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# Understanding Social Networks

Dora L. Costa\*

## Heroes and Cowards: The Social Face of War

When are men willing to sacrifice for the common good? What are the benefits to men of friendship? How do communities deal with betrayal? And what are the costs and benefits of being in a diverse community? Matthew Kahn and I answer these questions in an interdisciplinary book, *Heroes and Cowards: The Social Face of War* (forthcoming, Princeton University Press for NBER). Building on a series of joint NBER Working Papers, we weave a single narrative from the life histories of 41,000 Union Army soldiers, diaries and letters, and government documents.

One summer we both read Robert Putnam's thought-provoking book *Bowling Alone* (2000). We were fascinated by Putnam's account of the decline in American civic engagement over time. Putnam emphasized the growing popularity of television as a pivotal cause of the decline in community participation, but we wondered whether an unintended consequence of the rise of women working in the paid labor market was that PTAs and neighborhood associations lost their "volunteer army." We started to write a paper testing whether the rise in women's labor force participation explained the decline in residential community participation.<sup>1</sup> To our surprise, we found little evidence supporting this claim. Instead, our analysis of long-run trends in volunteering, joining groups, and trust suggested that, all else equal, people who live in cities with more

income inequality were less likely to be civically engaged. These results contributed to a growing literature in economics documenting the disturbing fact that people are less likely to be "good citizens" when they live in more diverse communities.

Our early work on community participation attracted academic and popular media attention. Although we were flattered, we were aware that our measures of "civic engagement" bordered on "small potatoes." We were examining low stakes outcome measures such as entertaining in the household, joining neighborhood associations, and volunteering for local clubs.

In the summer of 2001, we realized that the American Civil War, 1861 to 1865, provided the ideal "laboratory." The setting was high stakes—roughly one out of every six Union Army soldiers died during the war. Unlike people in civilian life today, Union Army soldiers could not pick and choose their communities. Even when they signed up with friends, some men ended up in homogenous units and others in heterogenous units and they could not leave their units unless they deserted. Their "communities" were the roughly 100 men in their units—men they lived with 24 hours a day.

We answer the question of when men are willing to sacrifice for the common good by examining why men fought in the Civil War.<sup>2</sup> During this war most soldiers stood by their comrades even though a rational soldier would have deserted. Punishments were too rare and insufficiently severe to deter men from deserting. What then motivated these men to stand their ground? Was it their commitment to the cause, having the "right stuff," high morale, officers, or comrades? We examine all of these explanations and find that loyalty to comrades trumped cause, morale,

and leadership. But loyalty to comrades extended only to men like themselves—in ethnicity, social status, and age.

Sacrifices for the common good are costly. Standing by their comrades raised men's chances of dying. What then are the benefits to men of friendship? We can reply by looking at who survived the extreme conditions of Civil War POW camps.<sup>3</sup> We can see the effects of age, social status, rank, camp population, and the presence of own officers on survival. We can also see that the fellowship of their comrades helped soldiers survive POW camps and, the deeper the strength of ties between men, the higher their probability of survival. Ties between kin and ties between comrades of the same ethnicity were stronger than ties between other men from the same company.

If loyalty toward your own kind is admirable, how do communities deal with betrayal? In the Civil War companies were raised locally and hometowns were well aware of who was a "coward" and who was a "hero" during the war. Some towns were pro-war and others anti-war. Men who betrayed their pro-war neighbors by deserting moved away, driven out by shame and ostracism.<sup>4</sup> Community codes of conduct are re-enforced not just by loyalty but also by punishments.

By examining men's lives during the war we saw that more diverse communities are less cohesive. Their members are less willing to sacrifice and derive fewer benefits from being part of the community. Are there then any benefits to being in a diverse community? When we look at the lives of black soldiers after the Civil War we can understand the tensions between the short-run costs of diversity and its long-run benefits. Men did not like to serve with those who were different from them, so

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much so that they were more likely to desert, but in the long-run the ex-slaves who joined the Union Army learned the most from being in units with men who were different from themselves.<sup>5</sup>

Whether diversity fosters understanding or distrust is a long standing question in the social sciences that has become particularly timely with rising immigration and growing income inequality. We find that the same types of social network variables that determined who deserted from the Union Army and who survived POW camps predict commitment to organizations in civilian life today. Organizational membership is lower in metropolitan areas with greater racial and ethnic diversity and higher income inequality; support for income redistribution is higher when the aid recipients are from the same racial and ethnic group; and laboratory games show that trust is higher when the players look like each other.<sup>6</sup>

Our work emphasized the importance of ethnicity, state of birth, occupation, age, and kinship for the formation of social ties in the past. We are not claiming these were the only factors that influenced the formation of social ties among Union Army soldiers. Nor are we claiming that these factors are as important now as they were in the past. Race and ethnicity no longer predetermine friendships and marriages. Although racial and ethnic diversity still affect community participation, they have become less important relative to income.<sup>7</sup>

Although people want to be friends with others they can relate to, they may learn the most from those who are different. In recent Supreme Court cases a brief filed by eight universities emphasized that students educate each other, that cross-racial learning takes place, and that this learning is valued by students and by the labor market. Nevertheless, few large-scale studies actually measure the benefits of diversity in either a university or an employment setting and campus newspaper accounts suggest large amounts of racial self-segregation.

Like college students, Civil War soldiers preferred to interact with others who looked like them. For white Union Army soldiers, similar men were those of the

same ethnicity, occupation, and age group. For black soldiers, similar men were those from the same state or even plantation and from the same slave or free background. But, in the long run (and studies of college roommates have never been able to examine the long run), Union Army soldiers benefited from their interactions with men who were different. Freeman taught the former slaves to write and helped them forge a freeman's identity. Both slaves and freemen first learned of new cities and states from their comrades who had come from those places.

There is increasing interest in building "good" communities today. The World Bank, on its social capital Web site, writes "Increasing evidence shows that social cohesion—social capital—is critical for poverty alleviation and sustainable human and economic development" (<http://web.worldbank.org>). This social capital has both positive and negative consequences. Union Army deserters were never re-integrated into their communities, not because of legal punishments, but because of shame and ostracism.

We have highlighted the tensions between cohesion and diversity. A community of similar people is likely to be cohesive and its members are likely to sacrifice time, effort, and even their lives for each other. But in a diverse community members can learn from one another.

## Health and Social Networks

Our research agenda on social networks does not end with our book. Our new NIA-funded research combines our interests in social networks with my research agenda on the determinants of health at older ages. Using data on Union Army veterans, I find that a large proportion of the poor health and longevity experience of men in the past relative to men in more recent cohorts can be explained by such early life experiences as infectious disease, poor nutritional intake, and physical job demands. For example, Joanna Lahey and I found that season of birth had a strong effect on the older age mortality rates of men who lived to age 60. This effect was much more pro-

nounced among Union Army veterans than it is among more recent populations, probably because of the elimination of the summer-time diarrheal deaths with the improvement in sanitation and because of the improvement in vitamin levels among women pregnant during the long winter months.<sup>8</sup> Lorens Helmchen, Sven Wilson, and I found that being born in the second relative to the fourth quarter predicted the probability of Union Army veterans developing arteriosclerosis at older ages, perhaps because nutritional deprivation in utero leads to compromised immune function and higher inflammation rates.<sup>9</sup>

If older age health and longevity is partially determined by earlier life conditions, then senescent processes may be plastic and highly controllable and life expectancy rates are likely to continue to rise until improvements in early life conditions have been exhausted. Older age mortality rates may therefore not decrease as rapidly for the post-baby-boom cohort as they have for earlier cohorts. However, because of rising incomes, the value of even marginal improvements in life expectancy is now higher than the value of the very large increases in life expectancy experienced at the beginning of the twentieth century.<sup>10</sup>

Early life conditions may also partially explain observed racial health disparities in modern populations and among Union Army veterans. Data on Union Army veterans reveal very high rates of arteriosclerosis among black relative to white veterans, differences that can be explained by blacks' greater life long burden of infectious disease.<sup>11</sup> The effects of infectious disease rates are clearly observed in black-white differentials in birth weights, prematurity rates, and stillbirths among children born in the first third of the twentieth century under the auspices of Johns Hopkins University Hospital.<sup>12</sup>

Economic and epidemiological research has linked social networks to health. People who report themselves to be socially isolated, both in the number and quality of their personal relationships face a higher mortality risk from all causes and from several infectious, neoplastic, and cardiovascular diseases. A large body of literature links stress, whether in the form

of war, natural disasters, divorce, lack of control on the job, or even disrupted sleep patterns, to cardiovascular disease. Social networks could either mitigate or accentuate the effects of stress. They could mitigate the effects of stress through beneficial effects on psychological and physical well-being. But, they could accentuate the effects of stress if the stressor leads to the loss of friends or family (for example the well-established effect of death of a spouse on the mortality of a survivor).

By studying how the interactions between unit cohesiveness and combat mortality, and between POW camp experience and the strength of social networks within the POW camp, affected older age mortality and morbidity, we can investigate the interaction between stress and social networks in one of the few human populations to provide us with measures of stress, of long-run outcomes, and of exogenous social networks. We are finding that being in a more cohesive company reduced the negative, long-term consequences of wartime stress on older age mortality and morbidity, particularly from cardiovascular causes.<sup>13</sup> Focusing on the role of stress factors in health and mortality may be a fruitful line of research, particularly as we exhaust the gains from public health advances.

<sup>1</sup> D.L. Costa and M.E. Kahn, "Understanding the American Decline

in Social Capital, 1952–1988," NBER Working Paper No. 8295, May 2001, and *Kyklos*, 56(1) (Fasc 1 2003), pp. 17–46.

<sup>2</sup> D.L. Costa and M.E. Kahn, "Cowards and Heroes: Group Loyalty in the American Civil War," NBER Working Paper No. 8627, December 2001, and *Quarterly Journal of Economics*, 118(2) (May 2003), pp. 519–48.

<sup>3</sup> D.L. Costa and M.E. Kahn, "Surviving Andersonville: The Benefits of Social Networks in POW Camps," NBER Working Paper No. 11825, December 2005, and *American Economic Review*, 97(4) (2007), pp. 1467–87.

<sup>4</sup> D.L. Costa and M.E. Kahn, "Shame and Ostracism," NBER Working Paper No. 10425, April 2004, and "Deserters, Social Norms, and Migration," *Journal of Law and Economics*, 50 (2007), pp. 323–53.

<sup>5</sup> D.L. Costa and M.E. Kahn, "Forging a New Identity: The Costs and Benefits of Diversity in Civil War Combat Units for Black Slaves and Freemen," NBER Working Paper No. 11013, December 2004, and *Journal of Economic History*, 66(4): pp. 936–62.

<sup>6</sup> For a summary of social capital research see D. L. Costa and M.E. Kahn, "Civic Engagement and Community Heterogeneity," *Perspectives on Politics*, 1(1) (March 2003).

<sup>7</sup> D.L. Costa and M.E. Kahn, "Understanding the American Decline in Social Capital, 1952–1988".

<sup>8</sup> D.L. Costa and J.N. Lahey, "Becoming Oldest-Old: Evidence from Historical U.S. Data," NBER Working Paper No. 9933, September 2003, and *Genus*, 61(1) (2005), pp. 21–38, and D.L. Costa and J.N. Lahey, "Predicting Older Age Mortality Trends," *Journal of the European Economic Association*, 3(2–3) (March–April 2005).

<sup>9</sup> D.L. Costa, L. Helmchen, and S. Wilson, "Race, Infection, and Arteriosclerosis in the Past," *Proceedings of the National Academy of Sciences*, 104 (2007), pp. 13219–24. Written for the NBER conference, *Economics of Health and Mortality*, <http://www.nber.org/books.html>

<sup>10</sup> D.L. Costa and M.E. Kahn, "Changes in the Value of Life, 1940–1980," NBER Working Paper No. 9396, December 2002, and *Journal of Risk and Uncertainty*, 29(2) (September 2004), pp. 159–80.

<sup>11</sup> D.L. Costa, L. Helmchen, and S. Wilson, "Race, Infection, and Arteriosclerosis in the Past".

<sup>12</sup> D.L. Costa, "Race and Pregnancy Outcomes in the Twentieth Century: A Long-Term Comparison," NBER Working Paper No. 9593, March 2003, and *Journal of Economic History*, 64(4) (December 2004), pp. 1056–86.

<sup>13</sup> D.L. Costa and M.E. Kahn, "Health, Stress, and Social Networks: Evidence from Union Army Veterans," NBER Working Paper No. 14053, June 2008.

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David G. Blanchflower is a Research Associate in the NBER's Program on Labor Studies and the Bruce V. Rauner Professor of Economics at Dartmouth College. He is also a Visiting Professor at the University of Stirling and a member of the Monetary Policy Committee at the Bank of England.

Blanchflower obtained his BA at the University of Leicester, a Masters from the University of Wales, and PhD from the University of London. He received an honorary Doctor of Letters in 2008 from the University of Leicester and will be awarded

an honorary Doctor of Science degree at the University of London in 2009.

His main areas of research interest are happiness economics; wage determination; unemployment; discrimination; trade unions, and entrepreneurship. His book *The Wage Curve* with Andrew Oswald won Princeton University's Richard A. Lester prize.

Blanchflower has two daughters and a son.

