Colorimetric comparison of the non-laminated and laminated 4th edition HRR color vision tests

Lee, DY, Mok, M, and Jane Yam
Illinois College of Optometry, Chicago, IL, USA

The revised HRR color vision test by Richmond Products in 2002 (the 4th edition) has been validated by both psychophysical and colorimetric studies. In 2007, a laminated version was offered to enhance color preservation. This is a particularly useful feature for testing young children because it allows the child to trace directly on the shapes. However, lamination has the potential to alter the colors. The purpose of this study is to use colorimetric analysis to determine if colors in the laminated book remain similar to those in the 4th edition. A GretagMacbeth Spectrolino spectrophotometer was used to measure the chromaticities of the 4th edition and the laminated books. Four plates (#8, 14, 17, 20), selected from the four sections of the test, were analyzed. In these plates, the background is composed of four different gray dots. Each shape is made of three different colors. For each plate from both books, the colored dots were plotted on a CIE chromaticity diagram for direct comparison. Confusion axes were drawn to evaluate chromatic alignment. Colors in the laminated book are found to be only slightly different from the 4th edition for all four plates. One interesting finding is that the background gray dots in the laminated plates are more clustered together than those in the 4th edition. One not so desirable finding is that for plate #14 in both the 4th edition and the laminated books, both the protan and deutan colors are significantly misaligned from their respective confusion axes. Such misalignment could potentially weaken the protan/deutan differentiation efficacy. Overall, our data shows that the colors in the laminated book are not significantly different from the non-laminated 4th edition.

This study is supported by the Research Allocation Committee of the Illinois College of Optometry. The authors also thank Richmond Products for a complimentary copy of the laminated book.