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Human intelligence, fluctuating asymmetry and the peacock's tail
General intelligence (g) as an honest signal of fitness

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Abstract

Assuming that general intelligence (g) is an honest signal of fitness, we expected g to be related to developmental quality as indexed by Fluctuating Asymmetry (i.e. non-pathological variation in the size of right and left body features). In a population sample of 44 men and 37 women, we assessed the relationship between Fluctuating Asymmetry (FA) and g, and, as a control, to the Big Five personality dimensions for which no theoretical relationship with FA was expected. We found a relation between g and FA in men and women, but only a marginally significant relation with Openness in women only. We conclude that about 20% of the variance in g is explained by FA, and discuss the implications for the evolution of g and human mate choice.
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1. Introduction

> *It has yet to be proven that intelligence has any survival value.*
> Arthur C. Clarke

Why did g evolve? As Kanazawa (2004) argues, the Environment of Evolutionary Adaptedness (EEA) did not change for thousands of years: edible fruit stayed edible fruit, and poison stayed poison. g was only needed to solve the relatively few novel situations that did occur in the EEA, like the overflowing of rivers and lightening strikes. Difficult problems in the EEA were usually social in nature, and those were dealt with specifically dedicated domain-specific mechanisms like Theory of Mind and cheater detection mechanisms. The fact that g and social skill or social intelligence are hardly correlated points to the validity of this reasoning (see Jensen, 1998).

Miller (2000) has argued that intelligence has evolved in humans in part as the result of sexual selection instead of natural selection (although this reasoning has been challenged, see Roney, 2002). Indeed, the relation between g and survival is small, if any, even in contemporary western societies that put great stress on intelligence. The assumption is that women preferred intelligent men because they were able to secure high status positions, and as such were able to invest in them and their offspring. Thus, sexual selection made us smart.

To modern eyes this looks plausible enough. g and status are highly correlated in our modern world. But the world in which we evolved, the EEA, was very different from our world. If g does not make a man a better hunter, does not make him much more socially skilled, then it is likely that the relation between g and status was much less pronounced than the relation between social intelligence and skills and status. That leaves us with a paradox: although g was probably not reliably related to survival or status in the EEA, it probably was and certainly still is an important criterion in (female) mate choice. Why?

The solution could lie in the fact that g may be an honest signal of fitness, specifically of developmental stability (for an introduction to "Handicap Theory", see Zahavi & Zahavi, 1997). If a feature is expensive to build and maintain, cheating is impossible because you cannot fake that you have it when in fact you do not. The classical example is the peacock's tail: hard to build, hard to maintain, impossible to fake and quite useless except for the fact that female peacocks prefer big tails, precisely because it is an honest signal of fitness. g might be the human equivalent of the peacock's tail.

Is g costly? Mental adaptations, like g, are information-processing units working on knowledge bases. If the range of input stimuli is narrow, and the number of appropriate output behaviours is limited, it is relatively easy to build. The more fuzzy the input and output become, the more difficult it is to build. To use a computer metaphor, a program that only has to detect and remove a limited set of viruses is necessarily much smaller and much easier to construct than a program that has to understand human spoken language during meetings and summarise them (in fact such a program does not exist precisely because it is too difficult and costly to built). Using this information processing perspective, it becomes clear that the mental adaptation g is very expensive to build, because its domain is not specific at all. It is a candidate for being an honest signal of fitness, and as such, a good criterion for mate choice. In sum, we argue that intelligence might be a criterion of sexual selection because it is an honest signal of developmental stability.