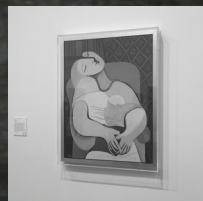
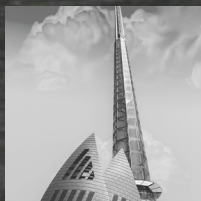


The Behavioural Scientist's Guide to Fuelling Creativity

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Crawford Hollingworth and Liz Barker
The Behavioural Architects



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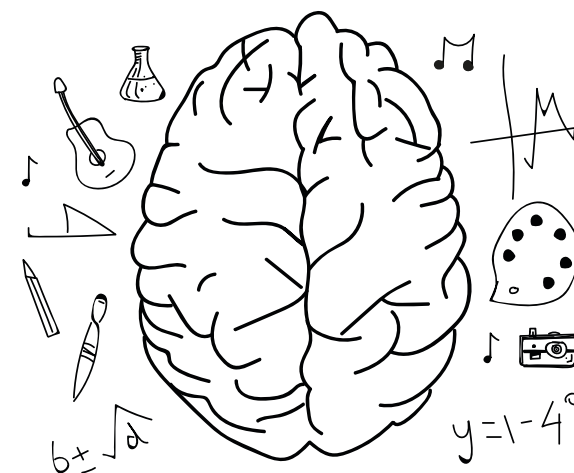
Creativity is *“the ability to take existing pieces of information and combine them in novel ways that lead to greater understanding and suggest new behaviours and responses.”*

Robert Stickgold and Matthew Walker ¹

“Creativity is just connecting things.”
Steve Jobs²

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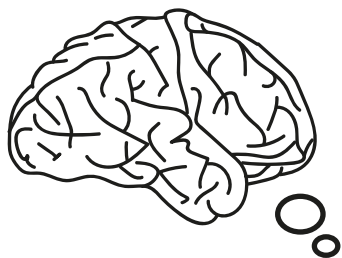
Over the last few years behavioural scientists have been investigating what makes us more creative and original, and what's going on inside our brains to enable this. In this article, we showcase four of the strongest techniques to build more creative environments and to maximise the creativity of our teams. What key factors best drive creativity in groups, to ultimately generate original thinking and successful ideas?



01

There has been a considerable amount of research on this issue by businesses, business schools, neuroscientists and psychologists. From this range of research four core insights stand out which inspire and challenge some previous beliefs about how we should both set up and run creative sessions:

- 01 Priming our subconscious minds
- 02 A diverse team trumps pure expertise
- 03 Debate and criticise ideas to maximise quality and quantity
- 04 Sleep on it



Priming our subconscious minds

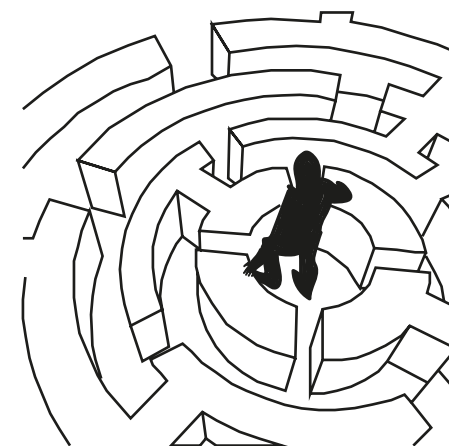
Feeling there is not enough time for pre-work before a creative session or brainstorm, we often jump straight in. But this can mean missing out on the best ideas. We now know from the behavioural sciences that allowing information to come in consciously, but then permitting time for it to be processed in our subconscious – our ‘System 1’ part of the brain – can often lead to those valuable ‘A-Ha’ moments. These sudden, seemingly random connections or leaps of thought provide us with an answer to a problem or an innovative solution.

So, setting pre-tasks, small activities or exercises before any creative session or brainstorm can encourage more original thought by giving us time to subconsciously process and mull over the problem. Without this initial step, creativity can be thwarted and certainly limited, meaning we miss some of the wider context that can build more lateral connections and ideas.

Scott Barry Kaufman, scientific director of the Imagination Institute and researcher at the Positive Psychology Center at University of Pennsylvania, highlights the problems of a myopic ‘must think hard!’ type of focus: “Great ideas don’t tend to come when you are narrowly focusing on them.”

Moreover, certain pre-tasks may promote more creative thinking than others. IDEO, the Silicon Valley design agency, experimented with giving people homework in the days leading up to a scheduled brainstorm on new technologies for the toy industry.

- One group was asked to do **some background reading and listen to an expert lecture;**
- A second group was asked to **spend half an hour in a toy store examining the state of technology in existing toys;** and
- The third group was **not asked to do any preparation** before the brainstorm.



The group who visited the toy store significantly outperformed the other two groups, both in the quantity and quality of their ideas.

For another brainstorm to develop alternative wine beverage containers, IDEO filled the conference table with all sorts of containers, from Japanese sake flasks to porcelain beer bottle stoppers. Simply examining all the items on the table before the session helped the group generate a large number of good ideas quickly.³

02 A diverse team trumps expertise

Another myth is that the more people know or the more expert they are in a field, the better their generated ideas will be. Yet, this can actually lead to a narrower approach. Research has shown that teams made up of individuals with broader perspectives and a wide range of experience are more likely to generate more original ideas than even the best subject experts. Somewhat counter-intuitively, too much expertise can blinker creativity.

If we look back through history, the most creative individuals have tended to have broad interests and great versatility. For example, psychologist Dean Simonton found that the most successful operatic composers have tended to represent a mix of genres. His data suggests that these composers were able to avoid the inflexibility of too much expertise in only one composition area. Many highly innovative individuals were actually outsiders to the field to which they contributed. Michelangelo felt he was more of a sculptor than the painter most people consider him to be.

Highly creative scientists have also tended to have a lot of artistic hobbies and interests. Galileo was only able to identify the zigzag patterns separating light and dark areas on the moon as mountains because of his training in a drawing technique called chiaroscuro (an Italian term meaning 'light-dark'), used to illustrate the contours of mountains and other objects or landscapes. His peers had all been peering through telescopes at the moon too, but he was able to make connections that they couldn't due to his wider experience and training. Comparably, a study of Nobel Prize-winning scientists found they are more likely to have artistic hobbies than their fellow peers.⁴

Groups seeking innovation can ensure they perform best by bringing together a diverse collection of people with a broad knowledge base and mix of disciplines, experience and backgrounds, who don't all necessarily need to be experts in the area in focus.

Kaufman believes that:

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The relationship between knowledge and creativity is best characterised by an “inverted U-shaped” curve: some knowledge is good, but too much knowledge can impair flexibility.⁵

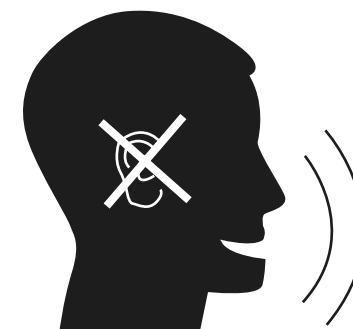
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Tom Kelley, of IDEO says:

“

Expertise is great until it begins to shut you off from new learning. Many self-described experts, for example, talk more than they listen. Experts can inadvertently block an innovation by saying ‘It's never been done that way’... Don't be an expert snob!⁶

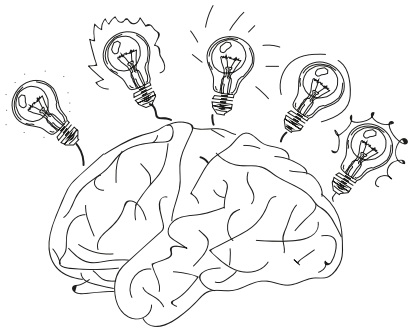
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03

Debate and criticise ideas to maximise quality and quantity

Experts have long believed that participants in a brainstorm session should not criticise or debate ideas as they were put forward in order to help people feel uninhibited and generate the largest number of innovative ideas. It rests on the theory that most of us want to conform with the group and be accepted by our peers. Knowing that what we suggest won't be criticised may lead us to be more forthcoming in the ideas we convey. However, this conventional wisdom is now being challenged. A 2004 study by Charlan Nemeth – a Professor of Psychology at the University of California, Berkeley – and colleagues found that **encouraging debate** in a brainstorm actually helped to generate a larger number of quality ideas.⁷



In the study:

- One group was told: "Most research and advice suggests that the best way to come up with good solutions is to come up with many solutions. Freewheeling is welcome; don't be afraid to say anything that comes to mind. However, in addition, most studies suggest that you should rule out criticism. You should NOT criticize anyone else's ideas."
- A second group was told the same as the above, yet the last sentence was replaced with "However, in addition, most studies suggest that you should debate and even criticize each other's ideas."
- A control group was just asked to come up with as many solutions as possible with no further instructions.

Nemeth and her team conducted these studies in both France and the US and found that those who were encouraged to debate their ideas actually generated 16% more ideas, which were independently judged as better quality.

Stating at the outset that it was beneficial to debate ideas probably helped to reduce anxiety among participants and increase the culture of dissent. Crucially, the resulting discussions then help to increase the quality of ideas, improving those suggested, inspiring new ones and raising the quality of critical thinking and analysis in the group.

Charlan Nemeth says:

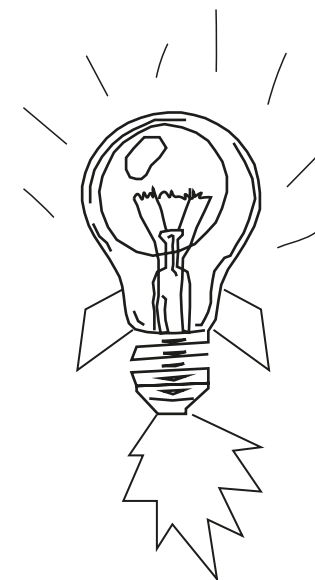


Minority viewpoints are important, not because they tend to prevail, but because they stimulate divergent attention and thought... As a result, even when they are wrong they contribute to the detection of novel solutions and decisions that, on balance, are qualitatively better.⁸



However, that doesn't mean we don't need to try to keep an open mind when others present their ideas. Research by psychologist Jennifer Mueller and colleagues revealed that we tend to have an implicit bias against creative ideas.

We like the idea of creativity, but initially, we tend to fear the uncertain and unconventional reality of creative ideas that by nature question the status quo. As Barry Kaufman and Carolyn Gregoire note, "It's usually only after an idea has gained acceptance and recognition that we applaud the idea and its creator."⁹ So, trying to recognise feelings of fear or uncertainty, risk and anxiety about non-conformity could help counter this bias in ourselves and make us more open to new, ground-breaking ideas.



04 Sleep on it

A final insight challenges the idea that only some people are creative in an innate sort of way – that they were simply ‘born creative’ whilst everyone else is more narrow-minded. In fact, we all have the potential to be a bit more creative by making sure we get a good night’s sleep.

In the last couple of decades, research by neuroscientists into sleep has identified why it is that a full night’s sleep – meaning you get a full 7-9 hours of sleep – fuels a more creative mind.



Our sleep consists of two different types: NREM (non-rapid eye movement) and REM (rapid eye movement) sleep. We switch between the two in 90-minute sleep cycles throughout the night. NREM sleep mostly occurs early on in the night, gradually shifting towards more REM intensive sleep later on in the night. NREM sleep is deep and restorative, and it’s when we sift through neural connections, removing unnecessary ones and lay down new memories. REM sleep is our dream sleep and the period in which we strengthen the connections remaining and make new, sometimes quite radical associations which can help with problem-solving.

“REM sleep helps construct vast associative networks of information in the brain” says neuroscientist Matthew Walker.¹⁰ This means we find it easier to make lateral, unique connections, enabling those instantaneous, revolutionary associations and see things in a new light.



REM sleep helps construct vast associative networks of information in the brain.



However, it’s not a case of doing away with NREM sleep to be more creative. We need both sleep cycles to function and need to make sure we sleep the full 7-9 hours we biologically need so that we go through the REM-intensive sleep cycles of the early morning.

Research by Robert Stickgold, Director of the Center for Sleep and Cognition at Harvard Medical School and his colleagues found that REM sleep enabled broader associations to come to mind in what’s known as a semantic priming test.¹¹ If I say the word ‘boat’, words such as ‘sea’, ‘water’, ‘sailing’ probably come to

mind. These would be described as narrow or strong associations. And these associations typically come to mind in a waking state (i.e. now) and after being woken from an NREM sleep state. On being awoken from REM sleep though, people tended to come up with broader, weaker associative words, such as ‘explorer’ or ‘refugee’. It’s hard to come up with examples like these when awake.

Similar research also found that people could more instantaneously solve anagrams when awoken from REM sleep. There’s a 32% increase in number of puzzles solved after REM sleep compared to NREM sleep. In tests of fluid thinking too, people performed better after a 3.5 hour period of REM sleep compared to a 3.5 hour period of NREM sleep or wakefulness. And in a test of repetitive mathematical problems, those who had slept a full night between sessions were overwhelmingly more likely to work out a short-cut solution, saving them considerable time and effort, as opposed to those who performed

another session in the same day. 59% of people who had slept between sessions figured out the shortcut compared to just 25% of those who had not.¹²

These findings have also been reflected in real-world tests. In one study, employees getting more sleep tended to generate more of and more accurate solutions to work-based problems they face.¹³

So, we don't need to be the stereotypical eccentric artist, or crazy scientist to have creative ideas. We can just be us. As long as we get our 7-9 hours of sleep, we have the potential to come up with elegant, innovative solutions to problems and new ideas for old approaches just as well as anyone else.



For our workplaces, this means that whether we are on our own or in teams, building enough sleep and time into the process could be a critical factor when thinking about issues or opportunities. And we don't necessarily mean napping in the office, or even the craze for sleep pods! It could simply mean emphasising the importance of an iterative process built around sound sleep: A good night's sleep before a pre-work task or an idea generation session, followed by another night's sleep, followed by a second idea generation session and so on. This research also throws into question the ubiquitous all-nighter hackathons, born out of the tech sector. Instead, planning shorter sessions with smaller goals over a period of time whilst encouraging everyone to sleep may be a more optimal way to structure creative sessions.

Summary

In summary, if you want to build more creative environments or brainstorming sessions that maximise creativity, breadth and quality of ideas, then:



01
Find the time to set inspiring activities and tasks before a session – release that sub-conscious power.



02
Search out a diverse team with potentially differing viewpoints, backgrounds and expertise.



03
A little more controversially, encourage debate and criticism of ideas.



04
Finally, sleep on it – let your brain make some unique, original associations

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About the Authors



The Behavioural Architects, which he launched in 2011 with co-Founders Sian Davies and Sarah Davies. He was also founder of HeadlightVision in London and New York, a behavioural trends research consultancy. HeadlightVision was acquired by WPP in 2003. He has written and spoken widely on the subject of behavioural economics for various institutions and publications, including the Market Research Society, Marketing Society, Market Leader, Aura, AQR, London Business School and Impact magazine. Crawford is a Fellow of The Marketing Society and Royal Society of Arts.



Liz Barker is Global Head of BE Intelligence & Networks at The Behavioural Architects, advancing the application of behavioural science by bridging the worlds of academia and business. Her background is in Economics, particularly the application of behavioural economics across a wide range of fields, from global business and finance to international development. Liz has a BA and MSc in Economics from Cambridge and Oxford.

The Behavioural Architects

The Behavioural Architects (TBA) is an award-winning global insight, research and consultancy business with behavioural science at its core. It was founded in 2011 by Crawford Hollingworth, Sian Davies and Sarah Davies.

The company was one of the first agencies built around the new insights coming from the behavioural sciences. This new thinking has inspired them to develop powerful frameworks that fuel deeper understanding of consumer behaviour and behaviour change. TBA has offices in London, Oxford, Sydney, Melbourne, Shanghai and New York and has worked with many global corporations, NGOs and governments, reinvigorating traditional research methodologies alongside pioneering new ones. Their aim is to make behavioural insights both accessible and actionable for clients.

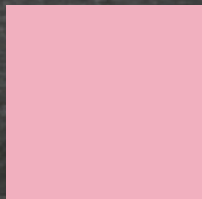
The Behavioural Architects invests heavily in its Oxford-based intelligence team dedicated to supporting its global teams, keeping them up to speed with developments from the academic arena and top BE practitioners.

In 2013 TBA won the Market Research Society (MRS) award for Best New Agency and, in 2015, the highly competitive MRS Best Place to Work.

For more information, please visit www.thebeearchitects.com

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Contact Details for The Behavioural Architects

London

Sian Davies, Founder
sian@thebearchitects.com
Sarah Davies, Founder
sarah@thebearchitects.com

Sydney and Melbourne

Mike Daniels, Founder
mike@thebearchitects.com

New York

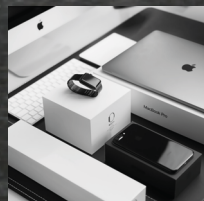
Sonia Misak, President
sonia@thebearchitects.com

Oxford

Crawford Hollingworth, Founder
crawford@thebearchitects.com

Shanghai

Qing Wang, Founder
qing@thebearchitects.com
Sharon Zhou, Founder
sharon@thebearchitects.com



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