

## **Against the research programme of Evolutionary Psychology**

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### Abstract

Evolutionary psychology seeks to explain human behaviour through the evolution by natural selection of mental modules, often supporting extremely controversial social conclusions. While I agree that the relations between evolution and human behaviour ought to be explored, I argue that the foundational claims of evolutionary psychology are deeply flawed. In reverse order I show that each claim is insufficient for its purposes and thus together they are insufficient for giving behavioral explanations. Evolutionary psychology ignores crucial factors such as evolution selecting for the best available not the best possible traits and not all traits being directly selected for. I use Developmental Systems Theory and work by Dupré to argue that not just genes build brains. Lastly, I use extended mind theory to argue that evolutionary psychology wrongly equivocates between the brain and the mind. Moreover, the hypothesized modules do not make sense. There is a danger that, if taken seriously, evolutionary psychology can easily be used to legitimise prejudice. Taking all this into account I conclude evolutionary psychology's foundation as a research programme falls apart, likely explaining why there is little compelling evidence in favour of it.

### Introduction

Evolutionary psychology argues that human behaviour is governed by genetically programmed brain/mind modules<sup>23</sup> which have evolved over time by natural selection. Evolution by natural selection is a well-established theory that explains the variation in the distribution of traits across a population (typically evolution means change in gene frequency, but I am using this wider meaning from Dupré (2003) so as not to presume behaviour to be a genetic adaptation without questioning it properly). Random genetic mutations occur in each generation, which causes variations in the traits of those carrying the mutated genes. For example, different leg length in a species of flightless birds. When it comes to competition for resources, some variations will be more helpful than others, especially if the environment changes. Say there's a flood, the birds with longer legs will be better adapted to this situation and so more will be able to survive

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<sup>23</sup> Evolutionary psychologists equivocate between mind and brain modules.

and reproduce than those with short legs. This ability to pass on your genetic material is called fitness. So, variations more suited or adapted to an environment increase fitness, meaning the genetic mutation will be more prevalent in the next generation and we can say evolution has 'selected for' this adaptation.

Traits are normally thought of as physical attributes like skull shape, but evolutionary psychology requires us to postulate that these hypothesised modules are evolved traits. Because evolution takes a long time, the modules are adapted to problems faced by the first homo-sapiens during the Pleistocene Epoch, between 2 million and 10,000 years ago. For example, a facial recognition module would have allowed your ancestors to know their kin by sight. Daly and Wilson (1999) propose a module for child-specific parental love, which results in step-children being more at risk of maltreatment a.k.a. "The Cinderella Effect". The argument goes that looking after children which are not biologically yours uses up valuable resources on someone who cannot pass on your genetic material. This means it is a waste of energy in evolutionary terms. On the other hand, caring for only your biological children is a more effective way to ensure your genetic material continues in the next generation. So, the trait of caring for only your biological children will become more prevalent than caring for non-biological children, as evolution continues. The more prevalent a gene is the more likely it is to physically manifest and affect a person carrying it. Thus, those with the gene (which is by now a majority of the population) will have a module for child-specific parental love (Daly & Wilson 1999). In order to come by this hypothesis, evolutionary psychology requires a sufficient explanatory link between evolution, genes, brains and behaviour to "reverse engineer" (Buller 2005:92) its claims. But the story it tells is far too narrow to do the explaining work it claims to do. This can be seen by looking at the foundations of evolutionary psychology, which are three-fold (Dupré, 2003; Tooby & Cosmides, 1992):

1. To understand human behaviour, it is not just necessary but sufficient to understand the modular structure of the human brain.
2. To understand the structure of the human brain and these modules it is not just necessary but sufficient to understand the genetic programming which created it.
3. To understand the genetic program, it is sufficient to understand the evolution by natural selection that caused the genetic mechanism to develop as it did.

However, the sufficiency part of these claims does not hold. Rather than disputing specific hypotheses, I will go through the foundational claims in reverse order and show that they are too limited to do the explaining work hoped.

If the base set of premises is flawed, then there can be no assurances that inferences from them are sound. All research programmes will have theories that are subject to change depending on evidence, however they must also have a core of solid theories which are not malleable (Lakatos, 1980). This is what characterises a particular research programme as itself (rather than just a study of everything), with specific principles and methodological commitments. Also, a programme needs a durable core to have enough grounding to allow it to move forward in the right direction<sup>24</sup> with research. This is why I am focussing on the foundations to argue against evolutionary psychology as a research programme.

(3) To understand the genetic program, it is sufficient to understand the evolution by natural selection that caused the genetic mechanism to develop as it did.

Evolutionary psychology hypothesises behavioural traits and argues that they evolved in response to evolutionary challenges faced by our ancestors e.g. a cheater-detection module to help us live in communities. However, the required link between evolution and genes overstates the role of adaptation. Evolutionary psychology theorizes that each genetic change is an adaptation to an evolutionary challenge but there are many possible adaptations that can arise from an evolutionary challenge. There are numerous, multifaceted interactions that are part of evolution by natural selection, it is after all premised by random genetic mutations. Evolutionary psychology seems to overlook this.

Following on from this, it is not simply the case that useful adaptations evolve. There are complex constraints on what adaptations can occur. For example, it would arguably be a useful adaptation to life in the Pleistocene epoch for homo-sapien skulls to be made from Adamantium<sup>25</sup> but this simply isn't an available option. Human bodies cannot make Adamantium from protein chains (not least because it's a fictional material), so in actuality our brain is kept in our heads by a thin layer of bone. Even if we keep the hypothesised adaptations more feasible, this does not necessitate their selection by evolution. So, it is

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<sup>24</sup> By right direction I mean one that will lead to successful and hopefully illuminating predictions, in line with however reality is.

<sup>25</sup> The indestructible alloy Wolverine's skeleton is made out of.

not clear that an adaptation hypothesised by evolutionary psychologists would have evolved.

Furthermore, not all traits are selected for. Some occur as side-effects of the core structure, like the spandrels on the San Marco cathedral (Gould and Lewontin 1979). These were not planned for but exist as a result of the arches, however they turned out to be very useful and of great artistic merit. We simply do not know enough about the detailed constraints and influences of the Pleistocene era to accurately pinpoint which traits were selected for and which were not. We know even less when we work under the false assumption of optimisation.

If a useful trait does not necessitate an adaptation and adaptations are not necessarily selected for, the role of idealised atavism<sup>26</sup> in evolutionary psychology is completely exaggerated. By focussing on only selected adapted traits this conditional is far too narrow to cover what it claims to. Moreover, as Buller (2005) points out, evolution is an ongoing process. Current homo-sapiens are not the finished product, they are one step along the way. Therefore, it is not clear what reverse-engineering from hypothesised adaptations could accurately tell us anyway. Evolutionary psychology's view of evolution is limited and so, it is insufficient for explaining genetic programmes in the hopes of creating behavioural explanations.

(2) To understand the structure of the human brain you must understand the genetic program creating it.

The idea that genes build brains seems obvious however it is not the case that only genes have such influence. There are numerous resources necessary for successful development, from water to extranuclear chemicals, as Developmental Systems Theory argues (Oyama, 2000). While genetic traits cross generations and a love of Britney Spears may not, the environment still plays a powerful role in brain development. In fact, social structures consistently reproduce, to affect similar forms of development in following generations (Dupré, 2003). Genes *are* part of the toolkit that works to form a brain. However, the more sophisticated a brain becomes, e.g. being able to learn by parental imitation, the more social structures can inform brain development (Dupré 2003:13). Cognitive Behavioural Therapy is an example of this. It alters patterns in brain mechanisms to change behaviour (Paquette et al. 2003).

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<sup>26</sup> Reversion to an ancestral trait.

Furthermore, while genes code for protein chains, there is no such link to more complex observable features (Godfrey-Smith, 2000). So, just because genes tell your body how to make your brown hair, it doesn't mean they tell your body how to construct sophisticated brain modules for your actions and behaviour. This is not endorsing the 'Standard Social Sciences Model' (Tooby, 1992) where a brain is a blank slate bending into whatever shape the environment causes. Instead I am arguing with Dupré that the brain is a product of a 'variety of more or less reliable resources including those that are reliably reproduced by human culture' (2003).

Thus, genes are not sufficient for understanding brain structure. The above criticism suggests brains can develop at the speed of cultural evolution not purely genetic change. So, it is not clear what a Pleistocene insight could reliably reveal about human behaviour today. Of course, there is some explanatory connection between genes and brains. But it is more limited than evolutionary psychology treats it. Genes are only part of the picture and perhaps they are not the most important part when it comes to finding behavioural explanations.

(1) To understand human behaviour, it is sufficient to understand the structure of the brain, which is composed of many modules.

Evolutionary psychologists claim the brain is made from numerous modules, each adapted to deal with a different behavioural situation. These modules interact with each other and are stimulated by our current environment, which differs vastly from the Pleistocene era they are adapted to. However, the nature of these modules is unclear. The core idea seems to be that behaviour reduces to brain structure however this has been criticised for equivocating the mind and the brain. In fact, evolutionary psychologists use the terms 'mind module' and 'brain module' interchangeably (Dupré, 2003).

The extended theory of mind, however, completely contradicts this equivocation. It argues that while the brain remains inside your body, the mind can stretch beyond the 'boundaries of skin and skull' into the external environment (Clark & Chalmers, 1998:7). Clark and Chalmers give a specific version of this theory called Active Externalism. Active Externalism is the view that, subject to specific conditions (1998: 11), elements of the external environment can be a part of not only cognitive processing (e.g. a child using an abacus to count) but more complex mental states such as beliefs and memories. For example, take Otto, an elderly man with Alzheimer's who uses a notebook to hold his beliefs, looking them up to remember them. This notebook is a constant part of his remembering, easily and directly available, full of

beliefs that were consciously endorsed by him when he wrote them down and that are re-endorsed automatically upon retrieval (1998: 11). In this way, this notebook is an active, external part of Otto's mind.

If active externalism is true, then the mind and brain cannot be one and the same. Rather, the brain is a part of the mind, but the mind can extend beyond. So, evolutionary psychology is wrong to reduce all behaviour to brain structure as it is ignoring the role of external elements in the extended mind. This may not be a convincing argument to some, externalism is definitely controversial, but I wanted to question the equivocation of the mind and the brain. On the other hand, some might say that we have already equivocated the mind with the brain by using Developmental Systems Theory to argue that the external environment plays an active role in developing brain structure. It might be that the external elements that go into forming a brain also happen to form a mind. One could argue that externalism is merely a continuation of DST and brain structure is actually fundamental. However, I think active externalism and DST are two different things which do not need to be mutually exclusive. While I'm not sure exactly how active externalism and DST relate, it seems clear to me that amniotic fluid might facilitate brain development and in a very different way an abacus might be an external part of your mind. So, the mind cannot necessarily be reduced down to the brain.

The advocate of evolutionary psychology could respond to this in two ways. Firstly, by denying active externalism and maintaining that our behaviour is the result of brain (equivalent with the mind) modules. Secondly, one could incorporate active externalism into evolutionary psychology. If this was the case, then active externalism would be some kind of behaviour, which was the result of evolution. So, there must be a module for this behaviour<sup>27</sup>. Both of these responses get to the core contention of this foundational claim which is the proposition that the mind/brain consists entirely of these behavioural modules.

Regardless of whether the mind and brain can be equivocated, the claim that the mind/brain is made entirely of these hypothesised modules is very problematic. First of all, there is little in neuroscience that lends itself to these behavioural modules. In fact, most behaviours require many different brain functions, so activity is spread throughout different parts of the brain (Woodward & Cowie, 2004). Secondly, and more significantly for this argument, the concept of a module is poorly defined. It is not clear what exactly these modules are, let alone how they would work. Hypothetically, these modules are the direct result of

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<sup>27</sup> By evolutionary psychology.

evolutionary challenges faced by our ancestors (hopefully I have shown the problems with this chain of reasoning previously in this paper). However, on top of this, the modules also interact with each other and the current environment, which differs vastly from the Pleistocene era they are theoretically adapted to. So, it is not clear how they behave let alone what would constitute evidence of them.

Following from this, it seems most criticisms of evolutionary psychology could be incorporated into the discipline by saying that we have not gotten to the exact nature of these modules yet. By making modules fundamental they explain everything, and even incongruencies can be explained away by them behaving in unexpected ways. But there seems to me to be no good reason for accepting the existence of these modules in the first place. Even as a hypothesis this is a big leap of faith as they can easily become an unfalsifiable concept. We should find it very troubling that the behavioural explanation evolutionary psychology gives rests upon these enigmatic modules.

#### The Insight of Evolutionary Psychology

Hopefully I have shown that the story evolutionary psychology tells is unsound.

It is compelling to explain current behaviour through evolved adaptations to challenges thousands of years ago. But with it comes the danger of telling a specific story that suits current day narratives and endorsing any prejudice within that narrative by treating it as a natural evolved adaptation when the mechanism of this explanation is not sufficient. Evolution by natural selection is more complex, genes alone are not sufficient for explaining brain structure and hypothesised modules are problematic to say the least. The way in which evolutionary psychology can be used to re-box and legitimise prejudice is also very problematic.

Evolutionary psychology seeks to use evolution to explain human behaviour through a hypothesised inner mechanism. But, it turns out this mechanism is very limited and so it is not sufficient to make such behavioural claims. In fact, it is not clear evolutionary psychology could tell us anymore than the obvious<sup>28</sup>: that everything we do we evolved the ability to do. But this does not tell us why we do them, how, in what way and what they mean. An ability to move to music does not explain why on a Saturday night, specific demographics dance at dimly lit venues to particular music, and why this is very different from the dancing and music you'd see if you went to a ballet, and why people

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<sup>28</sup> What evolution tells us anyway

prefer one to the other. A social fact like Saucy<sup>29</sup> or Swan Lake would be more informative.

So, evolutionary psychology gives a flawed explanation of human behaviour, which can easily replicate ingrained prejudice. While I agree that evolution and behaviour should be studied, we should not follow this mechanism to do it.

### Conclusion

To conclude, evolutionary psychology's explanation of behaviour remains incomplete. The proposed connections between evolution and genes (3), genes and brain structure (2) or brain structure and behaviour (1) are not sufficient for behavioural explanations. Thus, evolutionary psychology is an inadequate research programme, unable to make consistently supported and beneficial insights. Furthermore, there is a danger that evolutionary psychology can be used to endorse whatever social narrative one would like and justify existing prejudice. I hope to have shown the relations between evolution and human behaviour to be far more complex than evolutionary psychology claims. These relations should continue to be explored but not through evolutionary psychology.

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<sup>29</sup> LSE's weekly nightclub

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