Evolutionary Special Interest Group of the Royal College of Psychiatrists

Evolutionary Psychiatry (EPSiG)

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Notes from the editor

This is our 11th EPSiG newsletter. We held our scientific meeting and AGM at the College on May 18th 2018. There was a superb presentation from Dr Nikhil Chaudhary, a Research Associate at University College London Human Evolutionary Ecology Group with amazing video clips. This is his synopsis.

The mismatch concept from Evolutionary Psychology (EP) is often the premise of evolutionary explanations for psychiatric disorders. Whilst a useful tool for identifying evolutionary discordance, there are some questions and processes that can be overlooked by proponents of EP. Substantial research indicates that in numerous domains humans can adapt quickly to local and changing conditions via behavioural flexibility or cultural evolutionary processes. Thus, when constructing a mismatch hypothesis, it is important to consider the possibility that cognition and behaviour may not be constrained by rigid genetically determined mental modules comprising a stone-age mind.

Another serious issue with numerous mismatch arguments is that they are based on vague claims about the EEA, which can be at odds with anthropological research. Studies on extant hunter-gatherer populations do not support claims that ancestral societies were characterised by: hierarchies, tightly related kin groups with patrilocal residence, male provisioning and female childcare and promiscuous/polygynous mating. Instead, the evidence points towards: egalitarian communities that reject dominant behaviour, multi-local mobile groups with low average relatedness, a flexible sex division of labour dependent on local ecological conditions and a predominantly serially monogamous mating system with low levels of polygyny.

This is not to say mismatch is a redundant concept; and at times the phenotypic gambit employed by Evolutionary Anthropologists seems unreasonable and ignores that genetic/physiological constraints and lags in adaption can occur. However, it is important that mismatch hypotheses draw on the available genetic, anthropological and archaeological evidence when making claims about the EEA. Mismatches that are consistent with such evidence and relevant to psychiatry include the fact that compared to industrialised societies, hunter-gatherers have a lower prevalence of social isolation, outgroup interaction, future orientation, physical inactivity and inattentive parenting. These differences in social structure and lifestyle may have important implications for our understanding of the relative risk of psychiatric conditions in industrialised versus hunter-gatherer populations.

I also presented on some evolutionary aspects of Alzheimer's disease, longevity and ageing from a recent paper I co-authored ;Gunten AV, Clerc MT, Tomar R, John-Smith PS (2018) Evolutionary Considerations on Aging and Alzheimer's Disease. J Alzheimer's Dis Parkinsonism 8: 423. The following abstract gives a gist of the area covered.

Increasingly people are surviving into old age both in high and middle/low income countries. The increase in longevity is associated with increased levels of morbidity of both somatic and mental disorders during those added years. These pathologies prompt developing strategies for effective prediction, prevention and treatment of such disorders, among them the dementias such as Alzheimer's disease (AD). Ageing lies on a temporal continuum that starts at conception and ends at death. It refers to the ageing processes occurring during an individual's lifetime. However, our understanding of ageing remains limited. In the early stages of dementia, distinguishing normal from pathological aging remains complex. Medical research customarily investigates the immediate mechanisms or pathogenesis of "how" diseases come about and affect patients. Evolutionary perspectives consider the reasons "why" people may have become particularly vulnerable to different conditions.

Examining why people age is illuminating. Around the question whether ageing is adaptive, we consider some evolutionary concepts useful around aging theories, among others antagonistic pleiotropy and life history theory and more recent concepts including evolvability and evolutionary developmental biology. As AD seems to be specific to homo sapiens, its existence may in part be anchored in the adaptive changes that have occurred after the hominidae separated from the pongidae. Around the question why apparently non-adaptive conditions such as AD are so frequent, we consider, among other aspects, brain development including the related phenomena of altriciality and grandmothering, the evolution of ApoE and the genome lag hypothesis. We consider the idea that the neuropathological hallmarks of AD help mitigate neurodegeneration and cognitive decline rather than being its cause. Thus, an evolutionary look into AD may shed new light on the currently still sombre perspectives regarding disease-modifying treatments of AD and prove useful as a root cause analysis.

Minutes of EPSIG AGM

18 May 2018 at the RCPsych 4-5pm

1. Attendance:
   Mohammed Abbas
   Riadh Abed (Chair)
   Saadi Ali
   Nikhil Chaudhary
   Muzaffar Kaser
   Paul St John-Smith (Newsletter Editor)
   Annie Swanepoel (Assistant Editor)

2. Apologies:
   Agnes Ayton (Treasurer)
   Andrew Blewett

3. Review of activities for the previous year. The chair of gave a brief overview of the activities of the previous year. EPSIG held a successful half day scientific meeting in May 2017 and a landmark second symposium in January 2018. Our second symposium had over 100 delegates and the videos of the lectures, which have been posted on YouTube with links on EPSIG web pages, have attracted numerous hits.

4. Financial report: The financial position was briefly presented by the chair on behalf of the treasurer who sent her apologies. It was specifically noted that EPSIG has a healthy financial surplus that currently stands at approximately £10,500. This has accrued primarily from the second symposium. Our healthy financial position should give us considerable leeway in organising our next symposium.

5. Planning for Third Evolutionary Psychiatry Symposium 22 March 2019. The chair explained that we already have 4 confirmed keynote speakers (2 from Europe, one each from the UK and USA) and we agreed that we would aim to get one or two more speakers. We will seek to ensure ample discussion time and audience participation and adequate breaks. The aim is to maintain EPSIG's momentum in spreading the evolutionary message that we managed to achieve in our previous 2 successful symposia.

6. EPSIG Newsletter and website. The group commended Paul, our editor for his diligence and outstanding productivity. We then discussed ways of increasing participation in the newsletter and also widening its distribution. This is proving an uphill task. We also noted that our website is currently up to date and we would seek to continue to maintain and improve it.

7. Curriculum updates. There have been no specific developments on this front other than to say that the place where evolution may be added if accepted will most likely be in the Neuroscience module. It was noted that there appears to be a degree of resistance to the inclusion of evolution from a number of quarters. Also, the suggestion that we should consider submitting an editorial to the Bulletin on this subject was reiterated.

8. College issues. The chair explained that in a recent informal consultation that the college undertook with the chairs of all 15 college SIGs, there was overwhelming support for the idea of an annual meeting of the chairs of the SIGs together with the elected officers of the college. Those present at our meeting strongly supported such an initiative. The chair will be conveying this view to the college hierarchy.

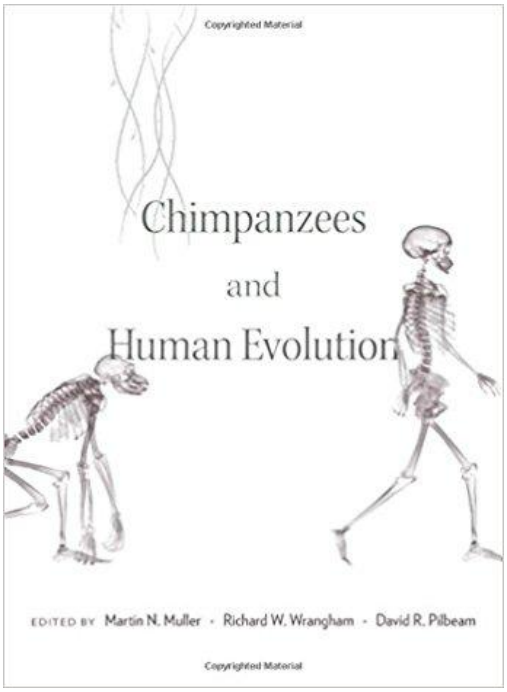
9. AOB. There were no items under this heading.

Future meeting dates:

EPSIG 3rd Symposium will take place on 22 March, 2019 at the RCPsych.We are also planning ahead for our AGM in 2019 and 2020 as well as possibly organising an international meeting perhaps co-organised with our Turkish counterparts. We have included below, some reflections after our last EPSIG symposium this year, from Muzaffer Kaser. He has been closely involved in the Turkish evolutionary group and is also an active member of EPSIG

Book Review

Chimpanzees and Human Evolution (2017) Martin Muller, Richard Wrangham & David Pilbeam. Harvard University Press.



This edited volume must be one of the most comprehensive and authoritative evolutionary texts on human and chimpanzee evolution available today. It is a scholarly work written in rigorous scientific prose and is exhaustively and meticulously referenced. The book consists of 21 chapters, many of which are written by the foremost experts in their respective fields. Therefore, the first thing to note about this volume is that it is not a work of popular science. However, it should be accessible to the serious non-expert reader who is interested in human evolution whether from a medical or other scientific background. The non-expert reader should, however, be prepared to expend time and effort familiarising themselves with a range of evolutionary and other biological terminology and concepts as required. But the effort is certainly worthwhile as many of the chapters are distilled summaries of book-length treatises on various aspects of human and/or chimpanzee biology, psychology and behavioural science.

Other than the general chapters dealing with the reconstruction of human and chimpanzee evolution and attempting to piece together the traits of the last common ancestor (LCA) there are chapters that discuss mortality/senescence and life span, fertility and fecundity, locomotion, dietary characteristics, mating systems, kinship systems, patterns of violence and coercion, relationships within and between the sexes, tool use, language, morality, cognition and cultural evolution. The primary and overarching conclusion of this book is that the LCA of humans and chimps was most likely chimp-like and that the traits evident in humans (separated around 7 million years ago) and bonobos (separated from chimps 1 million years ago) evolved subsequently, or as authors put it, are derivative.

One persuasive and rather fascinating explanation as to why humans look so much different from the LCA than do chimps was given by Henrich & Tennie namely that humans have been subject to millions of years of gene-culture co-evolution whereas there is no evidence this has occurred in chimpanzees due to the absence of evidence of cumulative culture.

To review a book of this size, breadth and depth would require far greater space than is available here. I will, therefore select a few areas that I found to be of particular interest and would hopefully be of interest to the readers of the newsletter.

With regard to senescence, mortality and life span a number of salient differences between humans and chimps become evident. While mortality is higher in chimpanzees at practically all stages of life, humans show higher infant mortality. This is due to the more hazardous human childbirth (the most hazardous birth of all mammals) related to bipedalism and constricted human birth canal combined with the enlarged human brain. Also, a striking difference is the absence of menopause in chimpanzees. In addition, while there is accelerated aging and higher mortality in chimpanzees there

is little evidence of Alzheimer's disease. A further striking observation is that while humans have longer periods of dependency than chimpanzees (infancy and childhood) humans reproduce more rapidly than chimpanzees and have shorter inter-birth intervals. This may be related to the existence of pair-bonding, grandmothering and a generally higher level of social support that human mothers receive.

A related area is the comparison of human and chimpanzee mating systems. Chimpanzees and bonobos universally show a promiscuous mating system and no evidence of pair bonding. The female chimp will mate more of less with every adult male in her troop during a single ovulatory cycle. Female chimps during sexual receptivity have been noted to respond positively to sexual advances by any male in the group within one minute 95.5% of the time. She can mate with 5 males per hour and a dozen in a day. Given the absence of pair bonding and any direct investment by fathers in the provision or care of offspring, female chimps have an interest in causing maximum confusion regarding paternity of her offspring in order to prevent the risk of male infanticide. Although female chimps do not show evidence of selectivity in mate choice (other than avoidance of mating with close male relatives), male chimps compete aggressively for copulations and high-ranking males routinely interfere in lower ranking male copulations. No known human society past or present has ever approached this degree of promiscuity.

Pair-bonding, whether monogamous, polygynous or polyandrous is a characteristic of all human societies. This refers to an exclusive affiliative relationship between a male and a female that includes a sexual component. The important point here is that while the bond exists, it is selective and is the opposite of promiscuity.

It is important to note here that the distinctive mating systems of each species determines and shapes the parameters of intra- and intersexual competition that takes place. For example, as male chimps invest little or nothing in offspring apart from the effort of copulation, they are geared exclusively to following short term mating strategies and are hence interested in the female's current fecundity (her chances of current reproduction). Male chimps therefore are more attracted to older females who are more likely to conceive and give birth. Human males, however, given their unusually high levels of parental investment are more interested in reproductive potential (future oriented) and hence have a preference for younger females. Finally, sperm competition is far more important in chimps than it is in humans.

Kinship systems: An important and striking observation is that human foragers have vastly more extensive and complex kinship recognition systems than do chimps and bonobos. In humans, pair-bonding has led to the development of father-son bonds and the evolution of patrilineal kinship structures. No such kinship structures exist in chimpanzee social groups due to uncertain paternity. The evolution of these kinship structures in humans has enabled the transmission of status from father to son and to the formation of independent groups based on patrilineal kinship lines. In addition, the evolution of language has enhanced the human ability to recognise and form enduring kinship bonds with relatives on both father and mother's side despite the fact that one set of relatives would be members of other groups. This enabled the formation of between group alliances also referred to as ethno-linguistic groups or primitive tribal groups. This is a uniquely human characteristic that has had a profound influence on the subsequent evolution of human societies.

Evolution of violent conflict: Human violent conflict, according to the authors of this section, may go deep into our evolutionary past (back to the LCA and beyond), superficial (relatively recent) or somewhere in between.

Levels of lethal violence among human foragers show a great deal of variation but on average is similar to chimps. Although the level of violence, both in males and females, is much higher in chimps, the lethality of violence in humans is greatly enhanced through the invention of weaponry and the skilled use of projectiles. The existence of weapons in humans has led to the removal of the advantage of body size in intra-group violence and created the need in humans to reduce aggression within groups to reduce mortality and morbidity of male on male violence.

Humans and chimps are said to be the same in the following characteristics: fission fusion societies (a tendency to split and disperse into smaller groups while foraging/hunting then getting together into a larger group at the end of the day), inter-group hostility, male coalitions, territorial behaviour and coalitionary killings.

Humans and chimps are different in the following: the existence of weapons, different benefits gained by aggression, multi-level societies and language.

Cooperation and competition within sexes: A general conclusion here suggests that humans and chimps show more similarities between them than with bonobos and gorillas.

In both humans and chimps same sex cooperative behaviour can involve larger numbers in males than in females. Also, intra-sexual competition interferes less in same sex male cooperation than among females in both humans and chimps. Male cooperation in both species facilitates hostile action against neighbouring groups. The authors suggest that these behaviours are more likely to characterise the LCA than are the bonobo's more peaceful traits which are likely to have evolved after the separation of the 2 Pan species around 1 million years ago.

Cooperation between the sexes: The division of labour in humans by sex has arisen with the advent of the genus homo some 2.5 million years ago. In human foragers around 60% of total calories consumed and 88% of total protein is provided by men through hunting whereas females carry out more than 90% of child care, 80% of food processing and 70% of domestic activities.

By comparison, among chimps, meat comprises less than 5% of total calories/protein intake. The proportion of meat in bonobo diet is even lower than this.

Of course, one of the major characteristics of human societies is division of labour that goes beyond that based on sex and is a fundamental aspect of human eusociality.

Sexual coercion in chimps and humans: Sexual coercion against females occurs more commonly in both chimps and humans than many other primate species. There are, however, important differences in the goals of coercion in the 2 species. In chimps, coercion is aimed at limiting female promiscuity rather than obtaining copulations as female chimps are not selective in their choice of mating partners. In humans, male aggression against females is aimed not only at reducing infidelity but also furthering the male's political objectives in bonding with other males (examples for this are given)

It is noted that aggression occurs less commonly in foraging societies than among agriculturalists. This is likely to be due to the more public nature of foraging life and the relative proximity of the female's male kin.

It is important to note that while forced copulation is known to occur in most human societies past and present this is rare or even unknown in chimps, bonobos and gorillas.

However, it is interesting to note that among chimps and humans, females are more likely to mate with their aggressors than with other males.

Tool use and manufacture: A tool culture is well documented in both Pan species (chimps and bonobos) as well as humans. Of course, the complexity and variety of tool manufacture and use among even the most primitive human foragers incomparably exceeds anything that chimps or bonobos are capable of. This suggests that the LCA was also a tool maker and user.

Cultural evolution in chimps and humans: A major conclusion from the review of a large number of studies is that there is little or no evidence of cumulative culture in the Pan species and hence no evidence of gene-culture co-evolution. Unlike the case in humans cultural practices among chimps appear to be re-inventible by individuals given the right circumstances. As already noted, this has led to gene-culture co-evolution causing humans to diverge to a much greater extent from the LCA than either of the 2 Pan species have done. As a result, the human species alone has become 'addicted to culture' as Henrich and Tennie put it.

Niko Tinbergen proposed that the proper understanding of a biological system requires the understanding of mechanism, development, phylogeny and function. This book provides a wealth of data as well as profoundly important insights on the phylogeny of our species and should therefore be of interest evolutionary psychiatrists, physicians and psychologists as well as others.

Riadh Abed.

The Evolutionary Psychiatry Group in Turkey: Reflections on the 2nd Symposium of EPSIG

Muzaffer Kaser, NIHR Clinical Lecturer Department of Psychiatry, University of Cambridge, Honorary Specialty Registrar in General Adult Psychiatry Cambridgeshire and Peterborough NHS Foundation Trust

I have been to numerous academic meetings, but I was particularly excited about the 2nd Symposium of the Evolutionary Psychiatry Special Interest Group at the Royal College of Psychiatrists. My excitement was about the memories when I was a psychiatry trainee in Istanbul, and also the founding member of the evolutionary psychiatry group at Bakirkoy Research and Training Hospital for Psychiatry (I will refer to as "Bakirkoy" for the rest of the piece). The group then evolved into the first evolutionary psychiatry special interest group recognized by a national psychiatry association.

Around 10 years ago in May 2007, we held the inaugural meeting of the evolutionary psychiatry group at Bakirkoy, founded as "Experimental and Evolutionary Psychiatry Group". I remember having long discussions with the coordinator, Dr Ejder Akgun Yildirim about the name of the group. Ejder was a consultant psychiatrist at the time with a PhD in physiology. We had a personal connection and shared research interests as we worked in the same lab on the rodent stress models and behavioural pharmacology, hence the "experimental" in the original name. Another reason was to start off cautiously by including the word "experimental". We felt that talking about links between evolution and psychiatry was a brave enough move in the hospital, let alone in the wider psychiatric community in Turkey. However, the interest in our group of psychiatry trainees was great and all of us were ready to accept the challenge.

We were meeting weekly and had discussions on the journal articles relevant to the main topics we aimed to learn more about. Mirror neuron system and evolution of social cognition were the first topics we discussed. One of our main goals was to understand the links between evolution, behaviour and psychopathology. The breadth of interests within the group was a source of strength. Members

brought a range of important and pertinent perspectives including social anthropology, neuroscience and ethology. The discussions became more comprehensive and we were joined by a few other psychiatric trainees and psychologists working in Bakirkoy. We then gave the first evolutionary psychiatry talk in the weekly hospital seminar which was received very positively.

Over the years, we discussed the evolutionary aspects of several phenomena including (but not limited to) theory of mind, aggression, compulsivity, psychosis, mate selection, and attachment. At times we referred to specific diagnoses such as obsessive-compulsive disorder or schizophrenia. Indeed, our first talk at national psychiatry conference was entitled "Evolutionary Psychiatry of Obsessive-Compulsive Disorder". However, in general, we tended to approach the psychopathology from a more phenomenological point considering certain entities and trying to understand the broader concepts in relation to evolution. When working on the theory of mind, we completed the Turkish reliability study of the Adult Reading Mind in the Eyes Test. The group had a significant impact on the dissertations in the hospital. Many colleagues set up projects related to the topics we had discussed.

Our efforts had started to have influence at the local and national level. We hosted prominent scientists and authors at our meetings. In 2010, Martin Brüne gave a talk on evolutionary psychiatry at Bakirkoy. Later that year, we were invited to give lectures on evolutionary psychiatry within the neuroscience graduate teaching programme at Istanbul University. Looking back, I believe our comprehensive approach paid off. Even the sceptics of evolutionary science within the psychiatric community respected and attended our talks. Among others, our talks provided a wider perspective to the understanding of psychopathology and were seen as interesting and mind opening.

At the national level, we were able to set up the Evolutionary Psychiatry Scientific Working Group in 2009. Since then, the evolutionary psychiatry talks have become standard in the national psychiatry conferences and increasingly well attended. It was only at the EPSIG symposium I found out that Psychiatric Association of Turkey and Royal College of Psychiatrists were the only two Professional organisations that have evolutionary psychiatry groups. Apparently, our group in Turkey was the first to incorporate it into a national psychiatry association.

Another noteworthy moment for me at the EPSIG meeting was that I got to meet Riadh Abed and Martin Brüne in person. Riadh's influential work, particularly his articles on the evolutionary psychiatry of OCD, had a major impact on our group. Similarly, Martin's work on theory of mind in schizophrenia, and his seminar at Bakirkoy were the two landmarks in the group's journey. I was very pleased to exchange ideas with the experts we were once reading in a seminar room at the mental health hospital in Istanbul.

A number of colleagues in the Turkish group were particluarly influential. Ejder Yildirim started the first discussions in his seminars on evolutionary psychiatry. Ertan Yurdakos, professor of physiology, and his research supervisor facilitated the discussions in Istanbul University. In Bakirkoy, Ali Babaoglu, the founder of psychotherapy unit, had a special interest in anthropology and was very supportive of Dr Yildirim's work. Our inaugural meeting was realised in the psychotherapy unit at Bakirkoy, and we gave the graduate lectures on evolutionary psychiatry at Istanbul University Medical School completing the circle.

Currently, a second wave of psychiatry trainees at Bakirkoy and other Turkish universities have kept the evolutionary flame burning. The Evolutionary Psychiatry group at Psychiatric Association of Turkey continues to give talks in national conferences and their work continues to influence the

research agenda. At the EPSIG meeting, we started planning a closer connection between the world's only two official evolutionary psychiatry groups (UK and Turkey).

Unsurprisingly, we discussed at length the state of academia and evolutionary thinking around the World and especially in Turkey. Despite the many reasons for gloom, I could point to the silver lining. Key features in our journey were to consistently share ideas, to keep being curious about evolution and behaviour, and enjoy the intellectual challenge.

On the day, I did a twitter thread about the evolutionary psychiatry in Bakirkoy. It was all over the Turkish twitter-sphere and I received praising comments by many Turkish students, academics, and doctors. Teaching evolution is under attack in Turkey, and scientific thinking is undermined by the post-truth World. However, the stories on solidarity and persistence will always give hope to others. During times of despair, people can show amazing resilience and hope is perhaps our species' best guarantee to maintaining our search for the truth.

Resources and EPSIG Website

The link to the EPSIG web pages that contain a range of resources is below:

http://www.rcpsych.ac.uk/workinpsychiatry/specialinterestgroups/evolutionarypsychiatry.aspx

Articles for the newsletter

We welcome submissions for future newsletters in the form of articles, reviews and interviews.

Correspondence: Replies, suggestions and clarifications on articles are welcomed and may be printed/included in our next newsletter.

Also, we welcome brief reviews of seminal articles where there is an evolutionary or other relevant conceptual angle (please include the weblink if the article is open access).

Please send any submissions to me at: - paul.stjohnsmith@hpft.nhs.uk or paulstjohnsmith@hotmail.com