AN OBSERVATIONAL STUDY TO ASSESS THE ABILITY OF LOW-VISION MULTI-PARAMETER TEST (LVMPT) TO EVALUATE FUNCTIONAL VISION

Brenden Truman, Burnett SOM, Sai Chavala, Nanoscope Technologies, Subrata Batabyal, Nanoscope Technologies

RESEARCH QUESTION

Does the 2nd generation LVMPT accurately assess visual function in ultra-low vision patients, with greater clinical utility, compared to the established logMAR visual acuity test?

BACKGROUND

A standard eye chart can not be used for ultra-low vision patients because their vision is so poor they are not able to see the largest letters on the chart.

The LVMPT tests 3D object identification under different light thresholds. It is important to evaluate a patient's ability to detect objects at different light levels to understand their ability to see things in well-lit vs. low-lit environments. 3D object identification is an important skill to have; from choosing the right utensils to eat with, to dressing oneself in the right clothing, to interacting with tech such as phones and remotes. By packaging these different parameters into one test, evaluators will have a convenient and accurate way to assess patients' real-world visual ability.

METHODS

Our study tests the overall hypothesis that the 2nd generation LVMPT will accurately depict visual ability in patients with impaired vision as reliably as the logMAR visual acuity test. The hypothesis was tested by execution of the following specific aims:

Specific Aim 1: We separated our subjects into two groups based on their visual acuity as demonstrated by their logMAR score. Those cohorts are 1) logMAR better than 0.3 or normal vision, 2) logMAR worse than 1.6 or legally blind.

Specific Aim 2: In each study participant, we assessed the relative performance of the LVMPT compared to the logMAR eye chart and determined the correlation.
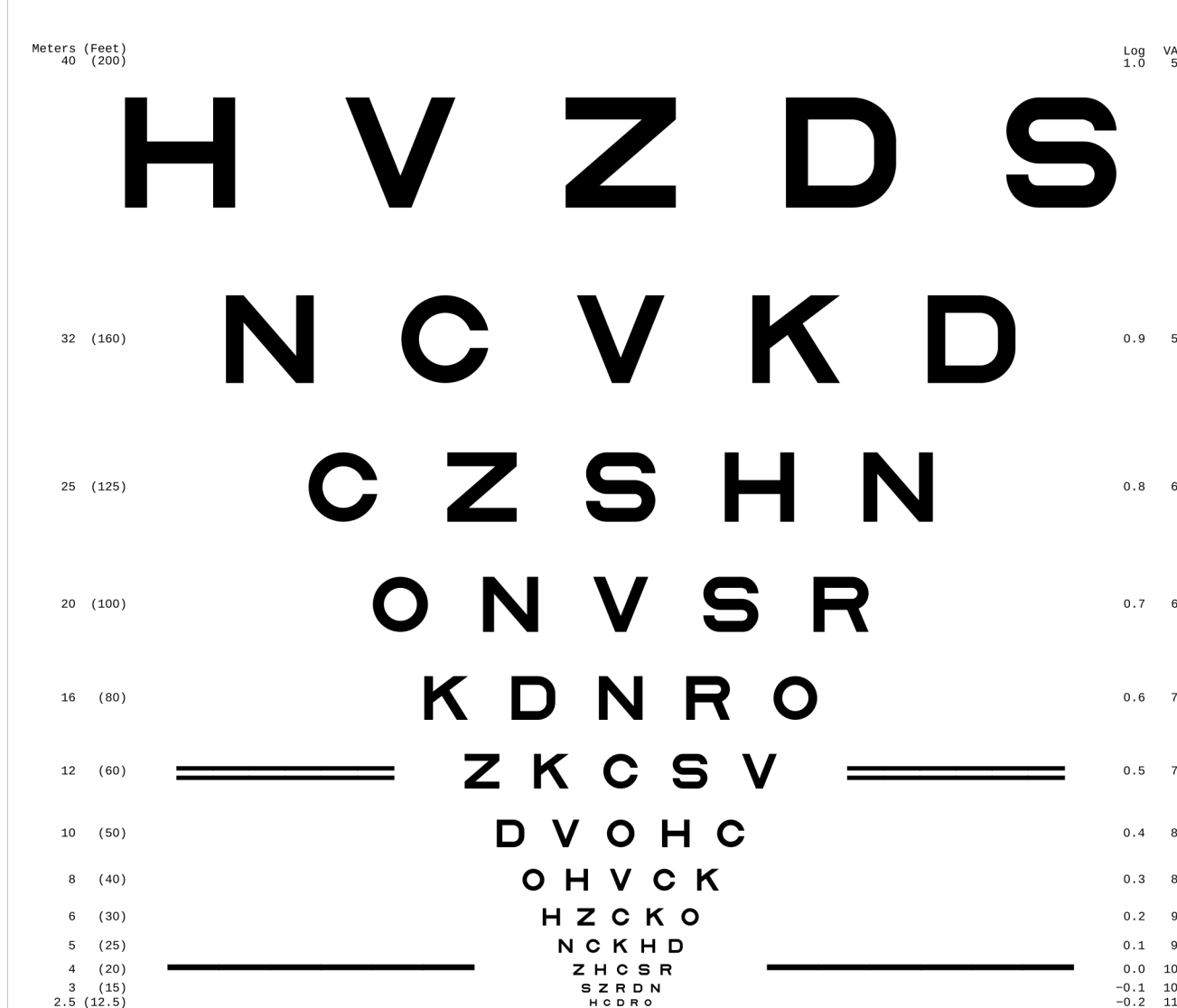
Traditional logMAR chart

The **LVMPT** showed close correlation to **established visual ability tests**. Since the LVMPT requires **real-life skills** to evaluate a person's **vision**, it represents a potential **new evaluation tool for clinicians and researchers** to use for patients with **ultra-low vision.**
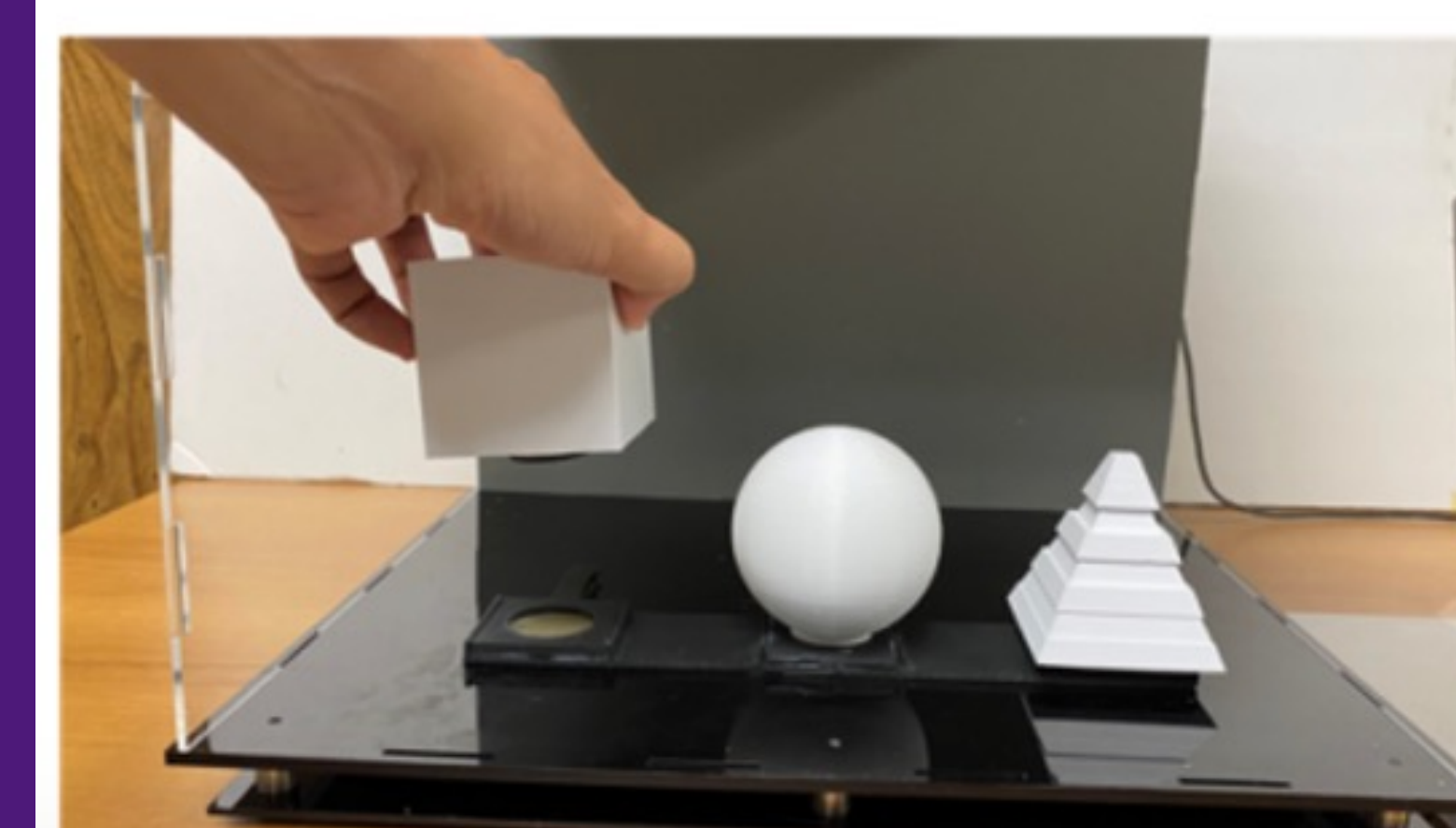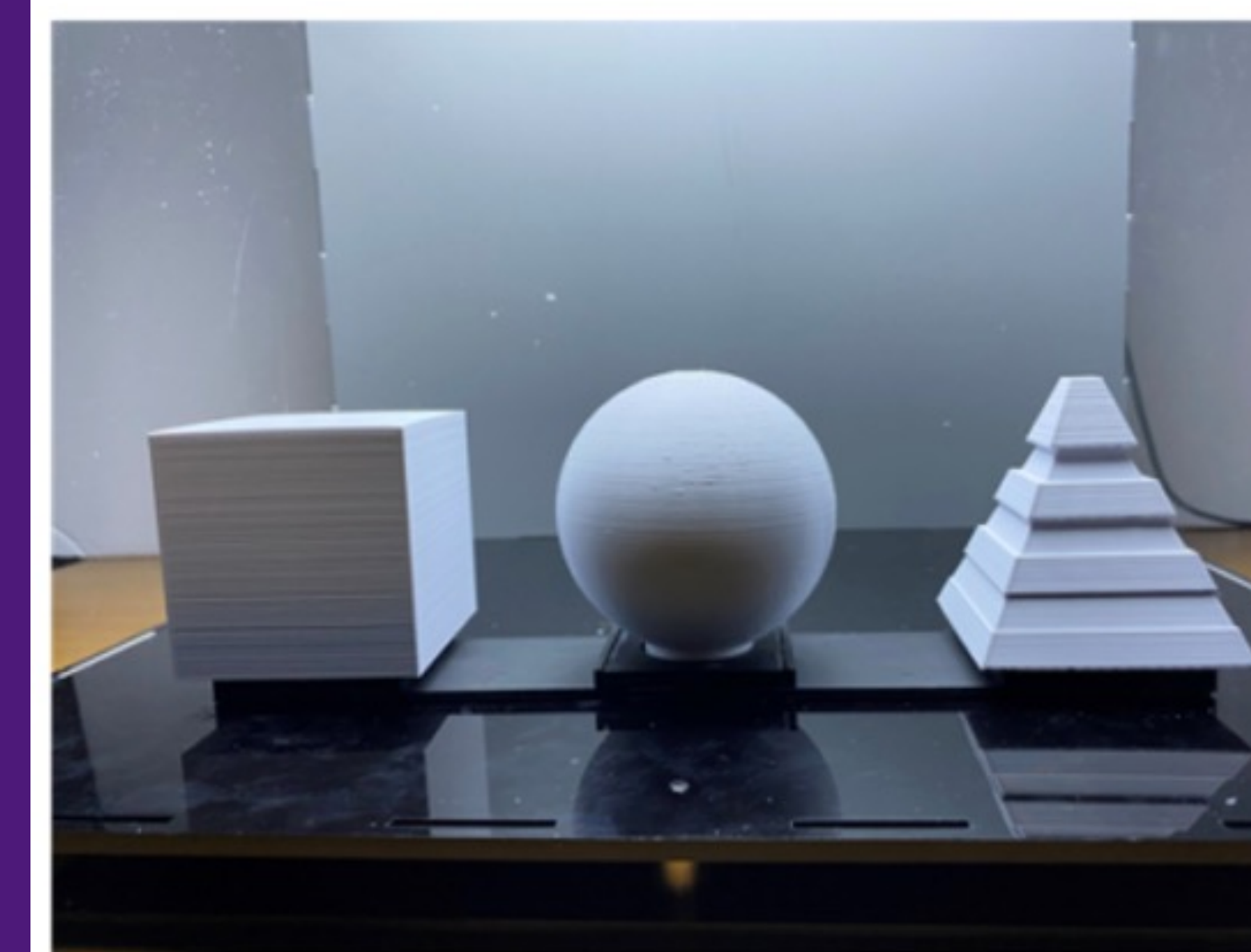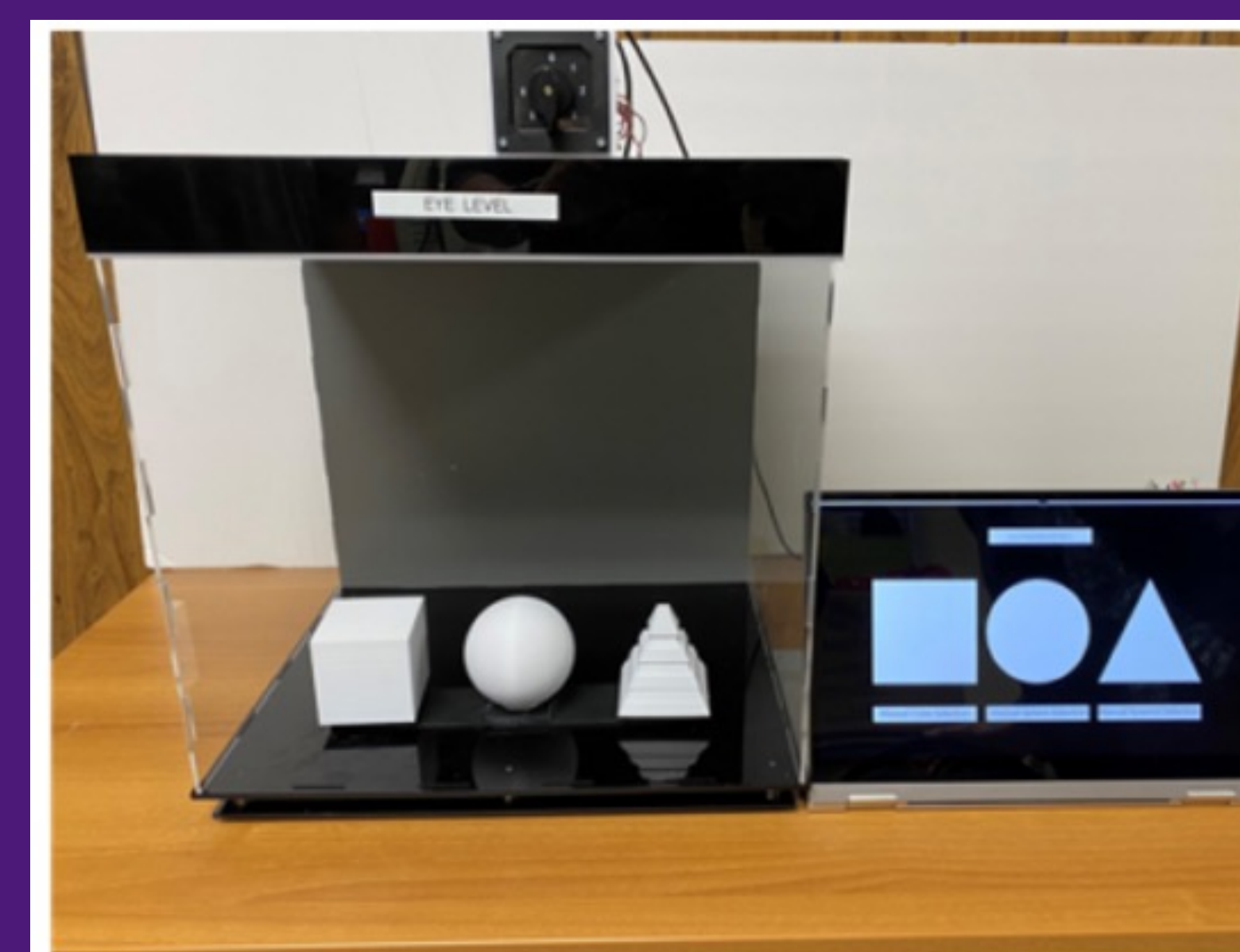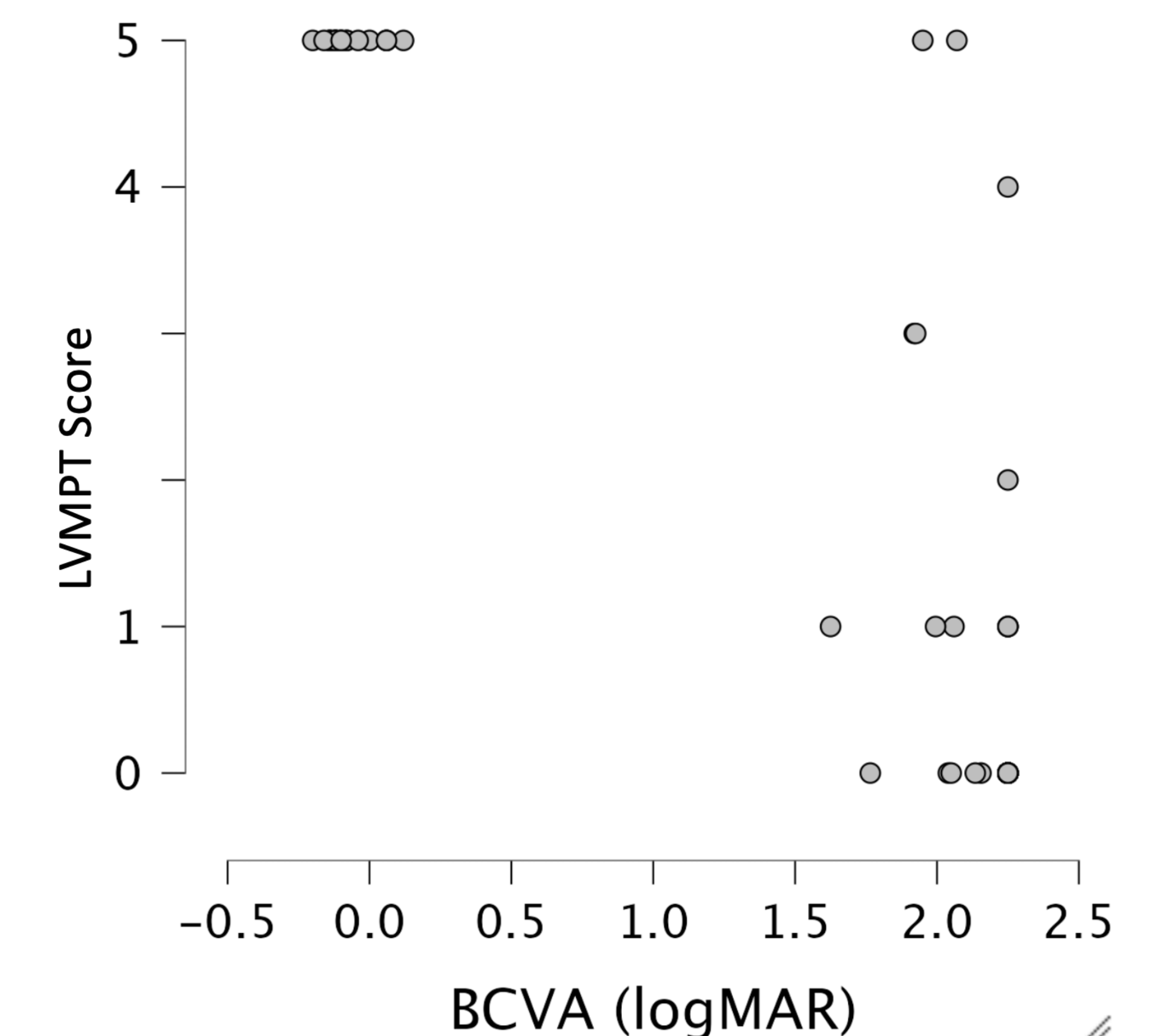
QR code for poster

QR code for more information

RESULTS

The figure shows that for most subjects, their logMAR score (the lower the number the better visual acuity), is correlated with their LVMPT score. Overall, the LVMPT had a correlation of -0.9 to the logMAR test.

FUTURE DIRECTIONS

While the results of the study were promising because the LVMPT showed good correlation with more established tests, further research needs to be done to evaluate its effectiveness in measuring functional vision in ultra-low vision patients. Additional studies with a larger sample size, more cohorts of patients with poor vision, and comparisons to functional vision assessments could provide more insight into the effectiveness this evaluation tool can have. Comparing the LVMPT to a patient survey that assesses their visual abilities in their day-to-day lives would also be useful.

ACKNOWLEDGEMENTS