

Evolutionary Psychiatry Special Interest Group (EPSIG)



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Notes from the Editor

Readers are in for a treat in this 34th Newsletter. I am delighted to interview Dr Nikhil Chaudhary, who is an assistant professor in evolutionary anthropology at Cambridge University. He has lived with contemporary hunter-gatherers in the Congo and has fascinating insights that psychiatrists can benefit from.

I am also pleased to include an essay by Dr Sirous Golchinheydari about an evolutionary perspective on suicide. Don't you just love the way that evolutionary thinking can broaden our point of view on core issues that psychiatrists face?

This is the last newsletter that I will be the editor for, and I will hand over to Dr Paul St John Smith in the summer. He will step down as Chair, which will be taken up by Dr Riadh Abed, while I will take over as Finance Officer. It has been a pleasure to help with the Newsletter and I look forward to reading future editions.

Notes from the Editor

The **Second EPSIG Psychiatric Trainee Engagement Workshop** will take place at the RCPsych HQ in London on 1 March 2024. This will be a full day training event on evolutionary principles and their application to mental health with both interactive and didactic components. Attendance is free and open to any psychiatric trainee in the UK or Ireland and will include lunch and refreshments. However, no travel or subsistence will be paid, and these must be claimed from attendees' current workplace CPD budgets. Places are limited and will be offered on a first come first serve basis. Interested trainees should contact Dr Tom Carpenter on carpenter.te@gmail.com for further information.

There are still a handful of tickets for an afternoon with Iain McGilchrist at the RCPsych on 5th April 2024, which promises to be a fantastic opportunity to understand more about the nature and importance of brain asymmetry.

<https://www.rcpsych.ac.uk/events/conferences/detail/2024/04/05/default-calendar/epsig-and-philsig-event---the-nature-and-importance-of-brain-asymmetry--an-afternoon-with-iain-mcgilchrist>

1-5 July 2024 Erice, Sicily : TOWARDS A NEW SCIENCE OF MENTAL DISORDERS: BRIDGING EVOLUTION AND GENETICS. Further information and registration: <https://centromajorana.it/mentaldisorders2024/>

5-6 August 2024 Durham, UK: International Society of Evolution, Medicine and Public Health Annual Conference, Evolutionary Psychiatry Pre-Meeting. Further information and registration: <https://isemph.org/Evolutionary-psychiatry-pre-meeting>

An important date for your diary: **22 November 2024** at the RCPsych in London, the 6th International EPSIG Symposium with a great line-up of speakers! Registration will open soon for this event!

FREE WPA EP Section web pages with links to all future webinars

<https://www.wpanet.org/evolutionary-psychiatry>

Registration is free of charge by clicking on the hyperlinks. All interested colleagues from all disciplines are welcome.



Thursday 28 March 2024, 6pm GMT: Prof Jerome Wakefield, title TBC

<https://uzh.zoom.us/meeting/register/u50lcu-vrD4pG9ODsl3PNr3hk2wxcmdclzaj>

Thursday 30 May 2024, 7pm BST: Prof Nichola Raihani, Evolutionary Perspectives on Paranoia and Suspiciousness

<https://uzh.zoom.us/meeting/register/u5wpdOmvzlsHNO4lwDubbM-z5TG3FCewcqy>

Interview with Dr. Nikhil Chaudhary



Please introduce yourself

I'm Nikhil Chaudhary and currently work as an Assistant Professor in Evolutionary Anthropology at the University of Cambridge. The majority of my research has been conducted with hunter-gatherers societies, principally the BaYaka who reside in the rainforests of northern Congo. I am on the right on the above picture.

What got you interested in evolutionary psychiatry?

Initially, my interests in psychiatry and evolution were entirely distinct. I studied managerial economics for my undergraduate degree and, for reasons unknown, I had a half module on evolutionary psychology. Whilst I learned a lot of questionable material in that class, I was immediately enticed by how such an elegantly simple theoretical framework (premised on natural selection) could have such vast explanatory power. This was really the first time I had ever truly enjoyed my education and it motivated me to pursue a masters and then PhD in evolution and behaviour at UCL.

My interest in mental disorder was much more long standing. I've always been drawn to extreme manifestations of the human condition.

Whether it be severe mental disorder, religious extremism, or any other rare expression of humanity, aside from the sadness of it all I also find it very captivating. In fact, I think we all do, for predictable evolutionary reasons - neuropsychological motivations to pay attention when exposed to the extra-ordinary is probably a useful trait to have. This attentiveness is evident when you consider the vast roster of true crime documentaries on Netflix.

Once I had entirely fallen for the evolutionary perspective it organically merged with my interest in mental disorder. The best thing about academia is you have more or less complete freedom to research what you want, and I've decided I want evolutionary psychiatry to be a core focus in my career.

What are the main advantages of evolutionary thinking for psychiatrists? And their patients?

I think we're still learning about the possible benefits of the evolutionary approach to psychiatry, and the field's potential and impact is at a nascent stage. A few thoughts about potential benefits:

Interview with Dr. Nikhil Chaudhary

i) Understanding the evolutionary underpinnings for vulnerability to disorder may be a fruitful for categorisation of disorders and symptoms. For instance, based on the DSM-5 criteria for depression, it is possible for two patients with a diagnosis to not share a single symptom. The criteria also allow for opposite symptoms e.g. hypersomnia or insomnia; weight loss or weight gain. I think the evolutionary approach has great potential for identifying why different symptom clusters may arise in response to different life circumstances. This may be useful for subtyping the disorder and/or rearranging diagnostic criteria. I think it could also help to predict which treatments are likely to be most effective for each subtype.

ii) I think evolutionary explanations can have a therapeutic effect in and of themselves. Understanding why certain vulnerabilities exist can help patients to reframe their understanding of their symptoms in a manner that reduces distress. The classic example being Randolph Nesse's smoke detector principle for explaining anxiety (have a read if you haven't already).

iii) For me, evolutionary psychiatry is another reminder that we are each just a unique psychological cocktail comprised of a large set of genes interacting with an infinite set of environmental conditions. Some people don't like this way of thinking and the implications for free will. However, I think the recognition of this fact is conducive to an unconditional compassion towards fellow members of our species regardless of their personality, moods beliefs, and behaviour.

What are the top resources you would recommend?

i) Robert Trivers is one of my favourite scientists. A collection of his most influential papers is collated in "*Natural Selection and Social Evolution.*" The papers are not about evolutionary psychiatry per se, and some of the concepts have been refined since he first wrote them, but his work has been fundamental in integrating evolutionary thinking into psychological and behavioural science. I think papers 2-5 are particularly seminal. The resource is available on his website:

<https://roberttrivers.com>



Interview with Dr. Nikhil Chaudhary

ii) "*Natural Selection and the Elusiveness of Happiness*" by Randolph Nesse. This is available open access, just google it. easy to find via google.

iii) "*Three Styles in the Evolutionary Study of Human Behavior*" by Eric Alden Smith. This is also available open access on ResearchGate, it's easy to find via google.

What are the most important things for readers to remember about evolutionary psychiatry?

I'll use this answer to try and address what I think are some misconceptions/issues related to evolutionary psychiatry:

i) The field does not suggest that mental disorders are, or previously were, adaptive. In a few cases there may be some truth to this, but the vast majority of disorders have not been favoured by natural selection. What evolutionary psychiatrists seek to explain is why our vulnerability to mental disorders persists *in spite of* the fact that they are usually maladaptive.

ii) Evolutionary mismatch is a tempting crutch when it comes to explaining mental illness in WEIRD (Western, Educated, Industrialised, Rich, and Democratic) populations. Mismatch explanations propose that discordance between the conditions we are exposed to and those we are adapted to—which many suggest is a hunter-gatherer way of life—can result in maladaptation or pathology. I have no doubt that mismatch has an important role in understanding mental illness but we shouldn't treat it as a default explanation; this sometimes occurs in popular culture, public discourse, and the field itself. We need to keep in mind that our species has an incredibly plastic brain and corresponding cognitive and behavioural flexibility; there is also a wealth of evidence that profound genetic evolution has occurred subsequent to the Neolithic transition away from hunting and gathering. Therefore, mismatch should not be assumed and mismatch hypothesis require testing.

ii) Furthermore, when generating mismatch hypotheses, it is essential that we base them on evidence rather than unsubstantiated ideas about ancestral societies. For instance, it is very common to hear mismatch explanations which rest on

assumptions that dominance hierarchies, high predation risk, patriarchy etc. were fundamental selective forces acting on our species over the 200,000-300,000 years. Many evolutionary anthropologists would question, or even disagree entirely, with these assumptions. We need to look to anthropological, archaeological, and genetic evidence to learn as much as possible about ancestral societies. This should then be the foundation for generating mismatch hypotheses.

Opinion piece: The Survival of Suicide

About the author

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In the hushed echoes of the ancient world, the tale of a man and his soul unfolds. A whisper from the past, revealing the timeless dance with the shadow of suicide. An act as ancient as it is profoundly human, this narrative, has borne numerous explanations, reasons and ideas. The enigma of self-chosen death has been explored but has not been assigned a definite meaning. From sin to honour, suicide has ironically survived the test of time and reach of natural selection despite refusing to show any change itself.

There are many theories that try to explain the survival of suicide through the lens of evolution and adaptation. The categorisation of these theories can be challenging as they do not all fit neatly into specific categories. Many theories are far-fetched and require a strong imagination to be understood.

An attempt to categorise some of the theories has yielded three main categories. These categories are by no means exhaustive.

Suicide is a very complex topic and none of the theories are able to explain its origins completely. However, they provide some insight into how this behaviour has survived while painting a picture of the world in which our ancestors used to live.

Kin selection theory – Altruism

Natural selection's argument for suicide in kin selection revolves around the notion that the survival of the individual does not always come

first despite the traditional thinking of evolution. The survival of the specie can be deemed superior. (1) There are various concepts in this theory which can be clearly seen in the more primitive species of the animal kingdom with no knowledge of the purpose of their actions. In most examples, the passing of genes has already taken place or the individual is no longer capable of reproducing, possibly having served their purpose from an evolutionary perspective.

Australian redback spiders (*Latrodectus hasselti*) surrender themselves to be eaten by their female counterpart while copulating. In this case, the spider has already mated and the passing of genes to the next generation is complete. (2) Bumblebees (*Bombus lucorum*) subject themselves to a lonely death away from the colony after being infected by parasites, thereby protecting their kin and exhibiting Hamilton's rule, a rule proposing that a gene promoting altruistic behaviour towards relatives can spread through a population. The infected bumblebee is unlikely to reproduce and may not serve an evolutionary purpose anymore. (3) The Australian social crab spider (*Diaea ergandros*) provides her own body as food for her offspring after they hatch. (4) Finally, worker honeybees sting intruders to protect the hive, an act which leads to the startled intruder fleeing while ripping out the bee's abdomen due to the lodged sting. Worker honeybees are non-reproductive and are acting in line with the inclusive fitness concept. (5) Evolution has allocated resources to create non-reproductive bees instead of reproductive ones is itself an example of adaptation and the efficiency of a eusocial colony structure.

Opinion piece: The Survival of Suicide

A quantitative approach of suicide in relation to the kin selection theory has been reported by Denys de Catanzaro's model. Using mathematical formula to conceptualise the decision-making process of suicide, he posited that when an individual continued existence is perceived as detrimental to the reproductive potential of the group, there is an increase in predisposition to suicide. An example of this is an individual with no direct descendants or prospects of future reproduction, who deems their existence as a burden to their kin or when an individual has passed their reproductive years and now feels as a financial or caregiving burden. According to the model, the individual believes that their death would alleviate the burden on their younger kin or increase the chances of their kin reproducing. (5)

Gene selection theory

Genetic selection theory focus on the primary unit of selection, the gene. Genes may behave in ways that maximise the chances of being passed on even at the expense of the organism. This is a shift from the organism, specie or unit to the genes itself.

The selfish gene theory overlaps with the kin selection theory but ultimately and selfishly ensures that specific genes are passed on. In the case of suicidality, the gene responsible can act as a "self-destruct" button in organisms that have served their purpose or serve to allocate more resources to the gene-carrying individual. Similar to the features proposed in kin selection theory in which the organism has lost reproductive function and now serves to protect the specie, in the selfish gene theory, a gene to remove a defective organism would be an advantage. (6)

A hypothesis proposed is the bargaining hypothesis focusing on suicidal behaviour influencing their social environment. Suicidal ideation is a method to signal distress and influence others, potentially leading to more support, attention and recourses. The gene in this case is beneficial in ensuring an advantage for the individual. However, in certain societies throughout human history, suicidality has been attributed to inferiority and

would therefore result in less recourses for the individual, showing the limitations of this theory. (7)

Another similar and interesting theory revolves around social communication. Social communication and group-belonging relate to suicide from an evolutionary perspective and the genes involved. They can be used to explain the social benefits and implications of suicide, influenced by social dynamics. The costly signalling theory, for example, suggests that individuals engage in "costly" behaviour that could be detrimental to the self but serve to communicate or signal certain qualities or information to others. In the case of suicidality, this would be the request for help. This is categorised differently from the bargaining theory, as the latter revolves around manipulative behaviour while the costly signalling theory focuses on the reliability of the signal given the "cost" to the individual and thereby ensures its authenticity to the receiver. (8)

Perhaps the most important aspect of the survival of suicide is its role in different cultures. While the bargaining theory looks are individuals, the gene-culture coevolution theory focuses on the interplay between genes and culture over generations. Although not directly resulting in propagations of genes, it provides a broad perspective regarding how genetic predisposition and culture can outcome suicide. An example is a culture that stigmatises mental health issues and simultaneously contains a genetic predisposition to suicide, leading to an increase in the behaviour. (9)

Evolutionary mismatch

The concept of evolutionary mismatch relates to most topics in evolutionary psychiatry and suicidality is no different. It is a simple idea that the genes that predispose an individual to suicidality, a disadvantage, also provide an advantageous adaption in other aspects.

The "low fitness of the organism model", proposed by de Catanzaro as well, suggest that the genotype associated with suicide may have been adaptive in our ancestors but no longer effective in modern contexts. In less small and kin-centric groups of today, the negative impact or

Opinion piece: The Survival of Suicide

detrimental effects of suicide is reduced and could make self-harm less detrimental from an evolutionary standpoint as opposed to the small and limited societies our ancestors lived in which each member played an important role. (10)

Similarly, in a small, close-knit societies, being part of the social group was crucial for survival of the individual. Exclusion from such groups could have dire consequences. An evolutionary mechanism to induce feelings of distress and despair in response to social exclusions would be an advantage. In modern societies, the same intense reactions to social exclusion could manifest into outcomes like depression or suicidal behaviour. (11)

Finally, psychopathology as an evolutionary by-product posits that suicidality could stem from by-products of adaptive traits. For example, the predisposition to rumination characteristic of depression could be a form of analytical thinking in complex social environments, serving as an advantage. (12) There are further theories relating mental illness and suicide that propose that mental illness is a byproduct of the brain's mechanism to prevent suicide. Suicide may have survived because there have been barriers to control its occurrence, preventing it from being eradicated. These barriers would present in various forms and be activated depending on the degree of suicidal ideation. Mental illness is one of these barriers as explained by the "pain-brain theory" suggesting mental illness as a safety measure that is activated during periods of increased susceptibility to self-harm. An example is the state of hopelessness and psychomotor retardation in depression as a method to stop the act of self-harm. Intense anxiety or compulsions seen in other mental health disorders could serve to keep an individual preoccupied and reduce the chances of self-harm. (13)

Conclusion

There is no doubt that the origins of suicide are complex and cannot be summarised or isolated. The genetic mechanisms that have placed the genes responsible in the gene pool are likely far

too numerous to count. It can be illogical to precisely explain how such a harmful exercise has remained in human behaviour since the time of our ancestors. However, looking at the vast possibilities of how this may have happened can provide some insight into understanding the origins of suicide and its survival.

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