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## The stressful price of prosperity

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It's a common half-joke among stress researchers that they are living their work. Here they are trying to "prove" that things like the death of a loved one can drive someone to depression, an ulcer or worse, or that job loss can trigger similar problems — connections that seem fairly logical to anyone with common sense. But it is this very obviousness — combined with the inherent problems that arise any time two or more fields of study overlap — that makes the struggle to attain true scientific proof all the more difficult.

"The man on the street might say 'so what' to some of the results we're getting, but to stress researchers, this is all very significant," one investigator confided last week during the American Psychopathological Association meeting in Boston. "We know it's [various stress-illness links] there — it's a matter of putting it all together."

But even the man on the street might have been impressed with some of the results presented at the meeting, which focused on "stress and mental disorder." Among the most significant reports was an updated, complex analysis linking economic trends to death rates, mental hospitalization, suicide, homicide and imprisonment since 1900. Aiming his computer at a mountain of 20th century statistics, Johns Hopkins University sociologist M. Harvey Brenner has come up with some unexpected connections between physical and social ills and economic growth, unemployment and inflation.

"Economic change is always given as the single most important source of social change," says Brenner, one of the country's top epidemiological investigators. Brenner helped create that impression in a 1976 report to Congress where he linked economic downturns since 1940 with increases in suicides, first admissions to mental hospitals, mortality (notably from cardiovascular causes), imprisonment, homicide, cirrhosis of the liver and other "pathological" trends. It was estimated, on the basis of the report, that a 1 percent rise in unemployment in any year would lead to an additional 30,000 cardiovascular deaths.

Now, in an expansion and refinement of that data, Brenner says he has pinpointed "spurts" within long-term economic trends that would appear to be primarily responsible for the links to pathology. Surprisingly, though, illness and antisocial behavior coincide not with downward spurts, but with short-term *upward* trends. The analysis "shows that rapid economic growth that follows directly on the heels of an economic downturn, has a deleterious effect ... even though good things are happening," reports Brenner.

The study laboriously cross-matches data in each successive, five-year period

between 1900 and 1975 and contrasts them to overall fluctuations in that span. "The most important implications are that long-term [economic] growth is beneficial, but what is clearly pathological are the upswings and downswings," says the sociologist. Such three- to five-year cycles, "like a series of steps," are inherent in American economics, Brenner notes. For a significant number of people, the sharp growth that invariably follows a period of economic loss is more damaging than unemployment or economic loss itself.

The types of people most susceptible to this phenomenon, Brenner suggests, include middle aged or older individuals who lose high level jobs in a downturn but must settle for lesser positions when the economy improves. "This is worse for some than not working at all, when at least a person can still call himself an 'unemployed accountant,'" he says. In addition, entire firms badly damaged in a recession may not be able to recover as well as a larger firm in an upturn because they lack the capital to take advantage of the situa-

tion, so "many smaller firms have to risk their total resources ... their lives," he says.

The negative effect of these upward spurts is so marked that Brenner says flatly: "There are people who would not have died if they had not also experienced a rapid economic growth period. We have not known in the past that many of our health and social problems are critically dependent on what economists do."

Aside from their obvious impact, Brenner's findings have significant implications throughout the entire stress research field. The economy constantly interacts with personal stresses, good and bad, such as marriage, death in the family, moving to a new home and loss of a loved one to trigger illness. His results indicate that such events are necessary but may not be sufficient in themselves to trigger pathology. In many cases, he says, that additional ingredient is rapid economic growth.

Many of the other reports at the meeting concurred that the same set of life events can lead to illness in some persons but not in others. Why? After two days of debate, Columbia University's Leo Srole concluded: "That is the \$64,000 question." □

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## Air controllers: Flying too high?

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The long-awaited results of a five-year study of hypertension among air traffic controllers (SN: 12/10/77, p. 395) are sure to stir up controversy when the report is released this summer. Several suits, dealing with the possible emotional and physical hazards of the job, have already been filed against the Federal Aviation Administration by various groups of controllers. For this reason, those conducting the research at Boston University and Harvard University admittedly are guarding their results closely until the report is formally submitted to the FAA.

However, some preliminary findings from the study, which examined 400 controllers on the job at New England and New York airports, were revealed last week at the annual meeting of the American Psychopathological Association in Boston. The researchers have found that the rigors of the job appear to trigger extreme fluctuations in blood pressure in one-third to one-half of the men studied during both hectic and slow days.

Although not all such men might be formally classified as hypertensive right now, "it looks like this group is at an increased risk to develop hypertension," says Robert M. Rose, former chairman of BU's Department of Psychosomatic Medicine and now at the University of Texas Medical Branch at Galveston. Rose told SCIENCE NEWS that the final report to the FAA will disclose how many air controllers develop hypertension and whether controllers are more susceptible than others

to blood pressure problems.

Research team members working in air traffic control rooms measured each man over a five hour period for blood pressure, behavior and cortisol (a hormone secreted under stress) readings. Though the subjects may have looked like traveling hospital cases, Rose assured that their work was not hampered by the medical gadgetry involved. Each man in this portion of the study underwent at least three such tests.

Although cortisol levels also showed significant fluctuation in a number of controllers, interpretation of those data are still incomplete, according to Rose. However, the blood pressure readings, while still "tentative," are more conclusive: Blood pressure, correlated in many cases with highly active behavior ratings (measured on subjective rating scales), shot up significantly for more than half the men on high work load days; for one-third of the subjects, pressure both increased on busy days and lowered on slow days in marked contrast to their average pressure.

Preliminary interpretation of the wide-ranging study indicates that those with highly variable blood pressures had fewer available social and marital resources, less pay satisfaction and lower self-morale; at the same time they appeared to be undergoing greater life change and were more bothered by the stresses of their job than were the others studied. Overall, the study covered a total of 37,000 separate observations and 2,577 man-days. □