

Interview with Professor Anna Abraham

Steven Kemp

Anna Abraham is a professor in the School of Social Sciences at Leeds Beckett University. Steven Kemp, recently appointed at Leeds Beckett, caught up with Professor Abraham to find out about her research on the psychology and cognitive neuroscience of creativity.

Even a casual browse of the internet shows that you are a leading and influential figure in the neuroscience of creativity. How did you get into this field of study?

I have been interested in the arts for as far back as I can remember. Instantiations of creativity have always been a source of marvel for me. Even as a kid, they were magical experiences that somehow lifted my spirits. My drive to understand the nature of creativity was naive at best through most of my early life. Eventually I came upon a generous opportunity to carry out a PhD in Neuroscience on a topic of my choice. I realised this was an exciting approach that, at the time, was rarely used to study creativity and that it stood to provide the kind of insights that no other approach could. That is what got me to venture into this field.

Can you define creativity?

Within social science and life science research settings, creativity is defined as the ability to generate ideas that have at least two core features. The idea must depart from the customary in being original or novel or unusual in some way. And the idea must be relevant or fitting or satisfying given the particular context in which it is being generated.

Neuropsychologists are often thought to be overly focussed on measurement and standard deviations! But can creativity be measured, or should the question be can we measure a cognitive style that results in creativity?

Creativity manifests in seemingly endless ways in all aspects of human endeavour. There



Anna Abraham
(Image courtesy of Anna Abraham)

is no single cognitive style that necessarily results in creativity, and a great many aspects of creativity escape capture through current forms of measurement. Nonetheless, specific facets of creative ideation (particularly those involving contexts of deliberate imaginative problem solving over a brief temporal duration) can be assessed using behavioural tasks that are readily available to us. These include the propensity to generate multiple and highly original ideas upon being prompted to do so as well as processes of creative cognition, such as conceptual expansion, imagery, flow and analogical reasoning among others.

In his book *Aping Mankind*, Ray Tallis calls attempts to use neuroimaging to reduce complex human abilities, emotions or states of mind to a specific brain region ‘neuromania’. Does the field of creativity research suffer from occasional neuromania?

Definitely.

Do you want to debunk the right-brain theory of creativity, or is there something in it?

One would be hard pressed to find a single creativity neuroscientist today who strongly subscribes to the idea that creativity solely stems from right hemisphere of the brain. We have come a long way since those early dual-

istic ideas of the imaginative/associative right brain versus the goal-directed/analytical left brain. Well, at least in relation to neuroanatomy. Functional dualistic ideas still abound, but they have been generally excised from the world of lateralisation and grafted onto the neuroscientific zeitgeist of the present, which centres on large-scale brain networks. So the current dominant view is that creativity comes about as a function of dynamic interactions between the associative default mode brain network and the goal-directed central executive brain network.

Does creativity, whether it be musical, linguistic, artistic or scientific, share a common neurological basis, or am I lapsing into neuromania?

That is an interesting question, but one I cannot yet answer definitively. While there is a generally accepted supposition that there are ‘domain-general’ (common to most of all forms of creativity) and ‘domain-specific’ (limited to particular forms of creativity) processes and mechanisms of creativity, few neuroscientific studies to date have sought to examine commonalities across different specialised domains of creativity. Indeed, it is incredibly challenging to examine creative compared to non-creative forms of ideation/expression/generation even within single domains using the neuroscientific methods we currently have on hand.

What is the relationship between creativity and IQ?

This is among the oldest questions in the field. And it elicits a veritable battlefield of views. On balance, much of the psychological evidence seems to suggest a threshold view, which is that creativity and IQ are correlated but only up to a point (i.e. average levels of IQ), beyond which there is no linear association between the two. It must be borne in mind though that some of the most widely used creativity tasks have their roots in the psychometric assessment of IQ. So it is little wonder that associations between the two are routinely evidenced. In any event, while there may be a stable relationship between IQ and some aspects of domain-general cre-

ativity, this is unlikely to extend in quite the same manner to domain-specific facets of creativity.

Is there clinical value in measuring creativity to either understand brain insults and their impact, or for ameliorative/rehabilitation purposes?

Yes, I believe there is. There are several strands of evidence to support this idea: The discovery of *de novo* artistic expression in subsets of patients with frontotemporal dementia, the occasional manifestation of acquired savant capabilities in artistic domains following brain damage, and so on. Moreover, several studies have showcased continued artistic productivity in professional visual artists and musicians following even significant neurological damage or deterioration. One of the leading experts in this domain, Dahlia Zaidel, has proposed that creative expression may in fact be a relatively disorder-resistant capacity of the human brain in that it reflects the fundamental human drive to communicate and express oneself when the usual forms we rely on in daily life (based on language or action) are no longer functional. The logic of channelling creative capacities to help ameliorate neuropsychological dysfunction would be akin to that of using music as a critical ingredient in aiding in speech therapy – the latter approach is being increasingly implemented across a range of psychiatric and neurological conditions.

I had a phone call recently from a student union representative asking if I could do an article on drugs and creativity. I got the impression that perhaps he'd seen the film *Limitless* too many times. But are there ways to enhance creativity?

Fortunately or unfortunately, there are no known silver bullets to enhance creativity. There are many ways in which to overcome impasses in the short-term during creative problem solving – and these typically involving carving out space and time in some way to permit the incubation of one's ideas. But long-term boosts in creativity require long-term dedication. Just as effortful physical training leads to the strengthening of one's

bodily fitness, continual practice and perseverance in refining and pushing the boundaries of one's craft are the factors that count in enhancing creativity.

The effects of drugs on creative ideation are another matter and are anything but clear given the limited empirical work on the topic. It is worth considering though the fact that quite a large leap is involved in going from seeing the world from unusual perspectives (as afforded by certain drugs) to novel idea generation. There is a stimulating interview with Aldous Huxley, which was published in 1960 in *The Paris Review* where he was posed similar questions. And Huxley responds by frankly stating that when in an intoxicated state, one is not in a frame of mind that can be described as purposeful. As one is not interested in doing something practical or useful during the experience, creativity would not be abetted in the moment. So while the experience is often transcendental in altering one's view of reality, and that in itself might provide inspiration for some people to create works of art at a later point, Huxley averred that psychedelic experiences are unlikely to have any direct, immediate or lasting positive influence on creativity in the vast majority of people.

What is the relationship between meditation and/or mindfulness and creativity? Can we be creative or have eureka moments when we take our mind away from the problem that we're trying to resolve?

Surprisingly enough, the influence of meditation or mindfulness versus mind wandering on creativity has rarely been compared within the same experimental design. There is much evidence though for the positive effect of an incubation period during problem solving, which is when we remove our mental focus from the problem at hand after a period per-

sistently working on the problem. The 'a-ha' experience of an insight is often reported to occur following a period of incubation. Which particular activities within this incubation period – be it mind wandering or mindfulness, or indeed others like physical exercise, computer gaming, listening to music, engaging with social media, and so on – would promote the reaching of insights better than others is as yet unknown.

Some fabulously creative people have had mental illness. Is there any association between creativity and mental illness? Or with psychological wellbeing?

This is also one of the oldest questions in the field and it is one that greatly polarises the research community. There is a wide range of evidence that is indicative of an association between mental illness and creativity. For instance, Simon Kyaga's population-wide studies speak to the disproportionately higher incidence of mental illness among people who work in creative professions. But there is much to consider more closely. What is the nature or shape of this association – is it linear or u-shaped? Which disorders are implicated – all forms of severe mental illness or only specific ones like bipolar disorder? What is driving this association – neurocognitive factors like information processing biases or socio-economic factors like high job insecurity in such professions? Given the positive impact of engaging with the arts on psychological wellbeing, might the association between creativity and mental illness be indicative instead of the turning to art in such populations in order to strengthen their mental health? These are among the many complex and fascinating questions that beg further study.

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