

Self-Rated Health Trajectories in the United States and the United Kingdom: A Comparative Study

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The cause of poorer health of the US population compared with that of other developed nations has been much debated in recent years.^{1–3} Some suggest that differences in population health stem from restricted access to resources at the individual level and public underinvestment in the human, physical, and social fabric of society within countries, including health and welfare policies.⁴ The more generous, comprehensive, and universal state programs of social democratic welfare governments have already been compared with the more financially limited and less accessible programs in the United States.^{5–7} Yet, despite these insights, at least 2 significant issues remain relatively unexplored in comparative research on socioeconomic inequalities in health. First, most comparative work on health differences has focused on aggregate measures of inequality.^{8–11} However, if we are to better understand how policies contribute to, maintain, and reduce social inequalities in health, we need between-country comparisons of health and inequality at the individual level.

A second issue is that most comparative research relies on cross-sectional data^{12–14} despite widespread acknowledgment that socioeconomic conditions and health have a complex time-dependent relationship¹⁵ and analysis of this relationship requires longitudinal repeated-measures data. For example, recent research on individual health change or trajectories shows that health patterns are more variable than previously thought. On average, physical health and function may decline with age,¹⁶ but there is considerable individual variation in this overall pattern.^{17–20} This suggests that the population health disadvantage in the United States at one point in time may tell us very little about national differences in health across individuals' life courses. Because health has stable and dynamic components, we investigated patterns of population health over time within a given

Objectives. We reviewed literature on comparative social policy and life course research and compared associations between health and socioeconomic circumstances during an 11-year period in the United States and the United Kingdom.

Methods. We obtained data from the US Panel Study of Income Dynamics and the British Household Panel Survey (1990–2002). We used latent transition analysis to examine change in self-rated health from one discrete state to another; these health trajectories were then associated with socioeconomic measures at the beginning and at the end of the study period.

Results. We identified good and poor latent health states, which remained relatively stable over time. When change occurred, decline rather than improvement was more likely. UK populations were in better health compared with US populations and were more likely to improve over time. Labor market participation was more strongly associated with good health in the United Kingdom than in the United States.

Conclusions. National policies and practices may be keeping more US workers than UK workers who are in poor health employed, but British policies may give UK workers the chance to return to better health and to the labor force. (*Am J Public Health*. 2007;97:812–818. doi:10.2105/AJPH.2006.092320)

country and differences in these patterns between countries. This approach also allowed us to make stronger statements about the social causes and consequences of different health patterns.

We compared health trajectories and their associations with socioeconomic variables in the United States and the United Kingdom during the 1990s. The United Kingdom is an interesting comparator because, like the United States, it is considered to be a liberal welfare state,^{21,22} although some of its policies are more closely shared with European social democratic welfare states. Recent UK welfare reforms resemble the means-testing and welfare-to-work programs that now dominate the US social assistance agenda, but the provision of universal health care and child benefits in the United Kingdom are just 2 examples of important differences in agendas.²³ Furthermore, although poverty rates in the United Kingdom and the United States were higher throughout the 1990s compared with the Organisation for Economic Co-operation and Development average, the United

Kingdom ranked squarely alongside other European countries in lifting those at risk out of relative income poverty via tax and benefits systems.^{24,25} During the 1990s, however, there was convergence between US and UK welfare reforms.¹⁵ Although we did not test specific hypotheses associated with this development, the reform period provides the context within which we interpreted population health patterns in the 2 countries and some possible causes for these patterns.

When comparing health trajectories, we asked 2 questions: what are patterns of individual health change in the United States and the United Kingdom, and how are these patterns associated with antecedent and subsequent socioeconomic circumstances? We used data from the US Panel Study of Income Dynamics (PSID) and the British Household Panel Survey (BHPS) to investigate individual health patterns with a latent transition model.²⁶ This approach built upon earlier work in which we modeled individual growth curves as a continuous function of self-rated health over time.^{27,28} However,

health trajectories may be better represented as movement between discrete stages that involve not only stable periods or unidirectional change but also intermittent deterioration or improvement. We asked whether and how health changes during an 8-year period, and whether the reciprocal association between health trajectories and socioeconomic circumstances over time can inform us about the processes that underlie cross-sectional national differences in health.

METHODS

Data

The data for our study were from the 1990 to 2001 waves of the PSID and the 1991 to 2002 waves of the BHPS, which are ongoing studies of representative samples of adults and children living in families in the United States and the United Kingdom, respectively.^{29,30} The PSID began with a national sample of nearly 5000 households in 1968. Individuals were interviewed annually until 1997 and biannually thereafter. The PSID sample (n=4042) comprised household heads and their partners who responded to the self-reported health question, were aged 25 to 55 years in 1991, and who had complete covariate data in 1990. The BHPS was initiated in 1991 and is an annual survey of approximately 5500 private households composed of approximately 9000 individuals aged 16 years and older. The BHPS sample (n=4116) comprised household members aged 25 to 55 years in 1992 who had self-reported health data that year and complete covariate data in 1991.

Measures

In the PSID, respondents were asked, "Would you say your health in general is excellent, very good, good, fair, poor?" This question was asked each year from 1990 to 2001, except in 1998 and 2000. In the BHPS, respondents were asked, "Please think back over the last 12 months about how your health has been. Compared with people of your own age, would you say that your health has on the whole been excellent, good, fair, poor, very poor?" This question was asked annually from 1991 to 2002, except in 1999

TABLE 1—Respondents' Self-Rated Health Reported at the Initial Survey Interview and Odds Ratios for Reporting Poor Health 1 Year Later, by Socioeconomic Characteristics: PSID, United States, 1990, and BHPS, United Kingdom, 1991

Socioeconomic Characteristics	1990 PSID (N = 4042)		1991 BHPS (N = 4116)	
	% (SE)	OR (95% CI) ^a	% (SE)	OR (95% CI) ^a
Self-rated health (PSID rating/BHPS rating)				
Excellent/excellent	30.23 (1.11)		33.46 (0.77)	
Very good/good	37.16 (0.97)		45.97 (0.76)	
Good/fair	25.97 (1.04)		14.75 (0.56)	
Fair/poor	5.66 (0.51)		4.48 (0.29)	
Poor/very poor	0.99 (0.18)		1.34 (0.18)	
Employment status				
Employed	92.62 (0.60)	1.00 (reference)	80.57 (0.69)	1.00 (reference)
Unemployed	2.87 (0.30)	1.16 (0.69, 1.96)	5.08 (0.38)	1.49 (0.96, 2.32)
Economically inactive ^b	4.51 (0.44)	1.31 (0.85, 2.03)	14.35 (0.56)	1.73 (1.25, 2.41)
Low income ^c	20.00 (1.19)	1.51 (1.21, 1.89)	20.00 (0.86)	1.75 (1.34, 2.30)
Routine or semiroutine occupation ^d	28.05 (1.44)	1.73 (1.38, 2.17)	29.09 (0.95)	1.84 (1.44, 2.34)

Note. PSID = Panel Study of Income Dynamics; BHPS = British Household Panel Survey, OR = odds ratio, CI = confidence interval.

^aFor reporting poor health 1 year later.

^bEconomically inactive includes those persons who are early retirees, permanently or temporarily disabled, involved in family care or keeping house, students, involved in workfare or government training schemes, in prison, or involved in other nonwork activities.

^cLow income was defined as those persons in the bottom 20% of adjusted household income. Adjusted incomes were derived by dividing household income by the square root of household size.

^dRoutine and semiroutine occupations are regulated by short-term labor contracts, exchange wages for labor, are highly unsupervised, and have little or no need for employee discretion.

when the wording of the question was identical to that of the PSID.

Table 1 shows respondents' descriptions of their health at the beginning of the observation period. Without a "very good" category, more of the UK respondents (33.5%) reported their health as excellent compared with US respondents (30.2%), but fewer US respondents rated their health as less than good (6.7%) compared with UK respondents (20.6%). Differences in the marginal distributions of health measures that were inconsistent with reports of poorer health in the US together with differences in response category labels suggest that the 2 variables were not equivalent measures in their raw states. This evidence underpinned the rationale for examining latent health rather than the observed responses for this comparative study. To account for the different health measure in the 1999 BHPS and the skipped interview years of the PSID, we used self-rated health for alternate years of the PSID (1991 to 1999) and the BHPS

(1992 to 2000) to analyze health transitions during an 8-year period.

Socioeconomic variables were measured in 1990 and 2000 for the PSID and in 1991 and 2001 for the BHPS. Respondents were classified as employed, unemployed, or economically inactive. The economically inactive included those who were not employed because they were early retirees, permanently or temporarily disabled, involved in family care or keeping house, students, involved in workfare or government training schemes, in prison, or involved in other nonwork activities (such as unpaid charity work). Low income was defined as being in the bottom 20% of adjusted household income. Adjusted incomes were derived by dividing household income by the square root of household size.³¹ We used routine or semiroutine occupation as a dummy variable. Employees in routine and semiroutine occupations are regulated by short-term labor contracts, exchanging wages for labor in highly supervised conditions with little or no

need for employee discretion. For the UK data, this variable was defined by the Office of National Statistics classification of an individual's current or most recent occupation.³² For the US data, it was identified by a 3-digit occupation code from the *Census of Population Alphabetical Index of Industries and Occupation*.³³ Self-reports of specific health problems were asked of respondents in both surveys (in 2001 for the PSID and 2002 for the BHPS), which enabled us to validate our latent class analysis of self-rated health. The following conditions were recorded in both surveys: cardiovascular disease, diabetes, cancer, lung disease, and self-reported emotional problems.

Analysis

We analyzed health trajectories with latent transition analysis (LTA), which examines movement into and out of latent health classes over time, and we considered the socioeconomic circumstances associated with this movement.

LTA requires a number of discrete steps. First, an optimal number of latent classes, or unobserved categories of health status, must be identified such that, in any year, respondents within the same latent class are homogeneous with respect to their observed responses to self-rated health, and respondents in different latent classes have dissimilar responses. The latent class model takes measurement error into account by allowing latent states to diverge from what is imposed by the common practice of dichotomizing observed responses into good and poor health. In addition to employment status, low income, and occupation, the latent health states were regressed on work-limiting illness, age in years, gender, race/ethnicity (White or non-White), education (completed by age 16 years and completed after age 16 years), and qualifications (no undergraduate degree or equivalent or undergraduate degree level or higher), all of which were measured in 1990 (PSID) or 1991 (BHPS).

Second, the discriminant validity of the latent states must be verified. We used data from 2001 (PSID) and 2002 (BHPS) in a confirmatory analysis to estimate prevalence rates of the selected health problems in each latent health class.³⁴

Third, the stability of and change in the unobserved latent health states must be charted. Initial health state probabilities at time t_0 were regressed on the set of background variables, similar to step 1. In the LTA, change was modeled as the probability of a transition from one health state to another at time t_n , a probability that depended on the health state at t_{n-1} . This LTA model is known also as a hidden first-order Markov model; the sequence of transitions or movement between health states over time is an individual's trajectory.³⁵ The transition probabilities at time t_n did not depend on health state at t_{n-2} and were the same for all t_n . A model that allowed the transition probabilities to be influenced by the background variables produced unstable estimates.

Fourth, transition patterns must be summarized. The LTA estimates the probability of an individual being in n health states on 5 occasions, which provides n^5 possible patterns for describing health transitions; we summarized these patterns into a smaller number of discrete trajectories. The probability of an individual having a particular health trajectory is the sum of the probabilities of belonging to the transition patterns that make up that trajectory.

Fifth, socioeconomic differences in transition patterns must be estimated. To examine the reciprocal influences of health and socioeconomic circumstances over time, we estimated trajectory-specific prevalence rates of the socioeconomic variables twice: 1 year before the assessment of the health trajectories (1990 in the PSID and 1991 in the BHPS), and 2 years after the end of the health trajectories (2001 in the PSID and 2002 in the BHPS). The precision of the estimates uses individual probabilities of having each health trajectory established in the previous step. (More details about the LTA are available as a supplement to the online version of this article.)

All analyses were conducted with Mplus v4 software,³⁶ which applies robust maximum likelihood estimation with the assumption that missing data are missing at random.³⁷ This made full use of data from individuals who did not respond to all questions, who dropped out of the survey, or were not interviewed in 1 or more waves of the survey. Inverse

probability weights accounted for differential sampling in the 2 surveys, and standard errors were adjusted for the clustered sample design.

RESULTS

Identifying and Validating the Number of Underlying or Latent Classes

The first step identified 2 latent health states underlying the observed responses to the self-rated health question: a good health state and a poor health state. There were considerable cross-national similarities in the distribution of response categories for the 2 health states (data not shown). Those who were in underlying good health also had a very high probability ($P > 0.94$) of endorsing the top 2 categories of the 5-point self-rated health questionnaire item. Those who were in poor health were more variable in their responses, and most reported the middle category.

Table 1 shows the odds for poor health at baseline as predicted by the socioeconomic variables 1 year earlier, after control for demographic variables. In the United States, low income and a routine or semiroutine occupation in 1990 increased the odds for being in a poor health state rather than a good health state in 1991. Employment status in 1990 did not have an independent effect on health state. In the United Kingdom, those who were economically inactive in 1991 were more likely to be in a poor health state than a good health state in 1992. The same was true for having low income or a routine or semiroutine occupation.

The health status of those who were in a good health state or a poor health state was confirmed during the validation step (data not shown). Despite some reporting differences between the United States and the United Kingdom, few individuals who were in a good latent health state in either country reported any health problems. Less than 10% of those who were in a good latent health state reported any health problem in either survey, whereas with the less healthy, more than 74% reported 1 or more health problems.

Charting Stability and Change in Latent Health States

The LTA model estimated that respondents in the UK survey were healthier both

at baseline (75% in a good health state in 1992) and at the end of the observation period (63% in a good health state in 2000). In 1991, 55% of US respondents were in a good health state, and by 1999, only 48% were. In the United States, the probability of moving from a good health state to a poor

health state 2 years later was estimated to be 0.047 (95% confidence interval [CI]=0.032, 0.062), whereas the probability of moving from a poor health state to a good health state was 0.010 (95% CI=0.003, 0.017). Transition probabilities were quite similar among the UK respondents who

moved into a poor health state ($P=0.052$; 95% CI=0.040, 0.065), but there was a significantly greater probability of recovery in the United Kingdom ($P=0.028$; 95% CI=0.013, 0.044). Thus, the cross-sectional finding of better health in the United Kingdom was parallel with more movement from poor health to good health among UK respondents. Nevertheless, the chances of recovery for both populations were still slim.

TABLE 2—Estimated Class Counts for Latent Class Patterns During the 5 Biennial Surveys: PSID, United States, 1991–2001, and BHPS, United Kingdom, 1992–2002

Trajectory Group ^a	Latent Class Pattern ^b	PSID, no. (proportion)	BHPS, no. (proportion)	
Stable good	1 1 1 1 1	1847 (0.46)	2480 (0.60)	
	Declining	1 1 1 1 2	92 (0.02)	137 (0.03)
	1 1 1 2 2	95 (0.02)	141 (0.03)	
Improved	1 1 2 2 2	99 (0.02)	144 (0.04)	
	1 2 2 2 2	103 (0.03)	148 (0.04)	
	2 1 1 1 1	16 (0.00)	25 (0.01)	
	2 2 1 1 1	16 (0.00)	26 (0.01)	
	2 2 2 1 1	17 (0.00)	26 (0.01)	
Stable poor	2 2 2 2 2	18 (0.00)	27 (0.01)	
	2 2 2 2 2	1728 (0.43)	927 (0.23)	
Intermittent change	1 1 1 2 1	1 (0.00)	4 (0.00)	
	1 1 2 1 1	1 (0.00)	4 (0.00)	
	1 1 2 1 2	0 (0.00)	0 (0.00)	
	1 1 2 2 1	1 (0.00)	4 (0.00)	
	1 2 1 1 1	1 (0.00)	4 (0.00)	
	1 2 1 1 2	0 (0.00)	0 (0.00)	
	1 2 1 2 1	0 (0.00)	0 (0.00)	
	1 2 1 2 2	0 (0.00)	0 (0.00)	
	1 2 2 1 1	1 (0.00)	4 (0.00)	
	1 2 2 1 2	0 (0.00)	0 (0.00)	
	1 2 2 2 1	1 (0.00)	4 (0.00)	
	2 1 1 1 2	1 (0.00)	1 (0.00)	
	2 1 1 2 1	0 (0.00)	0 (0.00)	
	2 1 1 2 2	1 (0.00)	1 (0.00)	
	2 1 2 1 1	0 (0.00)	0 (0.00)	
	2 1 2 1 2	0 (0.00)	0 (0.00)	
	2 1 2 2 1	0 (0.00)	0 (0.00)	
	2 1 2 2 2	1 (0.00)	1 (0.00)	
	2 2 1 1 2	1 (0.00)	1 (0.00)	
	2 2 1 2 1	0 (0.00)	0 (0.00)	
2 2 1 2 2	1 (0.00)	1 (0.00)		
2 2 2 1 2	1 (0.00)	1 (0.00)		
Total		4042 (100.00)	4116 (100.00)	

Note. PSID = Panel Study of Income Dynamics; BHPS = British Household Panel Survey.
^aTransition patterns were grouped into 5 trajectories: stable good (5 waves in a healthy state), declining (healthy at start to less healthy at end), improved (less healthy at start to healthy at end), stable poor (5 waves in a less healthy state), and intermittent change (all other combinations).
^bPattern for self-rated health every 2 years from 1991 to 1999 (PSID) and 1992 to 2000 (BHPS); 1 = good health latent class, and 2 = poor health latent class.

Summarizing Transition Patterns

The LTA model predicted the proportion of individuals who experienced each of the 32 possible health transitions during the 8-year period (Table 2). We grouped the transition patterns into 5 trajectories: stable good (5 waves in a healthy state), declining (healthy at start to less healthy at end), improved (less healthy at start to healthy at end), stable poor (5 occasions in a less healthy state), and intermittent change (all other combinations). The largest groups were those that remained in good health during the whole period. Next came a large minority in both populations who stayed in poor health. Considerably fewer individuals had declining health trajectories, and less than 3% were in the improved trajectory in either survey. The remaining participants (<1%) had indeterminate trajectories and are not discussed further.

Estimating Socioeconomic Differences in Transition Patterns

Table 3 shows the association between the socioeconomic variables and health before and after measurement and identification of the health trajectories. We examined health trajectories within each country and found that those individuals who were in stable poor health were the worst off socioeconomically, and the opposite was the case for those who were in stable good health. At baseline, the socioeconomic characteristics of individuals who were in the declining health trajectory more closely resembled those of the stable good health group. Eleven years later, these 2 groups became more differentiated as the proportions of nonemployed and low-income individuals in the declining health group grew compared with those in the stable good health group. The socioeconomic profile of those who

TABLE 3—Socioeconomic Characteristics and Estimated Percentage of Latent Health Trajectory Members Before and After Study Initiation: PSID, United States, 1991–2001, and BHPS, United Kingdom, 1992–2002

Characteristic	Stable Good Health, Estimated % (95% CI)	Declining Health, Estimated % (95% CI)	Improved Health, Estimated % (95% CI)	Stable Poor Health, Estimated % (95% CI)
PSID				
Percentage responding	45.8%	9.6%	1.6%	42.8%
1990				
Employed	95.2 (94.1, 96.3)	95.1 (93.8, 96.4)	92.7 (90.5, 95.0)	89.3 (87.7, 90.9)
Unemployed	1.8 (1.2, 2.4)	1.8 (1.1, 2.5)	2.3 (1.5, 3.1)	4.2 (3.4, 5.1)
Economically inactive ^a	3.0 (2.1, 3.8)	3.1 (1.9, 4.3)	5.0 (3.0, 6.9)	6.5 (5.1, 7.8)
Low income ^b	12.7 (10.7, 14.7)	14.9 (12.3, 17.5)	24.5 (20.1, 28.9)	28.7 (25.4, 32.1)
Routine or semiroutine occupation ^c	18.5 (15.9, 21.0)	23.8 (19.7, 27.9)	33.8 (28.8, 38.8)	39.0 (35.5, 42.5)
2001				
Employed	92.4 (90.9, 93.9)	85.0 (82.3, 87.7)	90.4 (86.2, 94.7)	85.3 (83.6, 87.0)
Unemployed	1.0 (0.5, 1.6)	2.4 (0.9, 3.8)	1.1 (0.7, 1.6)	2.9 (2.1, 3.8)
Economically inactive ^a	6.5 (5.2, 7.8)	12.6 (10.1, 15.2)	8.4 (4.2, 12.6)	11.8 (10.3, 13.3)
Low income ^b	11.7 (10.1, 13.3)	20.1 (16.5, 23.6)	19.3 (13.2, 25.5)	29.8 (26.3, 33.3)
Routine or semiroutine occupation ^c	14.6 (12.4, 16.8)	18.8 (14.9, 22.8)	20.5 (14.3, 26.6)	27.5 (24.8, 30.3)
BHPS				
Percentage responding	60.3%	13.8%	2.5%	22.6%
1991				
Employed	85.6 (84.4, 86.9)	84.4 (82.3, 86.5)	68.0 (63.0, 73.1)	66.1 (63.0, 69.2)
Unemployed	4.0 (3.3, 4.7)	5.1 (3.8, 6.5)	7.6 (4.5, 10.8)	7.6 (6.0, 9.2)
Economically inactive ^a	10.4 (9.3, 11.4)	10.5 (8.9, 12.1)	24.3 (19.8, 28.9)	26.3 (23.6, 29.1)
Low income ^b	15.3 (13.8, 16.9)	17.4 (15.2, 19.5)	30.1 (25.3, 34.9)	32.9 (29.3, 36.4)
Routine or semiroutine occupation ^c	23.1 (21.1, 25.1)	27.5 (24.9, 30.0)	40.5 (35.9, 45.1)	44.8 (41.7, 47.9)
2002				
Employed	90.4 (89.3, 91.6)	82.5 (80.2, 84.8)	84.4 (80.9, 87.8)	71.2 (68.5, 73.9)
Unemployed	1.2 (0.8, 1.6)	2.3 (1.3, 3.3)	1.5 (0.5, 2.4)	2.4 (1.5, 3.2)
Economically inactive ^a	8.3 (7.2, 9.4)	15.2 (12.9, 17.5)	14.2 (10.6, 17.7)	26.4 (23.8, 29.0)
Low income ^b	14.4 (12.7, 16.1)	21.6 (18.5, 24.6)	29.7 (23.8, 35.5)	33.6 (30.2, 36.9)
Routine or semiroutine occupation ^c	22.0 (19.9, 24.1)	26.9 (23.4, 30.3)	32.0 (25.8, 38.1)	34.1 (30.4, 37.9)

Note. PSID = Panel Study of Income Dynamics, BHPS = British Household Panel Study; CI = confidence interval.

^aEconomically inactive includes those that are early retirees, permanently or temporarily disabled, involved in family care or keeping house, students, involved in workfare or government training schemes, in prison, or involved in other nonwork activities.

^bLow income was defined as those in the bottom 20% of adjusted household income. Adjusted incomes were derived by dividing household income by the square root of household size.

^cRoutine and semiroutine occupations are regulated by short-term labor contracts, exchange wages for labor, are highly unsupervised, and have little or no need for employee discretion.

socioeconomic position. It is important to note the higher levels of nonemployment in the United Kingdom compared with the United States, regardless of health or occasion, although the magnitude of this difference declined considerably over time because labor force participation increased among all health groups in the UK population, with the exception of those in the declining health group.

As already noted, there were many similarities in the socioeconomic profiles of the health trajectory groups between the 2 countries both at baseline and at the end of the study, but differences also were evident. Notably, improved health in the United Kingdom was associated with significant increases in economic activity, but this was not the case in the United States. However, improved health was associated with increases in income in the United States, a change over time that was not observed for the stable poor health group. Thus, we found significantly higher rates of economic inactivity among those who were in poor health in the United Kingdom compared with in the United States, but this was combined with a significant return to the UK labor market among those whose health improved over time.

DISCUSSION

Crossnational Comparisons

Our study is the first to compare the health trajectories of individuals in the United States with those of individuals in the United Kingdom and to examine the role of socioeconomic circumstances in these patterns. As such, we have made 3 contributions to comparative research on health and social inequalities. First, we suggest that, although there may be an overall health advantage in the United Kingdom, the distribution of latent health states and change in health states over time were quite similar in the 2 countries. Four main trajectories placed the vast majority of the 2 populations in stable health states (good or poor) during the 8-year period, and the minority was in the declining or improved groups. The health of the US population was no more likely to deteriorate than the health of the UK population, but the latter population had a higher likelihood for improvement.

were in the improved health group in both countries was initially similar to that of the stable poor health group; however, with time, a gap evolved between them as the employment, income, and occupational status of the improved health group became

more favorable. Despite this progress, the socioeconomic conditions of the improved health group never caught up with those of the stable good health group.

We next compared between-country associations between health trajectories and

Health and Socioeconomic Circumstances

Second, we have shown processual associations between health and socioeconomic circumstances. In fact, when time is considered, the associations look quite different from the cross-sectional findings. The latter suggested that employment status exerted no effect on subsequent health state in the United States (Table 1); however, nonemployment was clearly associated with health trajectories (Table 3). Another observation regarding process is that we found evidence for both social causation mechanisms (socioeconomic disadvantage causes poor health) and health selection mechanisms (i.e., that social mobility affects health). Social causation would predict more nonemployment, lower income, and routine or semiroutine occupational status among the declining health group compared with the stable good health group. This was found among BHPS respondents and, to a lesser extent, among PSID respondents. Those who had improved health also had a small advantage in initial occupational class and unemployment levels compared with those who had stable poor health in the PSID, but this was not found in the BHPS. Health selection was shown in the PSID by a widening gap in the socioeconomic conditions of those in the declining health group between 1990 and 2001 compared with those in the stable good health group, and there was less unemployment and low income in 2001 among those in the improved health group compared with those in the stable poor health group. Final economic activity rates among the declining health group and the improved health group suggest health selection processes had little impact on socioeconomic inequalities in the health of BHPS respondents in 2002.

Among all between-country differences in process, the socioeconomic characteristic that stood out was employment status. Nonemployment was higher in the United Kingdom compared with the United States throughout the study period, an observation that may partly be understood by macroeconomic conditions and social policies. For example, the unemployment rate was, on average, 2.4% higher in the United Kingdom compared with the United States on an annual basis during

the study period.³⁸ When faced with poor employment prospects, applying for disability benefits may have become more attractive to unemployed individuals who had health problems, especially those who had few competitive skills.^{39,40} Another factor is access to health care. The universal health insurance system in the United Kingdom contrasts sharply with the largely private system in the United States, which ties insurance benefits (when they exist) to employment. Because of this constraint, individuals in the United States may be forced to continue working to ensure access to medical care, regardless of their health.

Although these explanations are plausible for cross-sectional national differences in employment status and health, they do not necessarily account for differences in change: during the study period, nonemployment fell in the United Kingdom (except among the declining health group), and it rose in the United States. Moreover, improved health was associated with improved chances for employment in the United Kingdom but not in the United States. Although the US pattern is consistent with the aging of this population cohort and their associated withdrawal from the labor force, the results for the United Kingdom are more puzzling. They may be associated with the sharper drop in unemployment in the United Kingdom (from 7.5% to 5.8%) compared with the United States (from 5.5% to 4.8%) during the study period.³⁸ More satisfying explanations may emerge from further research; nevertheless, our findings suggest that individual factors and structural factors interact in complex ways.

Measurement Equivalent

Finally, a third contribution of our research is that it offers a practical way for dealing with a common problem in comparative research—the lack of equivalence in measurement. LTA, when undertaken with appropriate checks for validation, appears to be a useful means for managing this. We found that a 2-class model fitted the data for both countries. The pattern of conditional response probabilities for each class was similar, but not completely invariant, across both countries. Thus, the nonequivalent raw measures were translated into homogenous latent

classes with understandable measurement heterogeneity. The analysis also accounted for the uncertainty in allocating individuals to latent classes and to trajectory groups. Because of this, comparisons of the latent class distributions with transition probabilities between the United States and the United Kingdom were possible.⁴¹

Conclusions

Our study of health trajectories paints a more complex picture of comparative health in both the United States and the United Kingdom than has been previously shown—i.e., the health status of the UK population was not only better but also more likely to improve over time. This finding suggests that it is important for future comparative health research to consider the associations between individual and structural factors and health *change* and health *state*. In this regard, we found clear evidence of the socioeconomic consequences of health change. However, our comparative examination raised intriguing questions about what processes and structures are keeping more US than UK individuals employed while at the same time returning proportionally more UK individuals with improved health to the labor force. No matter what explanations are ultimately determined through continuing comparative research, the evidence challenges researchers to answer several questions. What are the individual-level processes that sustain persistent states of good or poor health? What do these processes have in common? To what extent can governments adapt employment opportunities and access to health care to facilitate ready engagement with the labor market as health improves? The answers to these questions are fundamental for reducing social inequalities in health and thus improving the population health of all nations. ■

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Contributors

A. Sacker originated the study, conducted the data analyses, and drafted the article. P. McDonough drafted the article and conducted literature reviews. M. Bartley and R.D. Wiggins assisted with writing the article and interpreting the findings. All authors were actively involved in the editing process.

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Human Participants Protection

No protocol approval was required for this study.

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