DOES RESEARCH PRODUCTIVITY DECLINE WITH AGE?

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ABSTRACT

The research productivity of psychologists holding appointment in British universities was studied within a cross-sequential design. Publication rates in 1968–1970 and 1978–1980 were compared across groups differing in terms of chronological age and date of birth. At both times of measurement psychologists above 45 years of age published less frequently than younger psychologists. Psychologists who held appointment in 1980 as well as 1970 published less frequently in 1978–1980 than in 1968–1970, irrespective of their age in 1970. Although productivity dropped with age, there was considerable variability in output between younger and older psychologists. Further, a person’s publication rate in 1978–1980 was better predicted by their past productivity (publication rate in 1968–1970) than by their age. These results are discussed in the context of factors that affect research productivity, as well as changes that will occur in the age distribution of British academics over the next 20 years.

Universities in Europe and North America experienced unprecedented growth during the 1960s (see Kidd, 1981). Enrolments increased by 10–20 percent per annum. Academics were recruited in large numbers. Enrolments subsequently stabilized, and in most countries they are now dropping. Few new academic posts are being created, and in some countries tenured academics are being displaced through redundancy or early retirement.

Most of the many academics who were recruited by British universities during the 1960s and early 1970s had recently qualified, and hence they were relatively young (see Williams et al., 1974). In 1977 there were still more younger academics in British universities than would be expected under steady-state conditions (Kidd, 1981). The age distribution of British academics in the 1980s and 1990s will depend first on which academics retain or lose appointments in the reduction in numbers that is now planned.
and second on the rate at which young people enter the profession. As limited recruitment can be expected, the median age of British academics will shift markedly over the next 20 years. The median age in the 1990s will probably be in the range 50–60 years. Universities will face a crisis if the capacity of academics to undertake research declines with age.

Lehman (1953) argued that scientists are most likely to produce their research of highest quality before they reach the age of 40 years. This claim was based on analysis of citations to individuals in histories of science and similar sources. However, there are methodological problems with the approach that Lehman used (see Cole, 1979; Dennis, 1956). Due to exponential growth in the number of active scientists, there always have been more younger than older scientists at any specific point in time. Instead of citing work from different periods in proportion to the number of scientists who were active at the time, histories generally provide a disproportionately high level of citation to earlier periods. Simply on a probability basis, an active scientist is more likely to be cited in the history of a discipline for a contribution made when young than when old, since the person will have had many more competitors for citation (mostly younger scientists) later than earlier in life.

Cross-sectional and longitudinal designs have been used in attempts to overcome problems inherent in Lehman's methodology. Cole (1979) compared the publication rates in 1965–1969 of scientists of different ages who held positions in PhD granting institutions in the United States. Although differences were not pronounced, scientists in their late 30s and early 40s published more frequently on average than younger and older scientists. Cole's longitudinal analysis was based on 497 mathematicians who had completed doctorates in 1947–1950. Only 10 percent of this sample made a significant change in their pattern of research productivity over fifteen years. Strong publishers generally continued as such, but with time there was a dropping off in the proportion of weak publishers, and hence an increase in the proportion of non-productive scientists. Cole argued that age-related differences in research productivity represent role attrition on the part of older scientists instead of less adequate performance under circumstances where younger and older scientists have equal opportunities and make similar commitments of time and energy to research. Weak publishers are likely to become even less productive, since the reward system rations research resources among scientists to the extent that they have performed successfully in the past. Further, older scientists are more likely than younger scientists to assume responsibilities such as administration that conflict with direct involvement in research.

The cross-sectional analysis undertaken by Bayer and Dutton (1977) was based on 5,079 American academics from seven disciplines. Bayer and Dutton tested six models of aging (cumulative growth, leveling out, spurt,