Preface

Why evolutionary psychopathology?

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Why a book on evolutionary psychopathology? Indeed, what is evolutionary psychopathology?

Let us briefly sweep definitional issues out of the way. First, since pathology is the study of illness, psychopathology is therefore the study of mental illness. This encompasses both psychiatric and psychological approaches. Psychopathology usually considers a wide range of causal factors for different mental conditions. These typically include social factors, cognitive factors, developmental factors, structural brain damage, neurotransmitter imbalance, and genetic factors. But rarely is psychopathology considered within an *evolutionary* framework. Hence the need for this book, which aims to bring together readings that exemplify this new approach. Hence also its subtitle: "Essays in Evolutionary Psychopathology".

Leda Cosmides and John Tooby, in their book *The Adapted Mind* (Barkow, Cosmides, & Tooby, 1990), argue persuasively for considering evolutionary factors in psychology, the study of the normal mind. Their book stands as something of a manifesto for the new area of "evolutionary psychology". The title of the present book—*The Maladapted Mind*—explicitly echoes theirs, for it shows how evolutionary considerations can be applied to psychopathology. We hope this book may help set the scene for the area of "evolutionary psychopathology".

The neglect of evolutionary considerations in psychopathology is somewhat surprising, though there may be historical reasons for it (which I touch upon later). It is surprising because mental illness is ultimately a product of brain

function, and the brain is obviously a biological organ. It is taken for granted in all other areas of biology that to understand biological phenomena, evolutionary factors must be considered. It is time to redress this neglect in psychopathology. If this book does nothing more than rekindle the debates about the links between evolution and psychopathology, it will have done its job. Hopefully it will also spark more research in this important area.

WHY EVOLUTIONARY PSYCHOLOGY?

Evolutionary psychology encourages researchers to consider the universal aspects of the human mind, since these aspects of our make-up are most likely to be the result of our biology rather than our specific culture. Some universals are more obvious than others: They just jump out at you. Language is one (Pinker, 1994); colour vision is another (Zeki, 1995). Other universals are less obvious, or at least seem obvious only once someone has pointed them out. Cheater-detection is one such universal (Cosmides, 1989), and gaze-monitoring is another (Scaife & Bruner, 1975).

Having identified a universal aspect of behaviour or cognition, evolutionary psychology then encourages the researcher to consider its adaptive significance: What advantages does this behaviour or cognitive process confer on survival and reproduction? How might this behaviour or cognitive process have been shaped by natural selection in our ancestral landscape?

Such universals also need to be explained in terms of the neural mechanisms that control them—here, evidence from neuropsychological, neuroimaging, and neurophysiological methods needs to be considered. Ultimately, the genes that code for specific universal neurocognitive mechanisms will need to be identified. Both behavioural and molecular genetic techniques need to feature in such accounts.

Note that evolutionary psychology did not come out of the blue. There had been more than a century of "comparative psychology"—the psychological study of different species—the ultimate aim of which was to understand the human mind better. But in the course of comparative psychology, much research lost sight of this aim and of the importance of situating such work in an evolutionary framework. For example, it was not uncommon to see research programmes investigating maze-learning in the rat, *for its own sake*. This is perfectly valid, but its relevance to the human case is often left undiscussed. Evolutionary psychology refocuses research on to the important goal of attempting to understand the evolution of the human mind.

WHY EVOLUTIONARY PSYCHOPATHOLOGY?

If universal aspects of the mind, together with their neural mechanisms, are adaptive, then the breakdown of such mechanisms should be maladaptive.

Evolutionary psychopathology investigates the breakdown of such mechanisms, and their consequences for cognition and behaviour.

That might suggest that evolutionary psychopathology is strictly dependent on evolutionary psychology. First the universal, adaptive, neurocognitive mechanism must be identified in its healthy state, and only then can its breakdown be studied and its link to pathology explored. Examples abound: Language is identified as a universal, and the breakdown in its control mechanisms is then explored in studies of language impairment. Colour vision is identified as a universal, and the breakdown in its control mechanisms is explored in studies of colour blindness.

However, the relation between evolutionary psychology and psychopathology is not always one-way. It also sometimes happens that a universal, adaptive, neurocognitive mechanism is first revealed by its breakdown. That is, the mechanism might be overlooked when we observe the mind/brain functioning normally; but the existence of the pathology sounds the alarm that there must be a crucial mechanism at work, hidden until that point. Two examples will suffice to illustrate how evolutionary psychopathology can inform evolutionary psychology.

First, Frith (1992) suggests that the presence of auditory hallucinations in schizophrenia arises as a result of a breakdown in a monitor that identifies whether an action was produced by the self or by another. Previously it was taken for granted that we can distinguish between our own actions (including our thoughts, speech, and movement) and those of someone else. It is only the breakdown of this proposed mechanism that reveals how enormously important and adaptive such a mechanism must be. Was that my own thought (in my head) or someone else's voice (in the room)? The disturbing confusion that would follow from an inability to make such a distinction reliably is terrifying. Postulating the existence of a mechanism that monitors whether actions (in the broadest sense) are generated by self or by other helps us not only to answer the question "Why do patients with schizophrenia experience hallucinations?", but also to consider "Why do the rest of us not experience hallucinations?"

A second example of evolutionary psychopathology informing evolutionary psychology may be useful. My colleagues and I have suggested that abnormal social and communication development in children with autism arises as a result of a breakdown in the development of the capacity for mindreading (Baron-Cohen, 1995, and Chapter 10 in this volume). Earlier work had taken it for granted that actions, and social interactions, are interpreted in terms of people's mental states, and that attributing mental states to others is involved in predicting their behaviour. But there was little if any consideration that this "mentalizing" ability (as John Morton calls it) might be a universal (Morton, Frith, & Leslie, 1990). Again, it is only the breakdown of the control mechanisms for mindreading that reveals how enormously important and

adaptive such mechanisms must be. Such mechanisms allow us to interpret effortlessly why, for example, that person said one thing but then did another. Interpreting the subtleties of social behaviour is a major puzzle for people with autism, who suffer from degrees of "mindblindness".

THE SCOPE OF EVOLUTIONARY PSYCHOPATHOLOGY

As will be seen, this book contains examples of work that illustrate evolutionary psychopathology, encompassing anxiety disorders, psychopaths, depression, and autism. These readings are just some examples that fall within the scope of evolutionary psychopathology. This raises the following questions: What are the limits of this approach? Can *any* psychiatric condition benefit from an explanation involving evolutionary considerations?

The answers to these questions are not straightforward. We might be tempted to think that this approach is only useful for those psychiatric conditions in which a genetic factor is implicated in their aetiology, since natural selection ultimately works on genes, via differential reproduction rates. On this argument, a condition like Post Traumatic Stress Disorder (PTSD), which by definition only occurs following a major environmental stressor (assault, witnessing or experiencing a terrible accident, and so on), is not the sort of phenomenon that should be brought into the framework of evolutionary psychopathology. What could evolutionary factors possibly have to do with current environmental causal factors?

But excluding such conditions from this framework might prove to be a mistake. It is by no means clear that just because the immediate causal event triggering PTSD lies in the person's environment, his or her specific *response* to it was not shaped by evolved neurocognitive mechanisms. This mirrors arguments explored in relation to depression (see Chapter 12, this volume). In sum, we do not yet know if there are psychiatric conditions that do not fit an explanation in terms of evolutionary psychopathology. It is part of the research programme for scientists in this area to identify which conditions do fit this framework, and which do not.

THE BENEFITS OF EVOLUTIONARY PSYCHOPATHOLOGY, AND ITS DANGERS

In the past, some writers have proposed the morally offensive (and scientifically nonsensical) argument that psychiatric patients are "throwbacks" in evolutionary terms. Such a notion was part of the eugenics movement in the 1930s, and was taken to tragic extremes in Nazi Germany, with the systematic extermination of people with intellectual and psychiatric disabilities and the legalised genocide of Jews and Gypsies, who were also perceived as being of a "lower order" in phylogenetic terms. The eugenics movement in the USA in the same period also led to systematic, legalised, compulsory sterilisation

programmes of tens of thousands of people with so-called "mental retardation". In fact, such policies did not have the first thing to do with evolutionary biology, and this sinister history of *apparent* application of evolutionary considerations in psychiatry should not lead us to ignore their *actual* relevance in psychopathology. This history may, however, help us understand the relative neglect of evolutionary approaches in modern psychiatry, mentioned earlier.

It is for us to look to the potential of evolutionary psychopathology. What does this approach give us that other approaches do not? Studying the breakdown of neurocognitive mechanisms frequently throws additional light on their workings that would not be available by studying "normality" alone. All approaches to psychopathology acknowledge that we learn about the normal by studying the abnormal. But by definition, evolutionary psychopathology gives us a larger, more comprehensive picture: not just of behaviour and its control mechanisms in modern humans, but of the evolution of such mechanisms across hominid ancestral history. Ultimately, of course, the value of evolutionary psychopathology will lie in its generating new, testable predictions and discoveries; if some of these lead to a fuller understanding of psychiatric conditions, or to improved diagnostic and treatment methods, it will have proven its value.

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