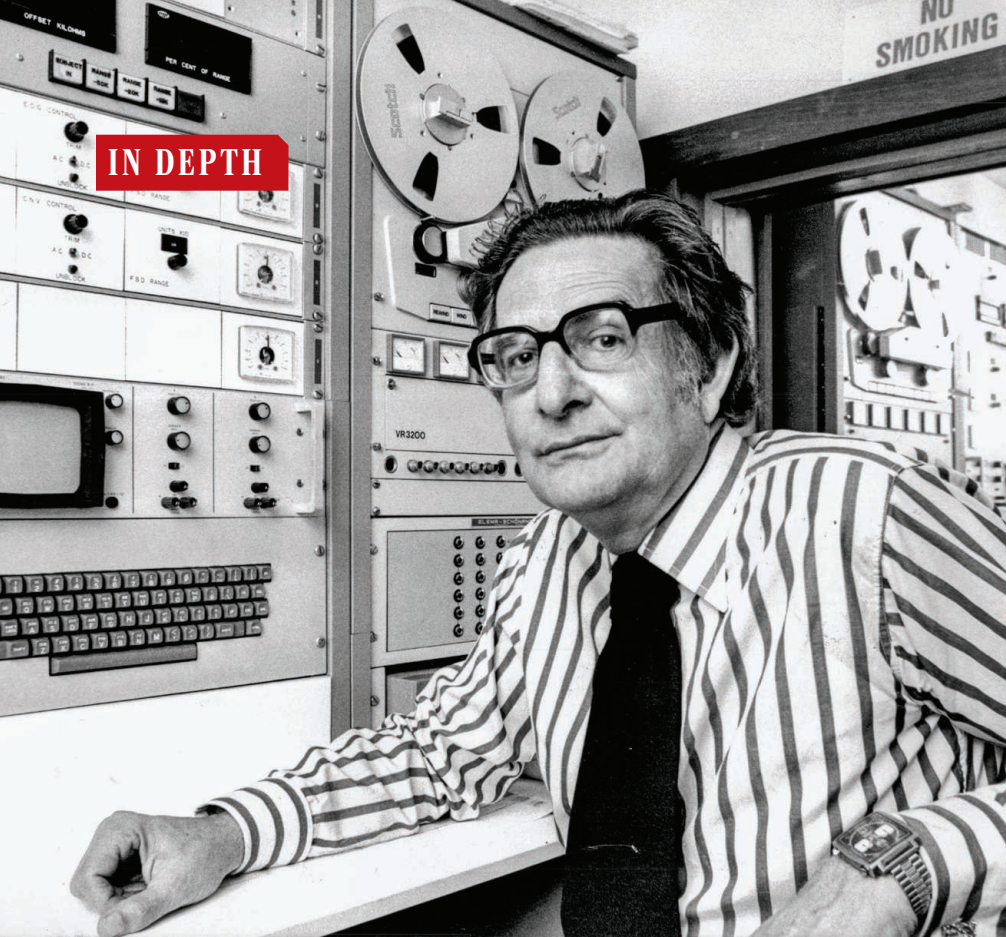


IN DEPTH



SCIENTIFIC INTEGRITY

Famous psychologist faces posthumous reckoning

Dozens of papers on personality and health by Hans Eysenck have been retracted or are under suspicion

By Cathleen O'Grady

One of Anthony Pelosi's most ambitious projects was on the back burner for more than 2 decades. In the early 1990s, Pelosi, a psychiatrist at Priory Hospital Glasgow, published two extensive critiques of the work of Hans Eysenck, a giant of 20th century psychology. Eysenck's papers contained questionable data and results so dramatic they beggared belief, Pelosi concluded. His critiques, and those by several others, were widely discussed in the field, but never led to formal investigations. Buried by the demands of clinical practice, research, and a young family, Pelosi never found the time to continue his effort. No one, he says, "picked up the baton."

More than a quarter-century later, Eysenck, who was celebrated for his theories of personality and individual differ-

ences, is finally falling from his pedestal. Last week, the *International Journal of Social Psychiatry* and the *Journal of the Royal Society of Medicine* issued expressions of concern for seven of his papers. Other journals have issued 64 such statements, as well as 14 retractions, over the past 6 months.

The renewed scrutiny comes in the wake of an inquiry by King's College London (KCL), where Eysenck was a psychology professor from 1955 to 1983 at what was then the Institute of Psychiatry. But Pelosi and others argue KCL failed to include many of Eysenck's other papers that also deserve a more thorough investigation in light of his lasting influence on the literature.

The case "throws up a lot of uncomfortable questions," says KCL neuroscientist Samuel Westwood. It's not clear whether the responsibility to investigate further lies with Eysenck's old institution, the journals

Hans Eysenck reported that certain personality types have a 70-fold increased risk of dying from cancer.

that published his work, or a professional association, Westwood says. Still to be determined is the responsibility of Ronald Grossarth-Maticek, a physician and social scientist based in Heidelberg, Germany, with whom Eysenck co-authored the 25 papers KCL evaluated.

When he died in 1997, Eysenck was the third most cited psychologist in the world—behind Sigmund Freud and Jean Piaget. By then, he was already controversial, not just because of the criticisms by Pelosi and others, but also for espousing racist views on the genetics of intelligence.

Pelosi's interest was rekindled by an invitation to contribute to a 2016 special issue of the journal Eysenck founded, *Personality and Individual Differences*, to celebrate the centenary of his birth and his findings on personality and intelligence. "I think they thought I was going to write some kind of 'experts disagree' type article," Pelosi says. Instead, his manuscript summarized a litany of statistical and ethical criticisms he and others had raised. The journal deemed the paper inflammatory and did not include it in the special issue. In 2019, Pelosi found a new home for it in the *Journal of Health Psychology*, whose editor, David Marks, supported Pelosi's call for an investigation in an accompanying editorial.

Pelosi's critiques center on just one of Eysenck's many areas of research: the relationship between personality and health, specifically cancer and cardiovascular disease. This work, which mostly relied on data collected by Grossarth-Maticek in Germany and what was then Yugoslavia, showed "astounding" evidence that "cancer-prone" and "heart-disease-prone" personality types exist, Pelosi writes. People with a cancer-prone personality had a risk of dying from cancer that was 40, 60, or even 70 times higher than that of people with a "healthy" personality, according to the duo. "These are unimaginably massive numbers in epidemiology," Pelosi says. Eysenck and Grossarth-Maticek also reported a clinical trial showing behavioral therapy could dramatically cut the death risk.

Other studies exploring the link between personality, stress, and health conditions have generally found that the various risk factors boost death risk by less than a factor of two. A large replication study in 2004 confirmed none of the links between personality and mortality reported in Eysenck's work, except for a modest association between cardiovascular disease and personality.

Several researchers have also reported evidence of errors and suspected data

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manipulation in Eysenck's work with Grossarth-Maticek. Dutch medical psychologist Henk van der Ploeg reported in the 1990s that different versions of the data showed different dates and causes of death of research participants, suggesting they had been altered. Hermann Vetter, a statistician based in Germany, described data that show zero cases of lung cancer for "low-risk" personalities, with a rush of cancer cases appearing precisely at the point where the personality scores shift into a "high-risk" category. He concluded the data were "produced artificially ... without pouring enough random error over it to make it appear more natural." Documents released in the course of litigation against tobacco companies—which funded some of Eysenck's work—show even some industry statisticians and researchers privately expressed doubt about the results.

In response to an interview request, Grossarth-Maticek, who is almost 80 but still offers counseling to people with cancer through his website, referred *Science* to a defense of his work posted on his website, which says the allegations are "untrue," "discriminatory," and "slander," and were made "without actual knowledge of the research program." He argues it would have been impossible to manipulate the data because they were given to other researchers to analyze before knowing the results, and denies that Eysenck's work was funded by the tobacco industry. He disputes their findings have defied replication, and claims KCL, a representative of "British and Jewish" psychology, didn't want "the little German Grossarth to dominate the scientific world stage."

Marks says there may be no "smoking gun," but the papers should be retracted anyway: "If they're so incredible, and have never been replicated, then we can dismiss those findings."

In response to Marks's editorial, KCL President Edward Byrne asked the university's Institute of Psychiatry, Psychology & Neuroscience to conduct an inquiry. In a report dated May 2019, a committee agreed with critics that the findings on personality and health were "incompatible with modern clinical science," designated 25 of Eysenck's papers as "unsafe," and asked Byrne to inform the relevant journals.

Since then, *Perceptual and Motor Skills* has retracted three of Eysenck's papers—two of which were not named in KCL's report—and *Psychological Reports* retracted 10. Both journals also added expressions of concern to dozens of Eysenck papers not

included in the KCL inquiry. *Personality and Individual Differences* issued expressions of concern for three "unsafe" papers but declined to retract them because there was no evidence of "intentional deceit" and no admission of malpractice by the authors. But that's an "unrealistic bar" for retraction, says psychologist Simine Vazire of the University of Melbourne, editor-in-chief of *Collabra: Psychology*. Expressions of concern are "really ambiguous," whereas retracted papers are clearly no longer part of the scientific record, she says.

Marks and Pelosi say KCL's inquiry wasn't thorough enough. It only focused on papers Eysenck co-authored with Grossarth-Maticek, but missed work authored exclusively by Eysenck that relied on the same underlying data. Rod Buchanan, a historian who published a biography of Eysenck in 2010, has identified 87 publications he thinks should be retracted.

KCL's own researchers have also criticized a lack of transparency around their university's inquiry. The committee members were not named, their 2.5-page report lacked detail, and the university has rejected a freedom of information request by Westwood and other staff members. "It reflects badly on the institution," Westwood says.

A KCL spokesperson says the committee investigated the publications that Marks's editorial designated as being of "immediate concern," and that it is standard policy to keep committee membership confidential.

One reason Pelosi says he wants a fuller investigation is that Eysenck's work still has an impact. A highly criticized 2008 meta-analysis that reported a link between stress and cancer included two dubious Eysenck papers; it has been cited more than 700 times, according to Google Scholar, including 50 times so far this year. Last month, a meta-analysis of studies investigating the effects of therapy on immune function in *JAMA Psychiatry* included one of the now-retracted papers. The idea that an upbeat personality can help people survive cancer permeates popular beliefs as well. "No epidemiologist takes [this work] seriously," Pelosi says, "but it does find its way into the scientific literature and I think it influences society."

A full investigation is warranted even if the work isn't particularly influential anymore, Vazire says. Otherwise, you can publish questionable research, "get super-famous, and then there are no consequences even when you get found out," she says. "That's terrible." ■

"These are unimaginably massive numbers in epidemiology."

Anthony Pelosi,

Priory Hospital Glasgow

SCIENTIFIC FACILITIES

X-ray source gets a 100-fold boost in brightness

Rebuilt synchrotron is the first of more than a dozen of its kind in the works

By **Adrian Cho**

A brilliant new light shines in Grenoble, France, where officials at the European Synchrotron Radiation Facility (ESRF) last week announced the re-opening of their completely rebuilt x-ray source. The ring-shaped machine, 844 meters around, generates x-ray beams 100 times brighter than its predecessor and 10 trillion times brighter than medical x-rays. The intense radiation could open up new vistas in x-ray science, such as imaging whole organs in three dimensions while resolving individual cells.

"The light is back at ESRF," said the lab's director general, Francesco Sette, at an 8 July online press conference. The reborn synchrotron, dubbed the Extremely Brilliant Source (EBS), will open to general users in late August, but since April, researchers have used its intense beams to study SARS-CoV-2, the virus responsible for the COVID-19 pandemic, and the disease's impact on the body. And the EBS is lighting the way for others, as the United States, Japan, and a dozen other countries develop similar machines.

A synchrotron is a ring-shaped accelerator that boosts charged particles such as electrons to high energies and near-light speed. Just as a wet rag flings droplets of water if you twirl it over your head, the circulating electrons radiate photons, including x-rays if the electrons have enough energy. In the 1950s, scientists began to siphon x-rays from electron accelerators built for particle physics experiments. Dedicated x-ray synchrotrons followed in the 1980s, employing magnets called wigglers to shake the electrons as they whirl around, causing them to produce more x-rays. In the 1990s, better synchrotrons debuted with magnets called undulators that shake the circulating electrons more harmoniously and effectively.

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