Human Ethology Bulletin

The Evolution of Personality and Individual Differences

Book Review

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The Evolution of Personality and Individual Differences, edited by David M. Buss and Patricia H. Hawley. Oxford University Press, 2011, 498 pp. ISBN **978-0-19-537209-0** (Hardback)

Evolutionary psychologists have been attacked from a number of directions. They have been criticised for their modular approach by those who favour a more general form of brain function, for their theories resembling "just-so stories" rather than directly testable hypotheses, and because their work was felt by some to conflict with certain political views. It seems not surprising they kept away from other branches of science that are also subject to prejudice, such as psychiatry.

This volume represents an adaptive radiation away from the initial approach of evolutionary psychology, which stressed what the human mind had in common, and starts to attack the problem of the ways in which individuals differ from each other. *The Evolution of Personality and Individual Differences* trespasses on the field of behavior genetics, which has already done a lot of work analysing personality variation (as expressed in the Maudsley Personality Inventory and the "big five"), and has developed sophisticated mathematical techniques for partitioning variance in personality traits into genetic, environmental, epistatic, gene-environment interactional and even more exotic components. Clearly, in order to study differences in personality, evolutionary psychologists need to master the existing field of behavior genetics, and this volume is a testimony that they have succeeded in doing so.

The book confronts two challenging problems. One is the finding that a significant part in the variance of each of the big five personality factors shows a large genetic component. Since adaptive traits should show directional selection, this should not be the case - variation should be wiped out. The two contenders for this discrepancy are mutation-selection (the accumulation of very large numbers of harmful mutations of small effect) and balancing selection, which means either that some traits are selected for in some environments, such as crowded versus isolated living conditions, or that the trait is subject to negative frequency-dependent selection. The latter situation occurs when a trait becomes more adaptive the rarer it becomes, and an extreme example is heterozygote advantage in which the rare allele is more likely to be paired with another of the same type to create a heterozygote, whereas when it becomes common it is more likely to be paired with another of the same type to form a harmful homozygote (as in pernicious anaemia). The same argument applies to traits thought to be affected by many genes, such as handedness, so that a left-handed duellist is at an advantage because he has had more practice fighting right-

handers than the right-hander has had of fighting left-handers.

The other problem is the finding that only a small portion of the variance in almost all traits is due to shared family environment – about five percent. That is, a great part of the variance not due to genetics is due to non-shared environmental factors. Thus, family environment and the influence of parents play a lesser part in determining the personalities of offspring than commonly assumed. How could this be? Some answers are given, for example, in an excellent chapter by Frank Sulloway about the influence of sibling position (pp. 86-120).

The problems confronting this new approach concerned with individual differences are very well presented by Geoffrey Miller (pp. 376-399), and also by the editorial introductions and the chapter by our Editor, Aurelio Figueredo, and his co-authors (pp. 210-242). Genetic problems are clearly presented by Matthew Keller (and colleagues, pp. 280-302), who with Geoffrey Miller wrote a landmark article in Behavioral and Brain Sciences (Keller & Miller, 2006). Marco Del Guidice and Jay Belsky contribute a very readable chapter on life history theory (pp. 154-176).

I have two main criticisms about the book, and these are problems of omission rather than commission. The first one relates to the absence of any mention of selection at the group level. Group selection can explain a lot of genetic (and environmental) variance in personality traits. Take, for instance, the difference between leaders and followers. We all know (albeit by folk psychology) that there are born leaders and born followers, and others who can adapt to either role depending on circumstances. The characteristic of leadership potential can be maintained by negative frequency-dependent selection within the group, since a born leader is likely to do better in a group which has no other born leaders and a follower is likely to do better in a group in which followers are rare. But this variation maintained by within-group selection is likely to be greatly magnified by selection between groups. Groups composed entirely of leaders are not likely to be functional whereas groups composed entirely of followers are not likely to do well either. In other words, a group composed of a mix of leaders and followers is likely to outcompete groups of leaders and groups of followers. Within-group variety gives efficiency, as David Sloan Wilson and E.O. Wilson have pointed out (Wilson and Wilson, 2007; Wilson, 2012), so that humans are similar to the eusocial insects in their divisions of labour, and have been almost equally successful (so far). Moreover, a group can develop a culture which selects leaders who are devoted to the interests of the group rather than to their own selfish interests, and this process can develop much more efficiently under group selection than under individual selection. Admittedly, leaders of the modern world are not conspicuous for their charity to the people they govern, but then they do not know them as individuals in the way that leaders of our hunter-gatherer ancestors presumably did.

My second criticism relates to the chapter on psychopathology written by Norwegian Leif Kennair (pp. 451-480). Regrettably, he fails to mention one of his compatriots, who not only was the first to describe the peck-order in social groups, but also was the first to report differences in personality between chickens in the same flock, and described in chickens what represent episodes of both major depression and neurotic personality: Thorleif Schjelderup-Ebbe, whose academic aspirations were crushed by those above him in his own Oslo peck-order. As a lonely boy on his parents' farm in the summer holidays before the first world war, Schjelderup-Ebbe got to know his family's chickens individually, and realised that the chickens recognised each other, too. He noted that for any given chicken, there were some that it would peck without compunction, and others which it would peck only at the expense of severe retaliation. Also, he noted that if chicken A could peck chicken B, and B were allowed to peck C, A too could peck C. I will quote this work at some length, because it seems rarely known but is relevant to the subject of this volume. Patricia Hawley (p. 67) mentions Schjelderup-Ebbe's German 1922 paper (Schjelderup-Ebbe, 1922), but there is no reference to the description of his findings in

English (which came many years later, Schjelderup-Ebbe, 1935). Schjelderup-Ebbe described a difference in countenance between high-ranking and low-ranking birds. While the face of the superior bird "[radiates] with the joy of satisfied pecking-lust", the subordinate has "a much less enjoyable and anxious existence" (Schjelderup-Ebbe, 1935, p.951), and if trying to revolt against the despot, the subordinate "fights with less display of energy than usual. It seems as if the spirit of the bird were dulled by a premonition of hopelessness" (Schjelderup-Ebbe, 1935, p.955).

In the translation of his 1922 paper, Schjelderup-Ebbe (1975) commented that "hens lead a more or less worry free existence according to their position in the peck order", and he gave as an example a low-ranking hen who "was very nervous because of the number of pecks she received. I had the impression that she tired herself out in a constant attempt to avoid punishment and to get enough food." By contrast, the high ranking hen, "who was never bothered by anybody, seemed to feel very well" (Schjelderup-Ebbe, 1975, p. 45). He claimed that the same applied to other birds, but that the effects were less in the natural state than in captivity. His observations were largely confirmed by later researchers (Appleby, 1983). It seems likely that the complex peck orders of human beings are as important for personality differences as the simple linear peck order of the flock.

Where is evolutionary psychology heading now? Daniel Nettle ends his highly readable chapter (pp. 5-28) as follows: "As is generally the case, the greatest progress will come not by forming a sub-discipline of evolutionary personality psychology separate from the rest of personality psychology, but rather suffusing the way we think about personality in general with a warp of ultimate, Darwinian logic, to weave into the weft of careful empirical research" (p. 22).

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