Structural Pluralism and All-Cause Mortality

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ABSTRACT

Objectives. This study tested the hypothesis that "structural pluralism" reduces age-standardized mortality rates. Structural pluralism is defined as the potential for political competition in communities.

Methods. US counties were the units of analysis. Multiple regression techniques were used to test the hypothesis.

Results. Structural pluralism is a stronger determinant of lower mortality than any of the other variables examined—specifically, income, education, and medical facilities.

Conclusions. These findings support the case for a new structural variable, pluralism, as a possible cause of lower mortality, and they indirectly support the significance of comparable ecologic dimensions, such as social trust. (*Am J Public Health.* 2001;91: 136–138)

The proposition that structural dimensions of communities, such as cohesion and complexity, can reduce mortality rates is fundamentally different from the other types of social causation that have been studied over the past 3 decades.[1] The others—socioeconomic status, social support, social statuses, and so on—are all limited to parts of the community. Structural dimensions, in contrast, refer to the whole community. Various labels—global, ecologic, and holistic—have been used to characterize these dimensions because they have 2 distinctive properties: they are systemic (rather than sectoral) and institutional (rather than aggregated characteristics of individuals). Recognition of this type of variable permits the formulation of hypotheses such as the one that is tested in this report: *Structural pluralism lowers the mortality rate in communities, after aggregate community-level socioeconomic characteristics have been controlled.*

We define *structural pluralism* as the degree to which organizations and population segments of a community have the capacity to participate in political exchange. The concept as used here is broader than political party competition reinforced by broad suffrage, because it includes everything from legislative debate to street tactics. However, the emphasis is on the capacity of groups for such competitive exchange. The theoretical antecedents of this concept are structural, and we interpret it as a dimension of "social problem-solving capacity" along with the social division of labor and the cohesion that is part of reform movements.[2–4]

Pluralism lowers mortality in 2 ways. Pluralistic communities are more likely to create or borrow the health facilities that defend against disease. Political participation permits diverse segments of the population to pressure authorities for such facilities and to maintain them once in place. In fact, this mechanism applies to almost all community services and could be expanded in the direction of Putnam's[5] "institutional performance" variable. We limited the analysis to medical facilities to focus the argument. Note, however, that this path requires the identification of *effective* medical facilities. Because of this contingency, some studies may not show significant effects on mortality.

The second causal mechanism that links pluralism to health postulates that participation in collective problem solving, even the conflictful activity that pluralism often involves, tends to optimize the biological functioning of the participants. Such a dynamic physiologic state generates the physical signs that are socially recognized as "health." Drawing on Seeman's review,[6] we would emphasize the generalized and regulative aspects of the cardiovascular, neuroendocrine, and immune systems that appear to be involved.

Our hypothesis assumes an organized community, which we define, following Selznick, as a group that "encompasses a broad range of activities and interests, and to the extent that participation implicates whole persons rather than segmental interests or activities."[7(p195)] This definition covers the county unit used here, as well as comparable administrative units.

The structural pluralism hypothesis parallels a proposition that Kawachi and colleagues[8] recently formulated and tested. They showed that "social trust" lowers age-adjusted mortality rates (for the US states), after poverty levels have been accounted for. We extrapolate their argument as follows: social trust increases the density of social interactions, which increases the probability of social support in the form of aid, information, and emotional sharing. Social support enhances the organism's resistance to stress and other environmental threats, reducing the chances of early death.

Our research on structural pluralism diverges from the Kawachi et al.[8] study in 2 respects. (We focus on only the social trust component of their more complex model.) First, structural pluralism is substantively different from social trust. The latter reflects social cohesion, whereas pluralism involves institutionalized conflict. Second, we used a type of measure that cannot be reduced to the individual level, in contrast to aggregations of individual responses to agree–disagree statements such as "Most people would try to take advantage of you if they got the chance." Either way, however, these comprehensive concepts are especially significant from a public health perspective.

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TABLE 1—Descriptive Statistics for the Study Variables

	Mean	SD	Minimum	Maximum
Age-standardized mortality	8.7	1.1	.0	17.9
Structural pluralism	0.0	1.0	–2.4	11.0
Median family income 1989, $	28 337.2	6973.2	10 903.0	65 201.0
Median years of schooling	12.0	0.8	7.0	16.0
Physicians/1000	1.1	1.3[a]	0.0	0.2
Hospital beds/100 000	380.8	396.9[a]	0.0	4945.0

Note. Age-standardized mortality = deaths per 100 000 averaged over 3 years (1989–1991), standardized on the basis of the national age structure. Structural pluralism = a factor score composed of 4 items: small retail establishments, membership organizations, percentage voting in national elections, and voluntary associations (see text). All other variables are conventionally defined.
Source. Bureau of Health Professions Area Resource File, 1940–1995 (mortality, physicians, hospital beds).
[a]Indicates a skewness coefficient of 3 or more, requiring a log transformation.

Methods

The units for this analysis were the 3023 counties of the contiguous United States. The counties in Alaska and Hawaii, as well as Virginia cities and a few data-deficient counties, were excluded. The data are circa 1990 and derive from the machine-readable census files, as specified in the tables and text.

Description of the Measures

Age-standardized mortality. Table 1 shows the descriptive statistics for the study variables, beginning with the age-standardized all-cause mortality rate averaged over 1989 through 1991.

Structural pluralism. For this measure, we used factor analysis for a set of variables that are representative of the organizational and institutional foundations of pluralism. The items formed a single factor and may be briefly described as a count (standardized by population) of all voluntary associations in the county (loading = 0.58); membership organizations, such as trade unions and professional organizations (loading = 0.70); and small businesses, such as bars and barbershops, that provide interaction opportunities (loading = 0.76). Additionally, we included the percentage who voted in the national elections (loading = 0.74). The last variable is an aggregation of individual acts and is not, strictly speaking, a structural indicator, but it does serve to validate our index against a well-known measure of political process. (The data for the structural pluralism factor are derived from the US Census Bureau, except for voluntary associations. The source for that variable is the *Encyclopedia of Voluntary Associations.* Detroit, Mich: Gale Research Co; 1990.) This factor score explained 49% of the variance.

Median family income in 1989 and median years of schooling in 1990. These variables were included as all-purpose controls, especially relevant to individual-level processes. They were correlated at 0.56, which is low enough to avoid problems of collinearity. Although our sample did not permit a rigorous multilevel test of the structural pluralism–mortality link, these controls should show that pluralism holds despite aggregated individual-level measures.

Physicians per 1000 and hospital beds per 100 000 population. The availability of medical facilities is measured by physicians per 1000 persons and hospital beds per 100 000 population. These 2 measures reflect the concentration of other kinds of medical facilities.

Results

The central result of this study is presented in Table 2, which shows that structural pluralism is a significant predictor of lower mortality, stronger than aggregate median income and education.

Hospital beds per 100 000 population had no effect on mortality, whereas the effect of physicians per 1000 persons was positive, contrary to expectations. This latter finding may be a selection effect, because urban areas have better facilities to attract doctors, and people with more health problems concentrate in these areas.

Our analysis did not pursue the intervening paths that are implied in our theory statement because the equation in Table 2 negates the medical facilities path and we lack the data for testing the second postulated intervening process (i.e., that community problem-solving strategies, such as pluralism, optimize average biological functioning).

Discussion

A cross-sectional analysis of the effect of structural pluralism at the county level has shown that this new dimension of community structure is a strong predictor of the all-cause mortality rate, after median income, education, and medical facilities at the county level have been accounted for.

We theorized 2 pathways that could link structural pluralism to reduced mortality rates. First, the potential for free expression of political positions increases the chances that communities will acquire a wider range of medical facilities, especially those that serve the disadvantaged. Second, involvement in political pluralism optimizes biological functioning and tends to increase longevity.

It might be argued that including hospital beds and physicians per capita as controls constitutes a test of the hypothesized health technology link and that the test (the results of which are shown in Table 2) was unsuccessful. But this is not an accurate interpretation of the theory. The term *health technology* implies only that some kinds of public health organizations should operate as intervening mechanisms and significantly predict mortality. The capacity of specific facilities to affect the mortality rate varies greatly. Public health programs such as immunization are more likely to have an effect in competition with pluralism and aggregated measures of socioeconomic status than are campaigns for specific medications. The search for effective programs may even have to include traditional norms,

TABLE 2—Regression Analysis of Age-Standardized Mortality for US Counties

	b	SE	β	*t*	*P*
Structural pluralism	–0.452	0.180	–0.396	–24.36	<.001
Median family income 1989, $	-3.248^{-05}	3.051^{-06}	–0.200	–10.65	<.001
Median years of schooling	–0.310	0.026	–0.233	–11.79	<.001
Physicians/1000 (log)	0.218	0.019	0.207	11.69	<.001
Hospital beds/100 000 (log)	2.281^{-04}	0.004	0.001	0.05	.960
Intercept	13.438	0.279	48.180		<.001
Adjusted R^2	0.369				
F test	354.300				

such as delaying pregnancies until after the teenage years.

Whatever the intervening mechanisms turn out to be, it is remarkable that structural pluralism should have such a strong effect on mortality. At first glance, the link is improbable. However, problem-solving social organization has been an increasingly important aspect of primate survival since the advent of speech. Individual capacities, even intelligence, cannot have much effect in a weak social context. This research has identified another dimension of that context. □

Contributors

F. W. Young and T. A. Lyson jointly contributed to the planning, analysis of data and the writing of the paper.

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