

# Black plus white equals colour

What colours do you see on the discs?



Put the disc with the red border on the turntable.

Try out various turntable speeds and change the direction of rotation.

Which discs make you see colours?

When the black and white patterns spin around, some of them make you suddenly see colours. These flickering colours depend on the pattern, the rotational speed and direction – but basically it's more to do with your eye! The colours are in fact an optical illusion and would not appear on a photo.

The “cones” on your retina are responsible for this effect. These photoreceptor cells make you see colours and come in three types, reacting separately to red, green or blue light. Their reaction time is variable between individuals, but generally it is the blue cones which react more slowly than the red-sensitive ones. Additionally, the perception of the blue cones lasts longer. A white surface is perceived by all cones together.

When faced with a rapidly changing black and white stimulus from the rotating discs, there is a time delay in the signals to the brain from these cones: instead of perceiving pure white, you see the red part of the white light's spectrum first.