Philip E. Vernon’s Theory of Intelligence

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November 19, 2022

Philip Ewart Vernon (6 June 1905 - 28 July 1987) was a British psychologist. He studied race and intelligence. Born in Oxford, England, he attended St. John's College, Cambridge and received his M.A. and Ph.D. from Cambridge University in 1927. Vernon studied contributions of environmental and genetic factors to intellectual development. He concluded that individual differences in intelligence are approximately 60% attributable to genetic factors, and that there is some evidence implicating genes in racial group differences in average levels of mental ability. He received a grant from Pioneer Fund, which he used to document the substantial social class differences in IQ scores found in both the U.S. and the UK. According to the Pioneer Fund website,

"the analysis of the World War I American military conscripts showed that the average IQ of children born in the professional class was 123, whereas those born to unskilled workers averaged 96. Vernon concluded that these social class differences have some genetic basis. He based this assessment on his review of the evidence that the intelligence of adopted children related more to the social class of their biological parents than to that of their adopting parents. Vernon suggested that social mobility allows those with higher intelligence to rise in the social hierarchy, while those with lower intelligence tend to fall."

In 1949, Vernon was appointed the Professor of Psychology at the Institute of Education, University of London, and was later appointed to a research professorship at the Institute in 1964. In 1968, at the age of 63, he abandoned a secure academic career in England to start a second career at the University of Calgary.

Definition of Intelligence

"Intelligence A is the basic potentiality of the organism, whether animal or human, to learn and to adapt to its environment...Intelligence A is determined by the genes but is mediated mainly by the complexity and plasticity of the central nervous system...Intelligence B is the level of ability that a person actually shows in behavior--cleverness, the efficiency and complexity of perceptions, learning, thinking , and problem solving. This is not genetic...Rather, it is the product of the interplay between genetic potentiality and environmental stimulation...I have suggested that we should a third usage to Hebb's Intelligence A and B, namely Intelligence C, which stands for the score or IQ obtained from a particular test (Vernon, 1979, pp. 10, 20)."

Ideas & Interests

Philip Ewart Vernon's contributions to the psychological literature were many and varied. His dissertation focused on the psychology of musical appreciation and auditory perception, but shortly after finishing his Ph.D. he began work with Harvard's Gordon Allport on the study of expressive movement and the development of an instrument to measure personality-related values (Allport & Vernon, 1931; 1932). A revised edition of the Allport-Vernon Study of Values (SOV) is still widely used by psychologists more than 70 years after its initial publication (P. A. Vernon, 1994).

Vernon's interest in personality research remained strong throughout his career, but his work in intelligence and giftedness gradually gained precedence. He was a proponent of Donald Hebb's theory of intelligence, which divided human intellectual ability into two categories: He called the biological substrate of human cognitive ability "Intelligence A." When Intelligence A interacts with environmental influences, Intelligence B is generated. Vernon elaborated this definition to include Intelligence C, which is what manifests on tests of cognitive ability--the score or IQ obtained on a particular test. These distinctions are important for the scientific study of intelligence, and they were adopted by other researchers including the German-born British psychologist Hans Eysenck. Both theorists noted that Intelligence B is essentially immeasurable due to the large number of confounding variables. Intelligence A is not a concrete "thing" that can be measured, and can only be approached through measures that yield an index of Intelligence C. Intelligence tests, however, are imperfect and vary to the degree that they reflect Intelligence A or B (Jensen, 1994).

Like many other prominent British intelligence theorists (e.g. Spearman and Burt), Vernon's preferred research tool was factor analysis. In The Structure of Human Abilities (1950) Vernon presented his hierarchical group factor theory of the structure of human intellectual abilities. At the top of this hierarchy was Spearman's general factor (g), which accounted for the largest source of the variance in intelligence. Below g were several major, minor and specific group factors. Because Vernon's theory accounted for a general factor and group factors, it was seen as a reconciliation between Spearman's two factor theory (which did not have group factors) and Thurstone's multiple factor theory (which did not have a general factor.)

In subsequent years, Vernon became interested in studying the relative contributions of heredity and environment, and he summarized his conclusions in two books: Intelligence and Cultural Environment (1969) and Intelligence: Heredity and Environment (1979). Although he acknowledged the pivotal role of environmental factors, Vernon's research led him to conclude that approximately 60% of the variance in human intellectual ability is attributable to genetic contributions. He extended this argument to implicate genes in the observed racial differences in intelligence test scores (P.A. Vernon, 1994). This controversial line of research was pursued in future years by Hans Eysenck and his student Arthur Jensen.