

Interpreting Rising IQs: Environment and Its Role (*Adapted*) - Claire M. Climer

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The idea that IQ scores are steadily rising was first expressed by James R. Flynn in 1987 and has since stimulated thorough investigation and opposing controversy. Although the evidence for this phenomenon is clearly established, interpretation of the *Flynn Effect* presents a diverse mixture of ambiguities and puzzles. Is it actually the case that each generation of people arrives more enhanced than the last, and that intelligence itself is increasing? Has some change or other in human environments, such as improved nutrition or widespread urbanization, resulted in genuine cognitive gains? Or is the Flynn effect best regarded as a psychometric anomaly, with no bearing on intelligence at all?

While it is well beyond the aims of this paper to probe all of these aspects, one especially compelling explanation for the Flynn effect, presented by Dickens and Flynn (2001), will be carefully discussed and explored. The rise of heritability with age will then be investigated in terms of the Dickens and Flynn models. Finally, one particular aspect of Dickens and Flynn's model - the pivotal role of environment in the determination of IQ - will be put forward as a hypothetical explanation for the instability of measures a child's cognitive ability.

The Flynn Effect: A Description

Before considering possible causes of the Flynn effect, it is necessary to describe the nature and magnitude of the observed increases in IQ. Here it is important to emphasize both the immensity and the consistency of these escalating IQ scores over the past sixty years. This upward trend is reflected in the data for twenty countries, including all of the 'advanced' nations of continental Europe as well as nearly all English-speaking territories: Britain, Northern Ireland, Australia, New Zealand, and the United States. Nations of non-European culture, particularly Brazil, China, and Japan, also exhibit the substantial increases in IQ that are associated with the Flynn effect (Flynn, 1998), with an average IQ increase of one-third of a point (0.33) each year (Rowe & Rodgers, 2002).

The Flynn Effect Paradox

Dickens and Flynn (2001) introduce their paper by describing the underlying paradox that has frustrated many attempts to explain and attach causation to IQ gains. On one hand, so substantial is the inflation of IQ scores that all conceivable genetic explanations prove severely inadequate. Certainly, the genome itself cannot have changed enough to instigate such massive IQ gains (Rowe & Rodgers, 2002). Nor can differing birth rates be designated as the cause (Dickens & Flynn, 2001). Some researchers have posited that marriage outside the community, thus stimulating and expanding the gene pool, is responsible for enlarged IQ scores, yet such 'outbreeding' long-preceded observation of the Flynn effect. Between 1952 and 1982, 18-year-old Dutch men exhibited a monumental increase of twenty IQ points. While outbreeding possibly produced genetic changes (cognitive and otherwise) in

the first half of the twentieth century, by the 1950s it was far too common to account for the later IQ gains (Dickens & Flynn, 2001).

With no available genetic explanation, environment appears to be unquestionable to any causal interpretation of the Flynn effect. The prevailing data, however, imply that a large environmental role is highly implausible. According to strongly agreed calculations, by late adolescence, heritability accounts for approximately 75% of IQ performance, and environment for only 25% (Dickens & Flynn, 2001). Such a high estimate seems to prohibit the extent of environmental contribution to IQ that the Flynn effect requires. Rather than reject this high heritability, Dickens and Flynn (2001) resolve the Flynn effect Paradox by configuring a model that explains how the importance of environment may be concealed through reciprocal causation between environment and genetic make-up.

The Dickens and Flynn Model

At the crux of Dickens and Flynn's model is the idea that one's genetic strengths will tend to lead them to environments that are conducive to the further development of such positive attributes. If a person has a genetically predisposed aptitude for basketball, their greater playing ability will tend to lead them to environments that enrich this inborn skill. This aptitude will be recognized by others and may be further cultivated by private coaching and external encouragement. A reciprocal relationship between genes and environment is thereby established, with any initial genetic advantages, however slight, boosting further environmental advantages. Dickens and Flynn (2001) term this process the *social multiplier*.

Since a person's present aptitude is influenced by the cumulative effects of all previous environments that person has experienced, continuous interplay between genes and environment magnifies the potency of environmental factors (Dickens & Flynn, 2001). Applied to intelligence quotients (IQ), this model may explain the persistent generational gains. If an environmental factor is introduced that accommodates or even favours higher IQs, that factor's influence within a generation is hard to identify because it primarily reinforces genetic predispositions. Only between generations, as genes remain equivalent while environmental change is perpetual, does the potency of environment become apparent (Dickens & Flynn, 2001).

Resolving the Flynn Effect Paradox, this model both explains how the high estimate for heritability obscures the contribution of environment to IQ, as well as allows for the strong environmental involvement that the Flynn effect demands. While Dickens and Flynn are hesitant to attribute the massive IQ gains to any particular environmental feature, they do provide a number of illustrative examples including industrialization, the proliferation of radio and television, and smaller family size - which might have triggered environmental changes with significant consequences for IQ (Dickens & Flynn, 2001).

Consequences for Heritability

The effects that the Dickens and Flynn model have on the role of heritability are both weighty and provocative. In short, the model's expanded role of the environment provides a persuasive explanation as to why heritability becomes distinguishable with age. As the authors remark, the greater autonomy that accompanies age will result more and more in environments that are selected by the individual rather than simply thrust upon them. As the environment becomes increasingly subject to personal choice, IQ in turn is less an environmental artifact and more a reflection of genetic endowment (Dickens & Flynn, 2001).

Child IQ Testing & The Flynn Effect: A Hypothesis

Controversy surrounds the proper use and interpretation of children's IQ tests. Some authors (Dickens & Flynn, 2001) suggest that the correlation of a very young child's IQ with their adult IQ is quite weak. Other authors report a significant instability of cognitive measurement in children. One study on children aged between six and sixteen, for instance, revealed a considerable change in IQ scores in up to fifty-eight percent of the participants upon retesting. Additional tests have also been demonstrated to yield low reliability (Neyens & Aldenkamp, 1996).

At the same time, research indicates that the IQs of young children are highly aligned to demographic status. According to Sellers, Burns, and Gyrke (2002), disparities in test scores notably appear to occur along ethnic and socioeconomic lines. In a study reported by these authors on children aged between two and seven, the mean difference between 'extreme' socioeconomic groups was roughly eighteen IQ points, while that between Black and White children was eleven (Sellers et al., 2002).

If valid, the Dickens and Flynn model discussed in this paper may have numerous implications for the field of psychology. More specifically, in terms of cognitive measurement in children, the model might be especially important in investigating the evidently low reliability of IQs for very young children. Since command of one's environment is severely inhibited in young children, the Dickens and Flynn model may explain both the instability of children's IQs as well as the low correlation between child and adult IQ. Additionally, that IQ results are aligned according to demographic status, an aspect of the environment over which the child has markedly little choice, seems to corroborate Dickens and Flynn's emphasis on environmental influence. With such considerations in mind, this paper concludes with a tentative hypothesis: provided the soundness of the Dickens and Flynn model and accuracy of its claims, contribution of environment to child IQ is substantial while heritability more modest, and thus the reliability and the ongoing significance of testing children's IQ is ultimately low.

Source: Climer, C.M. 2006. *Interpreting Rising IQs: Environment and Its Role*.