Do those with schizophrenia more accurately perceive reality? And why is this ‘abnormal’?

Visual illusions, such as those illustrated in the figures below, are fun opportunities to bewilder the mind, emphasising the gap between what we see (our subjective perception) and what meets the eye (the true physical reality). Are the eyes playing tricks on the mind? This “altered” view of reality is in fact normal, a result of adaptive cognitive mechanisms, which are usually helpful for seeing the world in a predictable manner, but trick us given the right set of circumstances, correcting where a correction is not necessary.

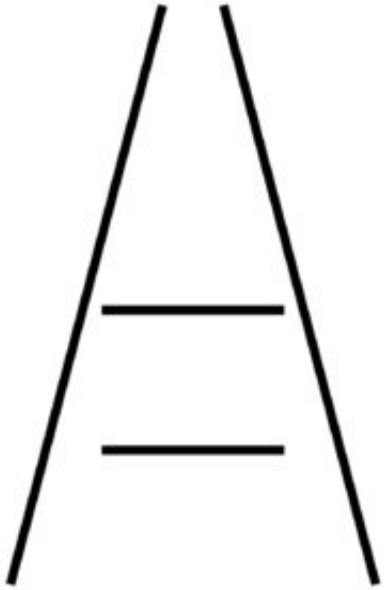

Fig. 1.

For instance, in the Ponzo illusion shown below, otherwise known as the train tracks illusion, the physical reality is that the top line is the same length as the bottom line, however our brain perceives the top line as being shorter. This is due to the two ‘train track’ lines mimicking a vanishing point where parallel lines tend to converge as they go off into the distance. This implied perspective alters our perception of the horizontal lines, telling our brains that the top line is further away and hence it must be longer.

However, this reality-perception mismatch generated by these visual illusions is not present for all individuals. In our review paper, my colleagues and I outline the evidence for increased resistance to illusions in individuals with schizophrenia. We divided the visual illusions into those requiring

higher cognitive operations for them to work, such as the linear perspective cues in the Ponzo illusion, and those that engage more basic visual processing like the centre-surround antagonism of the retinal receptive fields in the case of the Hermann grid illusion (shown below). We found that there was greater evidence in the literature to suggest a general decreased susceptibility in schizophrenia to illusions, which required the use of higher cognitive mechanisms, but more varied effects that were illusion-specific, were seen amongst the low-level illusions.

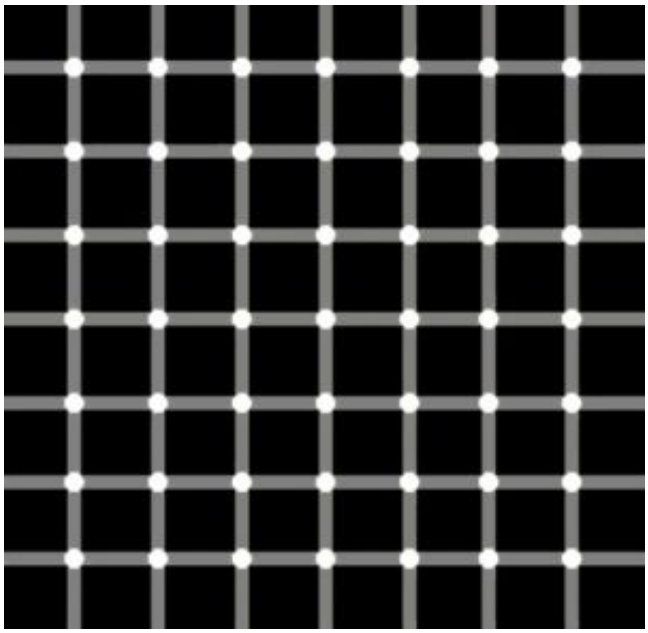

Fig. 2.

Overall, this can suggest that the perceptual experience of those with schizophrenia differs in the sense that they do not engage the adaptive visual mechanisms with which the general population views the world through. That is to say, those with schizophrenia do not succumb to the effects of the illusion; they more accurately perceive the physical reality presented by the visual illusion.

This initially comes across as a contradiction of sorts. Schizophrenia as a mental health disorder is characterized by symptomology such as hallucinations, which do not correspond to a physical reality. While visual hallucinations are generated internally, absent from visual input, we contend that visual illusions require the pictorial display to act as a ‘driver’ of the experience, and may be more closely linked to symptoms of visual distortion.

The findings demonstrate that those with schizophrenia do not perceive the world through the ‘filter’ of these adaptive mechanisms as the general population does. This could have wide-ranging implication for higher cognitive functioning in schizophrenia, such as social interaction and day-to-day functioning, due to the high reliance we have on our visual systems.

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