

IQ, g, statistical correlation, and heritability

As an [evolutionary biologist](#) and [historian of science](#), Gould accepted *biological variability* (the premise of the transmission of intelligence via genetic heredity), but opposed [biological determinism](#), which posits that genes determine a definitive, unalterable social destiny for each man and each woman in life and [society](#). *The Mismeasure of Man* is an analysis of [statistical correlation](#), the mathematics applied by psychologists to establish the validity of [IQ](#) tests, and the heritability of intelligence. For example, to establish the validity of the proposition that IQ is supported by a [general intelligence factor](#) (*g* factor), the answers to several tests of [cognitive ability](#) must positively [correlate](#); thus, for the *g* factor to be a heritable trait, the IQ-test scores of close-relation respondents must correlate more than the IQ-test scores of distant-relation respondents. However, [correlation does not imply causation](#); for example, Gould said that the measures of the changes, over time, in "my age, the population of México, the price of Swiss cheese, my pet turtle's weight, and the average distance between galaxies" have a high, positive correlation—yet that correlation does not indicate that Gould's age increased because the Mexican population increased. More specifically, a high, positive correlation between the intelligence quotients of a parent and a child can be presumed either as evidence that IQ is genetically inherited, or that IQ is inherited through social and environmental factors. Moreover, because the data from IQ tests can be applied to arguing the logical validity of either proposition—genetic inheritance and environmental inheritance—the [psychometric](#) data have no inherent value.

Gould pointed out that if the genetic heritability of IQ were demonstrable within a given [racial](#) or [ethnic group](#), it would not explain the causes of IQ differences among the people of a group, or if said IQ differences can be attributed to the environment. For example, the height of a person is genetically determined, but there exist height differences within a given social group that can be attributed to environmental factors (e.g. the quality of nutrition) and to genetic inheritance. The evolutionary biologist [Richard Lewontin](#), a colleague of Gould's, is a proponent of this argument in relation to IQ tests. An example of the intellectual confusion about what [heritability](#) is and is not, is the statement: "If all environments were to become equal for everyone, heritability would rise to 100 percent because all remaining differences in IQ would necessarily be genetic in origin", which Gould said is misleading, at best, and false, at worst. First, it is very difficult to conceive of a world wherein every man, woman, and child grew up in the same environment, because their spatial and temporal dispersion upon the planet Earth makes it impossible. Second, were people to grow up in the same environment, not every difference would be genetic in origin because of the randomness of molecular and genetic development. Therefore, heritability is not a measure of [phenotypic](#)

(physiognomy and physique) differences among racial and ethnic groups, but of differences between [genotype](#) and phenotype in a given population.

Furthermore, he dismissed the proposition that an IQ score measures the general intelligence (*g* factor) of a person, because cognitive ability tests (IQ tests) present different types of questions, and the responses tend to form clusters of intellectual acumen. That is, different questions, and the answers to them, yield different scores—which indicate that an IQ test is a combination method of different examinations of different things. As such, Gould proposed that IQ-test proponents assume the existence of "general intelligence" as a discrete quality within the [human mind](#), and thus they analyze the IQ-test data to produce an IQ number that establishes the definitive [general intelligence](#) of each man and of each woman. Hence, Gould dismissed the IQ number as an erroneous [artifact](#) of the statistical mathematics applied to the raw IQ-test data, especially because psychometric data can be variously analyzed to produce multiple IQ scores.

Revision #1

Created 2026-02-11 18:13:08 UTC by Dara

Updated 2026-02-11 18:13:47 UTC by Dara