state level.

Conclusion

The current research tested the independent and interactive influence of state-level social capital and political ideology on individual-level health outcomes across the U.S. As hypothesized, social capital and political ideology were both independent associated with health outcomes. Additionally, the variables interacted such that the importance of social capital in reducing negative health outcomes was enhanced in less liberal states where socially-oriented policies are less likely to be adopted. Thus, although social capital and liberalism appear to be independently associated with positive health outcomes, social capital may be a more critical determinant of health in areas where government is not predisposed to take an active role in the daily lives of citizens.

References

- Abdul Karim, S., Eikemo, T. A., & Bambra, C. (2010). Welfare state regimes and population health: integrating the East Asian welfare states. *Health Policy, 94*, 45–53.
- Bachmann, R., & Inkpen, A. (2011). Understanding institutional-based trust building processes in inter-organizational relationships. *Organization Studies, 32*, 281–301.
- Bambra, C. (2007). Going beyond *The three worlds of welfare capitalism*: regime theory and public health research. *Journal of Epidemiology and Community Health, 61*, 1098–1102.
- Berry, W. D., Ringquist, E. J., Fording, R. C., & Hanson, R. L. (1998). Measuring citizen and government ideology in the American States (1960–93). *American Journal of Political Science, 42*, 327–348.
- Berry, W. D., Ringquist, R. C., Fording, E. J., Hanson, R. L., & Klarnar, C. E. (2010). Measuring citizen and government ideology in the U.S. States: a re-appraisal. *State Politics and Policy Quarterly, 10*, 11–135.
- Chen, Z., & Crawford, C. A. G. (2012). The role of geographic scale in testing the income inequality hypothesis as an explanation of health disparities. *Social Science & Medicine, 75*, 1022–1031.
- Chung, H., & Muntaner, C. (2006). Political and welfare state determinants of infant and child health indicators: an analysis of wealthy countries. *Social Science & Medicine, 63*, 829–842.
- Cohen, S., Gottlieb, B., & Underwood, L. (2000). Social relationships and health. In S. Cohen, L. Underwood, & B. Gottlieb (Eds.), *Measuring and intervening in social support*. New York: Oxford University Press.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.
- Coleman, J. A. (1990). *Foundations of social theory*. Cambridge: Belknap.
- DeHaven, M. J., Hunter, I. B., Wilder, L., Walton, J. W., & Berry, J. (2004). Health programs in faith-based organizations: are they effective? *American Journal of Public Health, 94*, 1030–1036.
- Ecob, R., & Davey Smith, G. (1999). Income and health: what is the nature of the relationship? *Social Science & Medicine, 48*, 693–705.
- Eikemo, T. A., Bambra, C., Judge, K., & Ringdal, K. (2008). Welfare states regimes and differences in self-perceived health in Europe: a multilevel analysis. *Social Science & Medicine, 66*, 2281–2295.
- Erickson, R. S., Wright, G. C., & McIver, J. P. (1993). *Statehouse democracy: Public opinion and policy in the American States*. New York: Cambridge University Press.
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton, NJ: Princeton University Press.
- Esping-Andersen, G. (1999). *The three worlds of welfare capitalism*. Cambridge: Polity Press.
- Fujishiro, K. (2009). Is perceived racial privilege associated with health? Findings from the Behavioral Risk Factor Surveillance System. *Social Science & Medicine, 68*, 840–844.
- Giordano, G. N., Björk, J., & Lindström, M. (2012). Social capital and self-rated health—a study of temporal (causal)relationships. *Social Science & Medicine, 75*, 340–348.
- Han, S. (2013). Compositional and contextual associations of social capital and self-rated health in Seoul, South Korea: a multilevel analysis of longitudinal evidence. *Social Science & Medicine, 80*, 113–120.
- Harpham, T., Grant, E., & Thomas, E. (2002). Measuring social capital within health surveys: key issues. *Health Policy and Planning, 17*, 106–111.
- Helliwell, J. F. (2003). How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling, 20*, 331–360.
- Helliwell, J. F. (2006). Well-being, social capital, and public policy: what's new? *The Economic Journal, 116*, C34–C45.
- Helliwell, J. F., & Putnam, R. D. (2004). The social context of well-being. *Philosophical Transactions of the Royal Society, 359*, 1435–1446.
- Helliwell, J. F., & Wang, S. (2010). Trust and well-being. *International Journal of Wellbeing, 1*, 42–78. <http://dx.doi.org/10.5502/ijw.v1i1.9>.
- Hetherington, M. J. (2005). *Why trust matters: Declining political trust and the demise of American liberalism*. PressPrinceton, NJ: Princeton University.
- Hiza, H. A., Casavale, K. O., Guenther, P. M., & Davis, C. A. (2013). Diet quality of Americans differs by age, sex, race/ethnicity, income, and education level. *Journal of the Academy of Nutrition and Dietetics, 113*, 297–306.
- Inglehart, R. (2000). Globalization and postmodern values. *The Washington Quarterly, 23*, 215–228.
- Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: a global perspective (1981–2007). *Perspectives on Psychological Science, 3*, 264–285.
- Kawachi, I., & Berkman, L. F. (2000). Social cohesion, social capital, and health. In L. F. Berkman, & I. Kawachi (Eds.), *Social epidemiology* (pp. 174–190). New York: Oxford University Press.
- Kawachi, I., Kennedy, B. P., & Glass, R. (1999). Social capital and self-rated health: a contextual analysis. *American Journal of Public Health, 89*, 1187–1193.
- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health, 87*, 1491–1498.
- Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health: a decade of progress and beyond. In I. Kawachi, S. V. Subramanian, & D. Kim (Eds.), *Social capital and health* (pp. 1–25). New York: Springer.
- Kennedy, B. P., Kawachi, I., Glass, R., & Prothrow-Stith, D. (1998). Income distribution, socioeconomic status, and self-rated health in the United States: multilevel analysis. *British Medical Journal, 317*, 917–921.

- Kennelly, B., O'Shea, E., & Garvey, E. (2003). Social capital, life expectancy and mortality: a cross-national examination. *Social Science & Medicine*, *56*, 2367–2377.
- Kim, D., Subramanian, S. V., Gortmaker, S. L., & Kawachi, I. (2006). U.S. state- and county-level social capital in relation to obesity and physical inactivity: a multilevel, multivariable analysis. *Social Science & Medicine*, *63*, 1045–1059.
- Lochner, K., Kawachi, I., & Kennedy, B. P. (1999). Social capital: a guide to its measurement. *Health & Place*, *5*, 259–270.
- Mackenbach, J. P. (2013). Response to Pega, Kawachi, Rasanathan, and Lundberg (2013). *Social Science & Medicine*, *93*, 180.
- Mackenbach, J. P., Hu, Y., & Looman, W. N. (2013). Democratization and life expectancy in Europe, 1960–2008. *Social Science & Medicine*, *93*, 166–175.
- Macy, J. T., Chassin, L., & Presson, C. C. (2013). Predictors of health behaviors after the economic downturn: a longitudinal study. *Social Science & Medicine*, *89*, 8–15.
- McGeary, K. A. (2013). The impact of state-level nutrition-education program funding on BMI: evidence from the behavioral risk factor surveillance system. *Social Science & Medicine*, *82*, 67–78.
- Navarro, V. (2008). Politics and health: a neglected area of research. *European Journal of Public Health*, *18*, 354–355.
- Navarro, V., Muntaner, C., Borrell, C., Benach, J., Quiroga, A., Rodríguez-Sanz, M., et al. (2006). Politics and health outcomes. *Lancet*, *368*, 1033–1037.
- Navarro, V., & Shi, L. (2001). The political context of social inequalities and health. *Social Science & Medicine*, *52*, 481–491.
- Newton, K. (2001). Trust, social capital, civil society, and democracy. *International Political Science Review*, *22*, 201–214.
- Pega, F., Kawachi, I., Rasanathan, K., & Lundberg, O. (2013). Politics, policies, and population health: a commentary on Mackenbach, Hu and Looman (2013). *Social Science & Medicine*, *93*, 176–179.
- Roberts, S. C. M. (2012). Macro-level gender equality and alcohol consumption: a multi-level analysis across U.S. States. *Social Science & Medicine*, *75*, 60–68.
- Rostila, M. (2007). Social capital and health in European welfare regimes: a multilevel approach. *Journal of European Social Policy*, *17*, 223–239.
- Rostila, M. (2013). *Social capital and health inequality in European welfare states*. New York: Palgrave Macmillan.
- Shipan, C. R., & Volden, C. (2006). Bottom-up federalism: the diffusion of anti-smoking policies from U.S. cities to states. *American Journal of Political Science*, *50*, 825–843.
- Stolle, D., Soroka, S., & Johnston, R. (2008). When does diversity erode trust? Neighborhood diversity, interpersonal trust and the mediating effect of social interactions. *Political Studies*, *56*, 57–75.
- Subramanian, S. V., Kawachi, I., & Kennedy, B. P. (2001). Does the state you live in make a difference? Multilevel analysis of self-rated health in the US. *Social Science & Medicine*, *53*, 9–19.
- Subramanian, S. V., Kim, D. J., & Kawachi, I. (2002). Social trust and self-rated health in US communities: a multilevel analysis. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *79*, S21–S34.
- Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *International Journal of Epidemiology*, *33*, 650–667.
- Veenstra, G. (2000). Social capital, SES and health: an individual-level analysis. *Social Science & Medicine*, *50*, 619–629.
- Volden, C. (2006). States as policy laboratories: emulating success in the children's health insurance program. *American Journal of Political Science*, *50*, 294–312.
- Whitaker, E. A., Herian, M. N., Larimer, C. W., & Lang, M. (2012). The determinants of policy introduction and bill adoption: examining minimum wage increases in the American States, 1997–2006. *Policy Studies Journal*, *40*, 626–649.
- Wright, G. C., Erikson, R. S., & McIver, J. P. (Summer 1994). The impact of state party ideology. *The American Review of Politics*, 315–327.
- Yip, W., Subramanian, S. V., Mitchell, A. D., Lee, D. T. S., Wang, J., & Kawachi, I. (2007). Does social capital enhance health and well-being? Evidence from rural China. *Social Science & Medicine*, *64*, 35–49.