death has been determined. Such investigations using doctors as guinea pigs would make any findings more likely to be immediately translated into public health measures.

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Freedom, responsibility, and health

John P Bunker, Stephen Stansfeld, Jenny Potter

Freedom and responsibility, how much of each and how they are balanced, have profound implications for our personal lives and for our work. The health of a population and its achievement in the workplace are enhanced when individuals have some freedom and some responsibility, but not too much of either, and when civil associations of individuals rather than individuals acting alone are the essential social units. The consistent association of social contacts with health and productivity provides strong support for the premise that intimate relationships are the focus around which people's lives revolve. Membership of a "social network" may be merely conforming to a reigning social norm, and this could mean having to pay an important price in the loss of creativity associated with individualism. But social conformity should not prevent individuals from going their own way, and it should be possible to combine the luxury of individuality with an active life in civic affairs. Less than complete freedom may fall short of existential utopia, but it may be best for our health and wellbeing.

The human yearning for freedom, countered by the urge to escape from it and from responsibility, has commanded the attention of both metaphysical and political philosophers over the centuries. Some individuals seem to need the total, or near total, freedom exalted by Ralph Waldo Emerson and practised by Henry David Thoreau. At the other extreme there are many who voluntarily relinquish their freedom, as described in Erich Fromm's *Escape from Freedom* and exemplified by the mass movement of groups, and even whole populations, to fundamentalism. Though the philosophical and religious debates continue, new evidence from studies of the length and quality of life indicate that humans, on average, fare better when they have some freedom and some responsibility, but not too much of either—that is, when they live and work in an environment of "bounded freedom" and "bounded responsibility."

Autonomy at work

Freedom and responsibility go hand in hand, and how they are balanced has profound implications for our personal lives and our work. In the workplace a low level of worker responsibility and freedom is widely recognised to result in poor quality of work. The high levels of industrial productivity in Japan have been attributed to greater worker participation in shaping their own work, group loyalty, and social equality.^{1,2} Japanese workers' freedom and responsibilities are sharply constrained, however,³ and it seems to be the sense of shared community goals and social coherence that are the key to motivation and industrial productivity. American economist Robert Putnam also suggested that strong community and "networks of civic

engagement" were responsible for the high level of industrial productivity in Northern Italy.⁴

The conditions under which people work also greatly affect their health (above and beyond the hazards of occupations such as exposure to toxic substances and physical injury). British civil servants in top managerial positions enjoy greater health and longevity than middle management, and those in middle management are healthier than those at lower levels.⁵ This association of health with position in an occupational hierarchy has been explained in part by the degree of control individuals have over their work, and in part by early life, current health behaviours, and psychosocial circumstances.⁶

Social support

To exercise control a person must have the freedom to act; the two go hand in hand, and more of each can therefore be equated with better health. However, there seems to be an upper limit to their beneficial effects. The health of the Japanese again provides an example. Japanese living in Japan are relatively free from heart disease and as a result have a long life expectancy. Most Japanese who live in America rapidly assume the higher rate of heart disease of other Americans, but those who maintain the tight family structure traditional in Japan retain their immunity to heart disease.⁷ The prevalence of coronary heart disease in families who have adopted an American lifestyle was three to five times greater than that in those retaining a traditional Japanese culture, a difference that could not be accounted for by diet, smoking, or any of the other major coronary risk factors.

Similar observations have been reported for Italians who emigrated from the Italian town of Roseto to the United States, settling in Pennsylvania and founding a town by the same name.⁸ Residents of the new Roseto retained the relative freedom from coronary artery disease that their relatives in Italy enjoyed as long as they kept their traditional family oriented social structure. But as people became assimilated into the surrounding American culture, where the individual rather than the family and community was considered to be the dominant unit, the incidence of coronary heart disease rose rapidly. Again, the deterioration of cardiac health could not be explained by the usual risk factors. Diet had improved and smoking had fallen greatly. Although the Rosetans had become more sedentary, it was not enough to explain the large increase in coronary heart disease. The authors concluded that "attention directed to broader aspects of behaviour of individuals and groups, specifically those that lead to or reflect social disintegration, has suggested a strong influence of individual social values and collective morale on the heart and coronary vessels."⁸

The better health of individuals with strong ties to family, friends, and community has been widely documented. Adults who live together live longer than

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those who live alone; members of the church or other social groups live longer than those who have fewer social contacts. The plausible role of biological pathways leading from social disconnection to disease has been explored in a nine year study of residents in Alameda County, California.⁹ Smoking, alcohol consumption, a sedentary lifestyle, and other adverse risk factors were strongly associated with the ill health of individuals with fewer social contacts, but so, nearly equally, were marital status, contact with friends and relatives, and organisational membership, the so called social network within which individuals function.

Value of positive relationships

We can only speculate how social networks benefit health. It may be that social support provides a milieu in which the threat and impact of everyday stresses can be successfully coped with and the neuroendocrine response to stresses moderated.¹⁰ The capacity to develop positive relationships arises from good internal object relations (the internal representations of early relationships that influence the pattern of later relationships, as developed by Freud, and later by Klein, Fairbairn, and Winnicott). Continuing involvement in

positive relationships is likely to reinforce emotional security and enhance self esteem. Successful relationships may increase people's influence over the immediate environment and thus their perception of control. They will also provide individuals with a sense of meaning to the social environment and an awareness of their position within it.

Thus it seems likely that health is enhanced by positive personal attributes: control over personal and professional life, optimism, a sense of self worth, the ability to cope, and Antonovsky's sense of coherence. On the other hand, it is not clear to what extent poor or poorer health results from anxiety and depression, alienation, hostility, a sense of helplessness, pessimism, or even anger.

Whatever the explanation, the consistent association of social contacts with health provides strong support for the premise that intimate relationships, derived from the experience of infants with their parents, are the focus around which a person's life revolves. Early within this relationship the mother takes responsibility for containing the child's feelings. As the child becomes more self reliant and develops the capacity to contain his or her own feelings, freedom and responsibility become circumscribed, providing a model for relationships beyond the family.

The association of social integration with health is therefore consistent with the importance of clear behavioural guidelines in childhood and with the growing awareness of the relevance of cultural rules and social conventions that underlie acceptable human behaviour at all ages. Similarly, the association of social contacts with health mirrors current philosophical and political opinion, in which civil associations of individuals, rather than individuals acting alone, are the essential units of a productive and successful democratic society.^{4 11}

Price of individualism

Membership of a "social network" may simply be conforming to a reigning social norm, and this may mean paying an important price in the loss of the creativity associated with individualism and solitude. The American transcendentalist Ralph Waldo Emerson, writing in the middle of the 19th century, urged self reliance and eschewed conformity (coining the familiar aphorism, "a foolish consistency is the hobgoblin of little minds"). Nietzsche, exalting the individual, considered that it is only with the greatest effort that man can raise himself above the mediocrity of the herd and undertake "the great tasks 'to which higher men' may apply themselves." David Riesman in his influential book *The Lonely Crowd* deplored the pressures for conformity in middle class America and the failure of individuals to assert independence and autonomy.¹²

But membership in a wide social network need not make us predominantly a society of conformers. Mass conformity does not prevent individuals from going their own way, and there will continue to be the occasional Henry David Thoreau, Ludwig Wittgenstein, and Emily Dickinson whose genius is expressed in solitude. And is it not possible to combine the luxury of individuality, if not solitude, with a life of active participation in civic affairs? The psychiatrist Anthony Storr, while noting that "many highly creative people were predominantly solitary," argues that "all human beings need interests as well as relationships."¹³

If individuals vary in their needs—some needing more, and some less, freedom—so also does society as a whole. The social pendulum and political climate will continue to swing back and forth between libertarian and fundamentalist philosophies in response to changing public moods. The philosophical and political compromise is nicely stated by Isaiah Berlin: "We must preserve a minimum area of personal freedom.... We

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Fig 1—Some people need almost total freedom. Thoreau retreated to his cabin on Walden Pond, Concord, Massachusetts, in pursuit of the simple life

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Fig 2—Japanese business management school: bonding seems to be the key to increasing productivity

cannot remain absolutely free, and must give up some of our liberty to preserve the rest."¹⁴ Less than complete freedom may fall short of existential utopia, yet it may be best for our health and wellbeing.

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Commentary: Understanding it all—health, meta-theories, and mortality trends

George Davey Smith, Matthias Egger

Investigations into the determinants of health within and between countries contribute to a generally slow, but incremental process. Leaping forward to the big picture of how it all fits together represents an attractive alternative to merely continuing with this laborious spadework. Bunker and colleagues advance the idea of bounded freedom as being the key to health and wellbeing, a viewpoint which shares some characteristics with others who consider embeddedness within strong social networks as being the important determinant of population health.¹ The positive benefits of strong social ties seem self evident, but "the plausible role of biological pathways leading from social disconnection to disease" that Bunker and colleagues evoke has not been satisfactorily elucidated. Indeed, degree of social support may be influenced by health rather than the reverse. The supposedly protective influence of social support has been shown among the majority populations of the United States, United Kingdom, and Scandinavia, but in groups that have different connotations for such networks social ties can appear detrimental, rather than beneficial, to health.²

One theory of population health that has received considerable attention is the income inequality perspective of Richard Wilkinson, recently elegantly summarised in his book *Unhealthy Societies*.³ This view, which incorporates explanations relating to social networks, considers that the psychological consequences of living in an unequal society are the primary determinants of overall state of health. Several alternative models of the important determinants of population health to these essentially psychosocial accounts exist. The high profile of the human genome project has certainly led to the revival of primarily genetic accounts of the distribution of sickness. Conversely, the importance of lifestyle factors and their concomitants—for example, smoking, alcohol consumption, cholesterol concentrations, and blood pressure—may have been underestimated because only one measurement is used in epidemiological studies. Thus some contend that if proper account is taken of their importance there might be little left to explain,^{4,5} within developed countries at least. An almost diametrically opposed view took its lead from the failure of such lifestyle factors to account for the geographical and social distribution of many diseases.^{6,7} The hypothesis that influences from early life, particularly intrauterine and infant growth, influence long term health was advanced and has now been tested in an impressive

array of ecological and prospective studies.⁸ The arrival of a new paradigm of the determinants of adult health was announced.⁹

These, then, are some of the meta-theories of population health: social cohesion and the psychological consequences of inequality; genes; lifestyle factors; and long term effects of suboptimal early development. It would be worth considering how they fare in accounting for the important population differences in health: the large time trends in life expectancy and the unequal distribution of mortality risk between and within countries. Let us briefly consider one issue that has generated a great deal of interest—the relative (and in some cases absolute) deterioration in state of health in eastern Europe.¹⁰⁻¹²

The data seem to provide strong support for the income inequality hypothesis since life expectancy and income inequality (measured by the Gini coefficient) are inversely correlated¹³ (fig 1). Changes in income inequality and changes in life expectancy between 1987 and 1993 also show a sizeable correlation ($r = -0.62$). These countries have undergone a transformation from Stalinist pseudosocialism to the vagaries of the free market, and even the chief cheerleader for unfettered free market capitalism, the World Bank, was forced to ask: "Is transition a killer?"¹³ The growth of capitalism in Britain after the industrial revolution was associated with unfavourable mortality trends¹⁴ and a growth in inequalities in health,¹⁵ and the same now seems to be happening as capitalism penetrates the final frontier.

With the exception of genetic accounts, the various explanatory categories have been proposed as major contributors to the unfavourable mortality trends in eastern Europe. Thus in discussing the potential contribution of psychosocial stress Bobak and Marmot suggest that 30% of the excess mortality can be accounted for by a sense of pessimism.¹¹ The unfavourable mortality trends in Russia have been attributed to alcohol misuse, with the improvements in mortality during Gorbachev's antialcohol campaign being cited in support of this.¹³ Smoking and nutritional factors have also been considered important.¹² Much of Eastern Europe suffered greatly during the second world war, and unfavourable mortality trends have been attributed to the long term effects of people living through these times.¹⁶ Indeed, mortality rates of men and women who were born or were children in the most affected parts of the former Soviet Union during the war show just

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