

## The unscientific thinking that forever lingers in the mind

Young children are inclined to see purpose in the natural world. Ask them why we have rivers, and they'll likely tell you that we have rivers so that boats can travel on them (an example of a 'teleological explanation'). Cute, but maybe not that surprising. Well, consider this – a new study with 80 physical scientists finds that they too have a latent tendency to endorse similar teleological explanations for why nature is the way it is. Oh yes, they label those explanations as false most of the time, but put them under time pressure, and their child-like, quasi-religious beliefs shine through.

Deborah Kelemen and her colleagues presented 80 scientists (including physicists, chemists and geographers) with 100 one-sentence statements and their task was to say if each one was true or false. Among the items were teleological statements about nature, such as 'Trees produce oxygen so that animals can breathe'. Crucially, half the scientists had to answer under time pressure – just over three seconds for each statement – while the others had as long as they liked. There were also control groups of college students and the general public.

Overall, the scientists endorsed fewer of the teleological statements than the control groups (22 per cent vs. 50 per cent approx). No surprise there, given that mainstream science rejects the idea that inanimate objects have purpose, or that there is purposeful design in the natural world. But look at what happened under time pressure. When they were rushed, the scientists endorsed 29 per cent of teleological statements compared with 15 per cent endorsed by the un-rushed scientists. This is consistent with the idea that a tendency to endorse teleological beliefs lingers in the scientists' minds. This unscientific thinking is usually suppressed, but time pressure undermines that conscious suppression.

The scientists' greater inclination to endorse teleological explanation under time pressure wasn't a non-specific effect of being rushed. Time pressure barely affected their judgements about other

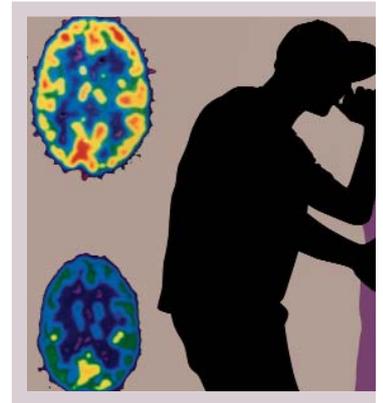
erroneous statements (i.e. simple false facts). Moreover, scientists who admitted having religious beliefs, or beliefs about Mother Nature being one big organism, were more prone than most to endorsing teleological explanation under time pressure, thus suggesting their latent unscientific thinking fed into their belief systems.

'A broad teleological tendency therefore appears to be a robust, resilient, and developmentally enduring feature of the human mind,' the researchers concluded, 'that arises early in life and gets masked rather than replaced, even in those whose scientific expertise and explicit metaphysical commitments seem most likely to counteract it.'

In a follow-up study, humanities academics showed the same tendency to endorse more teleological statements under time pressure. Intriguingly, their levels of endorsement were lower than college students but no greater than the physical scientists. This suggests that further education of any kind leads to a greater masking of teleological belief, but only up to a point. 'The [scientists'] specialised scientific training and substantial knowledge base does no more to ameliorate their unwarranted teleological ideas than an extended humanities education,' the researchers said.



In the *Journal of Experimental Psychology: General*



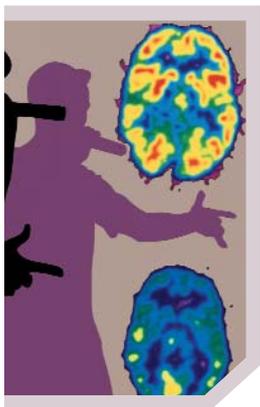
### Rapping – does it scan?

In *Scientific Reports*

In seeking to understand the brain processes underlying creative performance, researchers have already scanned opera singers and actors. Now they've invited rappers to undergo the same treatment. Siyuan Liu and her colleagues were specifically interested in the difference between freestyle rap, which requires the spontaneous generation of rhyming lyrics, and rehearsed rapping.

Twelve male professional rappers had their brains scanned while they engaged in freestyle rap and while they performed raps they'd learned earlier. Rappers usually like to gesticulate energetically as they perform, but this would have distorted the brain images so they had to keep still. No worry – '... debriefing indicated that participants' performance was not affected by the motion restraints,' the researchers said.

The main finding was that freestyle rapping versus rehearsed rapping was associated with increased activation in medial (inner) areas at the front of the brain, especially on the left-hand side, and concomitant reductions in activity in dorsolateral frontal areas, especially on the right-hand side. These patterns of activation were anti-correlated – the greater the increases in left-medial areas, the more the reductions on the right lateral areas. Liu and her team think this reflects a kind of disinhibition, whereby supervisory attentional systems allowed creative areas of the



## Applicants' voluntary experience is valued by recruiters

In the September issue of the *International Journal of Selection and Assessment*

brain to have free rein. The researchers said this fitted the possibility that the creative process of freestyle rap is experienced as largely occurring outside of conscious awareness. 'This is not inconsistent with the experience of many artists who describe the creative process as seemingly guided by an outside agency,' they added.

Freestyle rapping also exercised language areas more powerfully than rehearsed rapping, likely indicative of the need to find appropriate rhyming words. The researchers also looked for other connectivity patterns by seeing how activity levels correlated across the brain. The medial frontal areas engaged by freestyle rap appeared to be connected to activity in prefrontal motor regions, the left amygdala and on to the right inferior frontal gyrus and inferior parietal lobes – what the researchers called a network integrating 'motivation, language, emotion and motor function' and which they proposed could reflect the psychological state of 'flow'. Critics will likely wince at the excesses of reverse inference in this study – making assumptions about the role played by different brain areas during rapping based on the activity of those regions in other studies.

'We speculate that the neural mechanisms illustrated here could be generalised to explain the cognitive processes of other spontaneous artistic forms,' the researchers concluded.

Job applicants with experience in voluntary roles may be tempted to report this to their prospective employers. But how favourably do recruiters regard these sorts of experience?

Christa Wilkin and Catherine Connelly investigated this in a group of professional recruiters, providing them with CVs constructed to differ systematically in the types of experience reported. They suspected that other things being equal, work experience may be favoured more when it comes with a wage, as duration in a paid role implies you have met performance and behavioural standards, whereas voluntary positions tend to lack appraisals and focus more on participation (hours of involvement) than evaluating outcomes. Wilkin and Connelly also predicted that voluntary work would be subject to the same 'relevance' criteria as paid: if it didn't obviously supply skills, knowledge and experience that were pertinent to the targeted job, it wouldn't make them more attractive to the recruiter.

The 135 participants each evaluated eight CVs with a target job in mind, rating each one in terms of how qualified they seemed for the role. The work experience for four CVs was either entirely voluntary or entirely paid, and either clearly relevant or irrelevant. The other four CVs all had a mix of voluntary and paid work in various combinations (e.g. relevant voluntary and irrelevant paid work). In addition, each recruiter recorded how involved

they had personally been in voluntary work, to test the hypothesis that first-hand experience may lead them to attribute more value to this kind of work.

Comparison of voluntary and paid-work CVs showed that the recruiters had no significant preference for paid experience, but did favour relevant experience over irrelevant, regardless of type of employment. A recruiter's background of voluntary work had no influence on their ratings of applicants with voluntary experience. Finally, CVs with a mix of experience were rated more favourably than either pure voluntary or pure paid work. Wilkin and Connelly had predicted this, based on the idea that voluntary work can 'round-out' a career history by showing evidence of traits that may not be illuminated in paid opportunities to date, such as altruism, cooperation, and a work ethic. It provides evidence

that a candidate may be a welcome presence, which is especially attractive when coupled with evidence that the candidate can also produce results in an appraised environment.

This study paints an optimistic picture for candidates with volunteering backgrounds. Recruiters tend not to automatically deprecate these types of experience: they simply care about how the experience is relevant to the application. Moreover, introducing volunteering work as a complement to paid experience can enhance prospects, this appears to be true even when the volunteering is less-relevant, as long as the paid work is relevant, despite the explicit positions of recruiters that this evidence is unlikely to sway their evaluation.

*! Taken from the Occupational Digest, written by Dr Alex Fradera: [www.occdigest.org.uk](http://www.occdigest.org.uk).*



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