
The Origin and Operationalization of Fetal Programming Science

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Abstract

David Barker, a U.K. physician, began an intellectual trend in the 1980s with an epidemiological idea known as the "fetal origins hypothesis." Based on observational data that linked low weight at birth and the incidence of chronic disease in adulthood, Barker theorized that in utero conditions and exposures during early human embryonic development may relate to epigenetic modifications in the fetus that determine outcomes in later life. In his writing, Barker began to use the metaphor of "fetal programming" to explain potential mechanisms at play in the developmental origins of health and disease. As it precipitated novel research inquiries across a range of fields, from biology to demography to economics, the metaphor of programming was operationalized in both animal and human population sciences, thus moving from rhetoric to practice. This paper maps and traces the flow, evolution, and standardization of the idea of fetal programming within and across scientific disciplines, focusing especially on its uptake in animal and human population studies. Drawing on the professional scientific and medical literature as a public forum in the formation and dissemination of scientific knowledge, I examine how scientists understand and interpret phenomenological effects vis-à-vis impacts on the womb. Tracing this knowledge course around diverse mechanisms of environmental imprinting and parental effects, from initial epidemiological hypotheses and metaphors to animal experiments to modeling population health and disease, this paper will reveal how a scientific idea travels and how scientific knowledge and scientific practice are co-constituted.

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