

Optometry Student Attitudes towards Visual Electrodiagnostic Testing

Joanna Miranda, BS; Evan Shields; Patricia M. Cisarik, OD, PhD, FAAO; Paul A. Harris, OD, FAAO | Southern College of Optometry, Memphis, TN

INTRODUCTION

- Visual electrodiagnostic testing (VET) is a non-invasive way to obtain data that is becoming less expensive, more user-friendly, and applicable to diseases like diabetes.
- VET has been shown to predict where diabetic retinopathy will occur.¹
- With continued advances in technology, VET may one day be used as common tool to prophylactically prevent diabetic retinopathy.¹
- Incorporation of VET into practice may be increased through hands-on participation with the technology.

PURPOSE

To compare attitudes towards visual electrodiagnostic testing (VET) between students who have workshop experience and students with only didactic classroom experience.

METHODS

- **EXPERIMENTAL GROUP:** Two surveys, each with 6 items, were given to a group of 22 students who volunteered to learn about VET through a hands-on workshop demonstrating VEP and ERG testing using EvokedX. One survey was given pre-workshop and the other post-workshop. (See attachment)
 - The workshop was divided into 4 sessions of 5-6 students each. The instrument was introduced, one VEP and one ERG was run by the instructor, and then 2-4 VEP/ERG tests were run by the students on each other. (Figure 1)

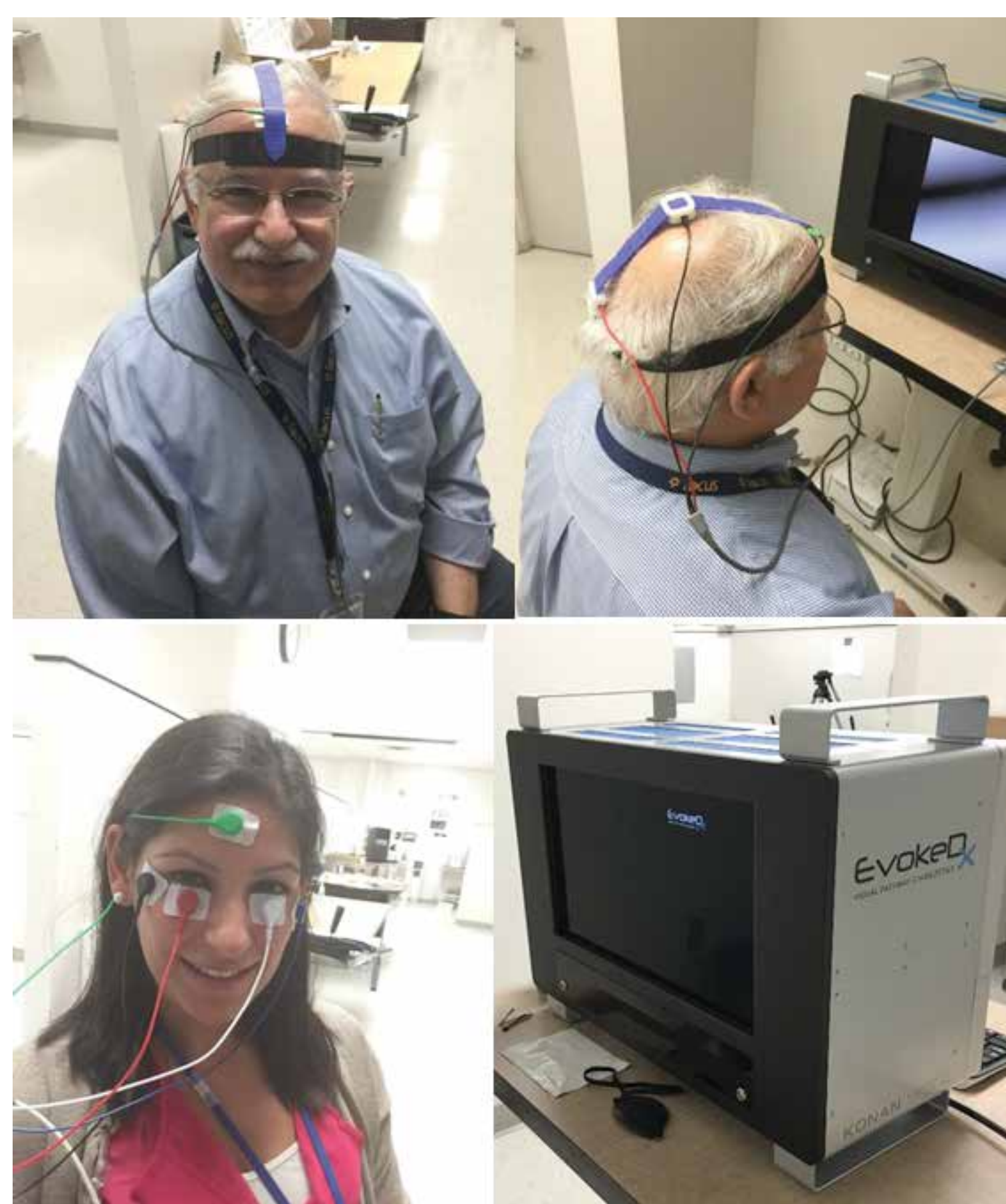


FIGURE 1: Top photos show electrode set up for visually evoked potential. Bottom left photo shows electrode set up for electroretinogram. Bottom right photo shows the EvokedX instrument used for the workshop.

- **CONTROL GROUP:** The pre-workshop survey was given to 159 first, second and third year students that did not participate in the workshop.
- All students in both groups had at least introductory didactic education in VET.

- **ANALYSIS:** Wilcoxon signed rank test was used to compare two pre- and post- workshop items within participants. Mann-Whitney U-test was used to compare survey responses between workshop participants and non-participants.

RESULTS

- Pre-survey experience with VET was similar between the groups (72.7% of participants and 71% of non-participants had no experience with VET). (Figure 2)

EXPERIENCE WITH VISUAL ELECTRODIAGNOSTIC TESTING

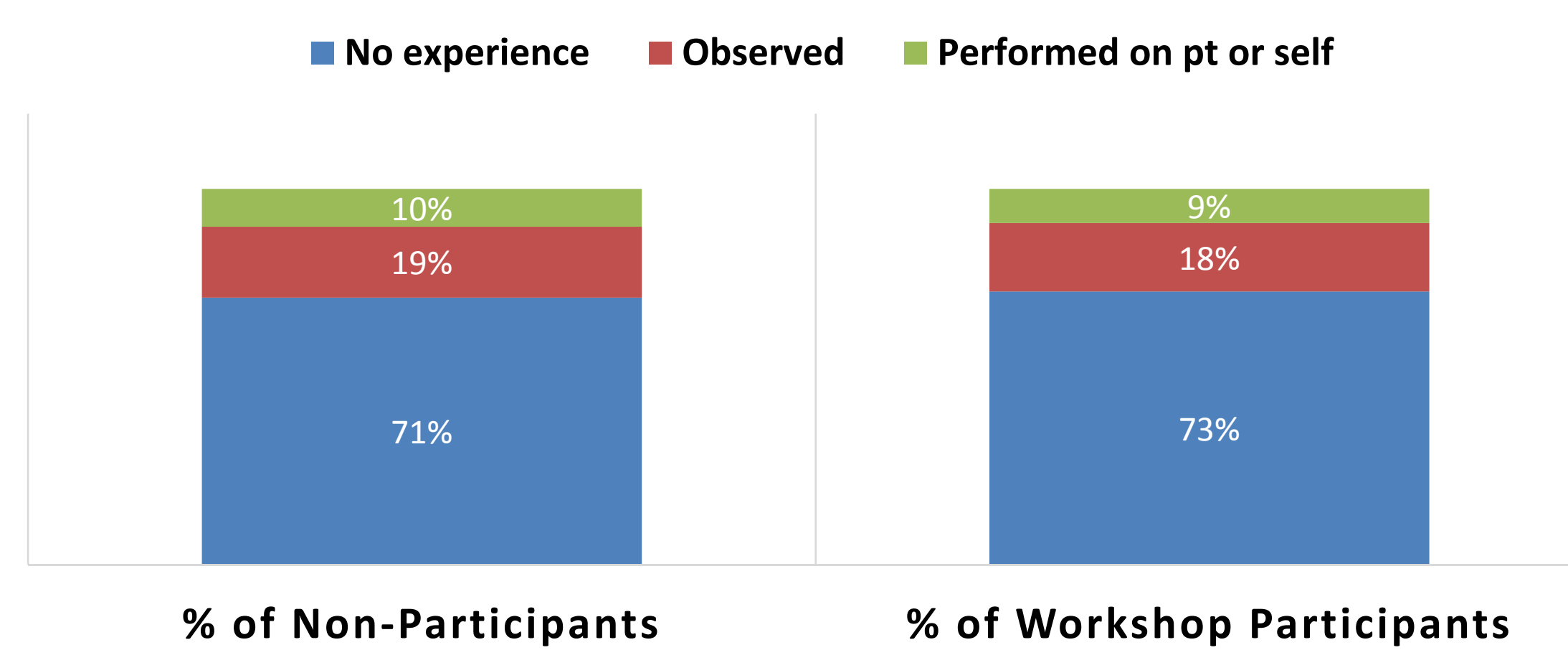


FIGURE 2: Clinical experience with electrodiagnostic testing prior to survey participation was comparable between workshop participants and non-participants.

- Participants demonstrated a significant positive directional difference in attitude towards the value of hands-on experience with VET for optometry students ($p < 0.05$) (Figure 3)

HANDS ON EXPERIENCE WITH VISUAL ELECTRODIAGNOSTICS WOULD BE A VALUABLE EXPERIENCE FOR EVERY OPTOMETRY STUDENT

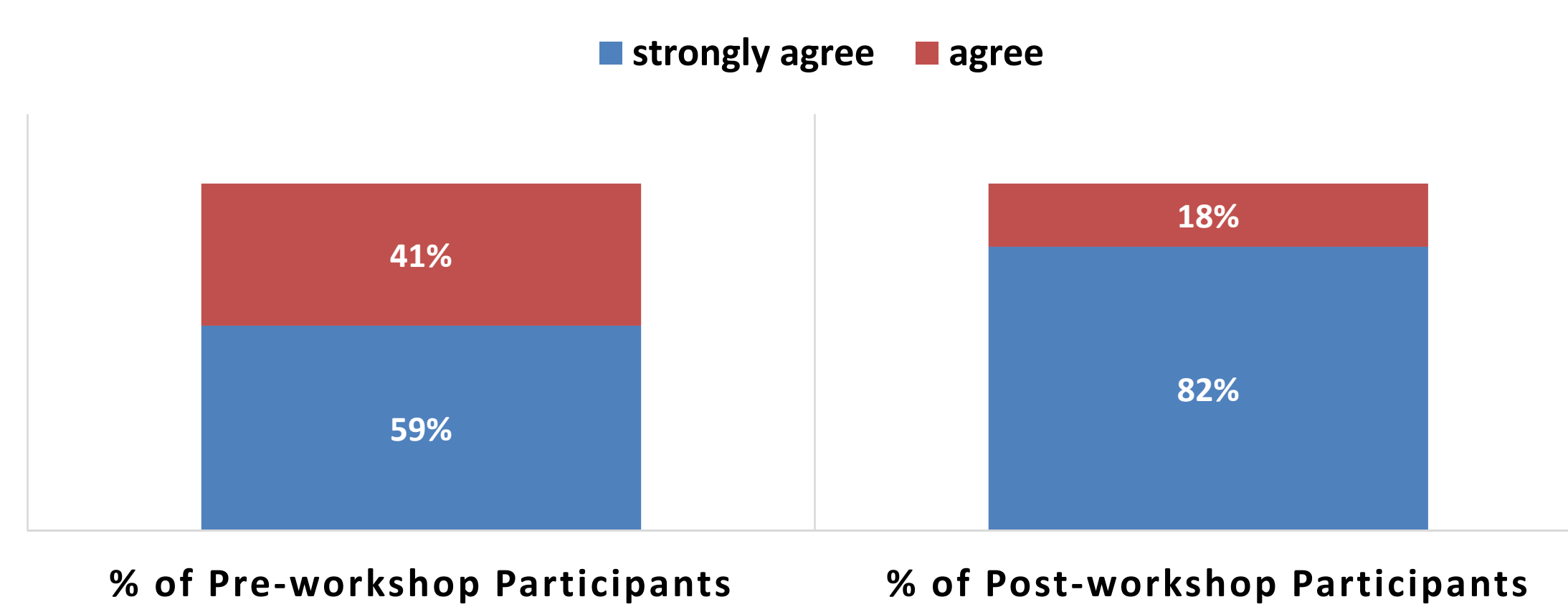


FIGURE 3: Pre- and post-workshop participants' opinions on the value of hands on experience with VET for optometry students are compared. Wilcoxon signed rank test indicated that post-workshop opinion about the value of hands on experience was statistically significantly higher than pre-workshop opinion: $W = 15, p < 0.05$.

- Participants also showed significant positive directional difference in attitude towards inclination to choose an externship with VET ($p < 0.002$). (Figure 4)

MORE INCLINED TO CHOOSE EXTERNSHIP WITH VISUAL ELECTRODIAGNOSTIC TESTING: COMPARISON OF PRE- VS. POST-WORKSHOP RESPONSES

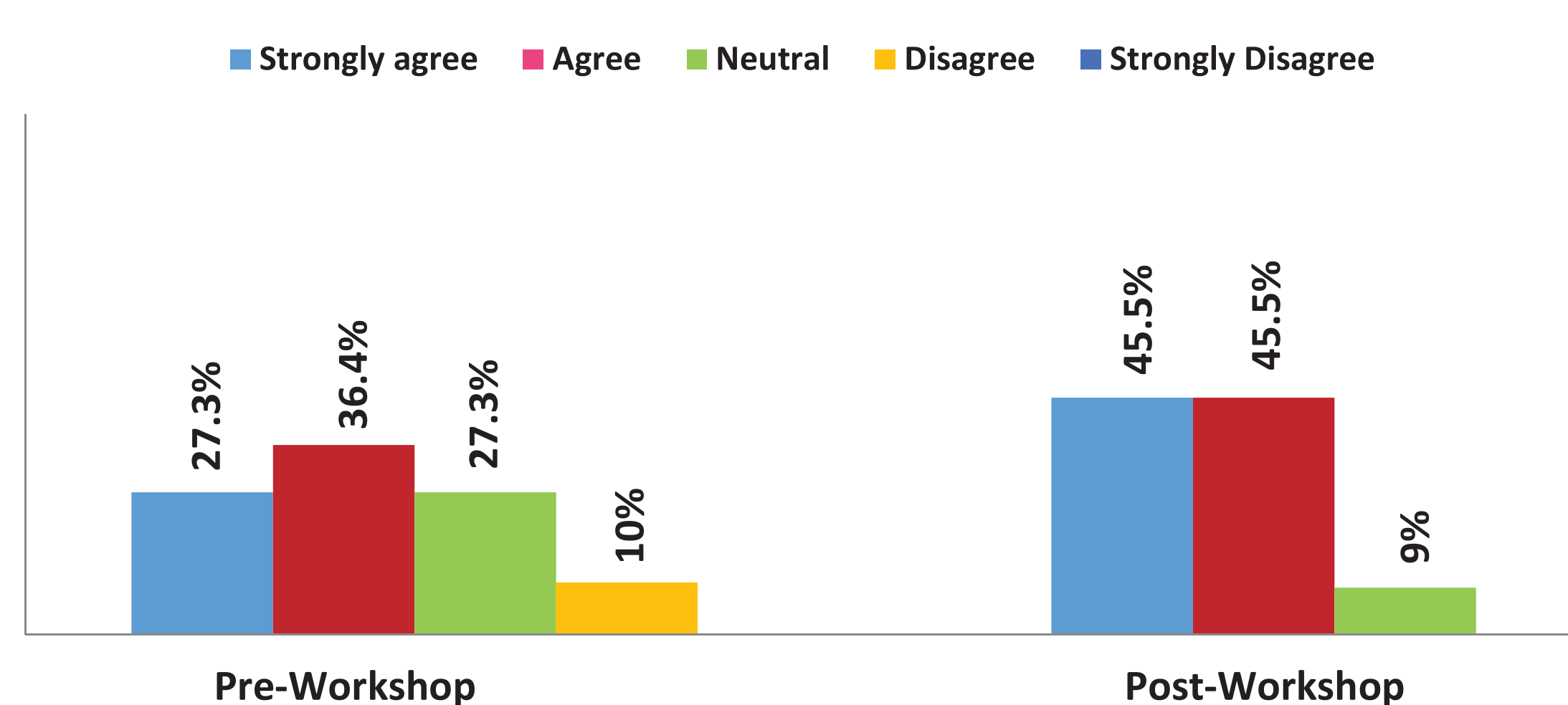


FIGURE 4: Pre- and post-workshop participants' opinions on the increased likelihood of choosing an externship site that has VET are compared. Wilcoxon signed rank test indicated that post-workshop opinion about the increased likelihood of choosing an externship site that has VET was statistically significantly higher than pre-workshop opinion: $W = 66, p < 0.002$.

- Optometry students' responses on the value of hands-on experience with VET post workshop was statistically significantly higher than non-participant responses (two-tailed $p = 0.03$). (Figure 5)

HANDS ON EXPERIENCE WITH VISUAL ELECTRODIAGNOSTICS WOULD BE A VALUABLE EXPERIENCE FOR EVERY OPTOMETRY STUDENT

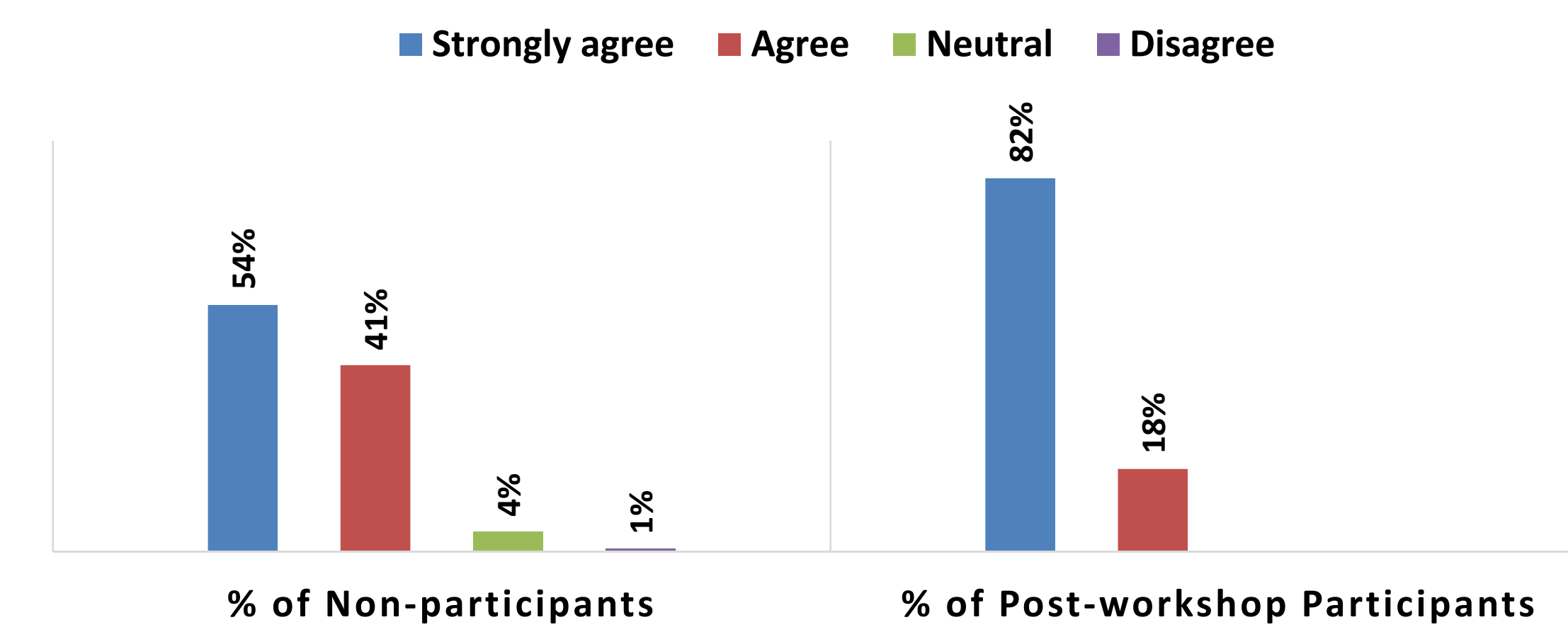


FIGURE 5: Responses on the value of hands on experience with VET are compared between post-workshop participants and non-workshop participants. Mann-Whitney U-test showed the responses for the two groups were statistically significantly different ($p = 0.03$).

- Optometry students' inclination to choose an externship with VET showed significant increase in workshop participant responses vs non-participant responses (two-tailed $p < 0.0001$). (Figure 6)

MORE INCLINED TO CHOOSE EXTERNSHIP WITH VISUAL ELECTRODIAGNOSTIC TESTING

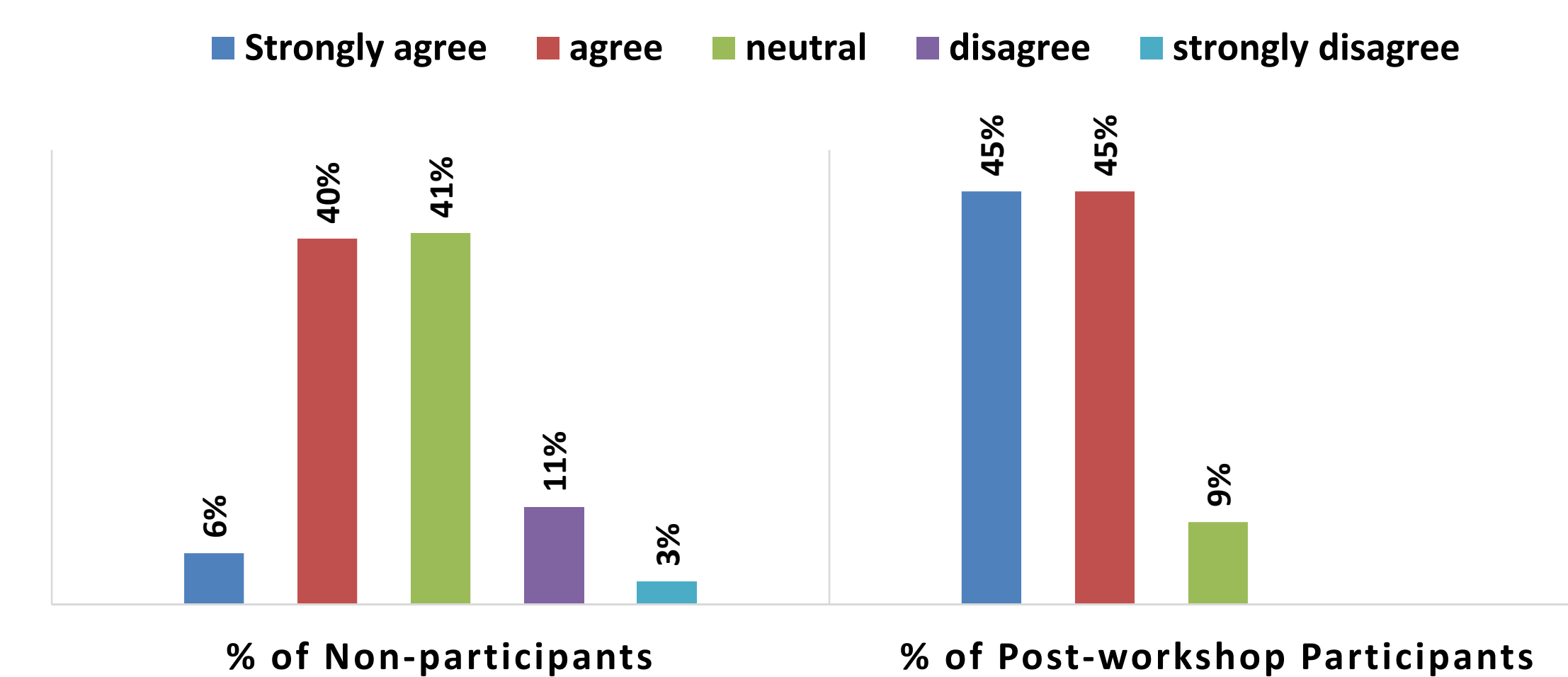


Figure 6: Responses on the increased likelihood of choosing an externship site with VET are compared between post-workshop participants and non-workshop participants. Mann-Whitney U-test showed the responses for the two groups were statistically significantly different (two-tailed $p < 0.0001$).

CONCLUSIONS

- Student participation in VET through a small-group workshop was associated with a more positive attitude towards the clinical use and value of VET.
- Small-group participation may facilitate the incorporation of VET in group practice to manage diseases like diabetic retinopathy.

ACKNOWLEDGEMENTS

Thank you to Dr. Julie Shaloub for her photos.

CONFLICTS OF INTEREST

None.

REFERENCES

1. Bearse, MA, et al. (2006). A multifocal electroretinogram model predicting the development of diabetic retinopathy. *Progress in Retinal and Eye Research*, 25(5), 425-428. Abstract retrieved from Pubmed. www.ncbi.nlm.nih.gov/pubmed/16949855
2. Ng, JS, et al. (2008). Local diabetic retinopathy prediction by multifocal ERG delays over 3 years. *Investigative ophthalmology and Visual Science*, 49(4), 1622-1628. Abstract retrieved from Pubmed. www.ncbi.nlm.nih.gov/pubmed/18385083