

# Is it valid to use a mobile app for testing a worker's colour vision?

A quick check of the App Store reveals more than 50 applications (apps) that can be downloaded to a smartphone for testing colour vision. Many of these apps display images similar in concept to the Ishihara Test and could be used by an individual to check if they (or a family member) have a colour vision defect.

Apps may appear an attractive option for pre-employment colour vision screenings for workers. The app is significantly cheaper than purchasing colour vision test books (such as the Ishihara Test), and the app does not suffer the fate of book tests that may fade with time or become discoloured with finger smudges<sup>1</sup>.

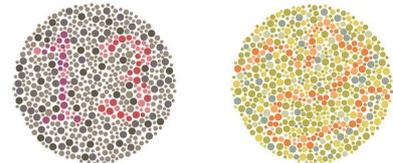
## Mobile apps are currently not a valid alternative to colour vision test books.

- Colour vision tests are carefully constructed so they can detect colour vision defects. If a colour is not accurately displayed then a person could pass the test when they actually have a colour vision defect, or fail the test when they have normal colour vision. Commercially available colour vision test books are printed accurately. Even if an app is well designed, the displayed colours can vary between digital devices<sup>2</sup>, giving different results for the same person.
- Digital devices come in all shapes and sizes, and so the image on the app may be a different size to the plate in the colour vision test book. Size differences can affect the accuracy of the test<sup>3</sup>.
- The coloured plates in a book are made with pigments and dyes (subtractive colour mixing) whereas the colours displayed on a digital device are made up of light (additive colour mixing). These differences may affect how some colour vision defects are detected<sup>4</sup>.

Colour vision apps are a quick and easy way to self-test colour vision, but might not always give an accurate diagnosis. For more accurate results, especially for employment testing, it is better to use a genuine colour vision test book under the testing conditions recommended by the test manufacturer.

## Did you know?

- \* The Ishihara Colour Vision Test was first published in 1917.
- \* It's sensitivity for detecting red-green colour vision defects is 98.7%.<sup>5</sup>
- \* Testing entails asking the viewer to identify a number against a background or tracing a line against a background:



- \* Some colour vision tests use variations on the Ishihara Test concept, such as asking the viewer to correctly identify a geometrical shape, a picture (for young children) or the orientation of a shape, for example:



**References:** 1. Bodduluri et al (2017) Behav Res 49: 548-558 2. De Fez et al (2018) Optom Vis Sci 95(11): 1054-1063 3. Sorkin et al (2016) Optom Vis Sci 93(7): 667-672 4. Dain et al (2016) Clin Exp Optom 99(3): 264-273 5. Birch (1997) Ophthal Physiol Opt 17(5): 403-408

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