

Seeing, spots and blots

We were drawn to Nour & Nour's article on visual perception by the front cover illustration of the Herdman grid, whose illusory qualities remain unexplained.¹ Their focus is on visual perception and how machine learning might shed light on the neuroscience of seeing, using an example of a Google-grown artificial neural network to identify bananas in a banana-free image by manipulating prior expectations. Pareidolic illusions and seeing things that are not actually there are as relevant to understanding clinical disease as they are to aesthetics and there is increasing interest in trying to dissect the mechanisms underlying this intriguing and complex phenomenon.

The legacy of Rorschach and his eponymous images live on in recent research revealing that it might be the detailed fractal geometry at the patterned edge which underlies the subjective response.² Building other features into Rorschach-like computer generated images, such as right-left symmetry patterns, seems to stimulate face pareidolia through top-down processing.³ The predictive potential of a 'pareidolia test' is as tantalising as ink blot patterns would have been to early researchers. We now have the tools and technologies to explore this realm of visual distortion and deception which Rorschach could only have dreamed of possessing.

Building algorithms informed by real-life data should allow machine learning and modelling to be refined and capable of revealing new insights into the rich range of the visual perception spectrum, from normal to abnormal. Advances in both image processing and computing, together with accessible crowd-sourced subjects, will prove to be a valuable public psychophysics network to explore other aspects of visual perception and pareidolia and may be the means to test the validity of recent reports that probing this aspect of perception might be used as an early diagnostic tool for dementia.⁴

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Vitamin D deficiency is to be expected due to immune changes related to mental health problems

Stewart & Lewis¹ have shown that adolescent psychiatric in-patients typically have vitamin D deficiency and hypothesise that this may be due to reduced exposure to sunlight. This may well be true, but it is much more likely that the reduced vitamin D levels are due to changes in the immune system linked with psychiatric disorders. For example, it is now well known that depression is associated with inflammation² and that immune markers are typically raised. What is less well known is that vitamin D is a negative acute-phase reactant,³ which means that its levels drop in response to inflammation. Therefore, a low level may not indicate a deficiency, but rather the presence of inflammation. It would be interesting to reanalyse the data and see whether there are any links with particular diagnoses.

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