

Cue utilisation reduces the impact of response bias in histopathology: Where to from here?

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INTRODUCTION

- Typically, histopathologists test the working diagnoses derived from cases that have already been classified as ‘abnormal’ by clinical examination and/or other diagnostic tests. For example, surgical incision for polyps.
- Consequently, disease prevalence tends to be high. Specimens are also accompanied by a clinical report which likely creates an environment where there is the potential for ‘abnormality priming’, and a response bias leading to false positives on normal cases.



PREVIOUS STUDY

- Carrigan et al. (2021)¹ suggests that histopathologists exhibit errors on normal cases – ie higher false positives (Fig. 1).

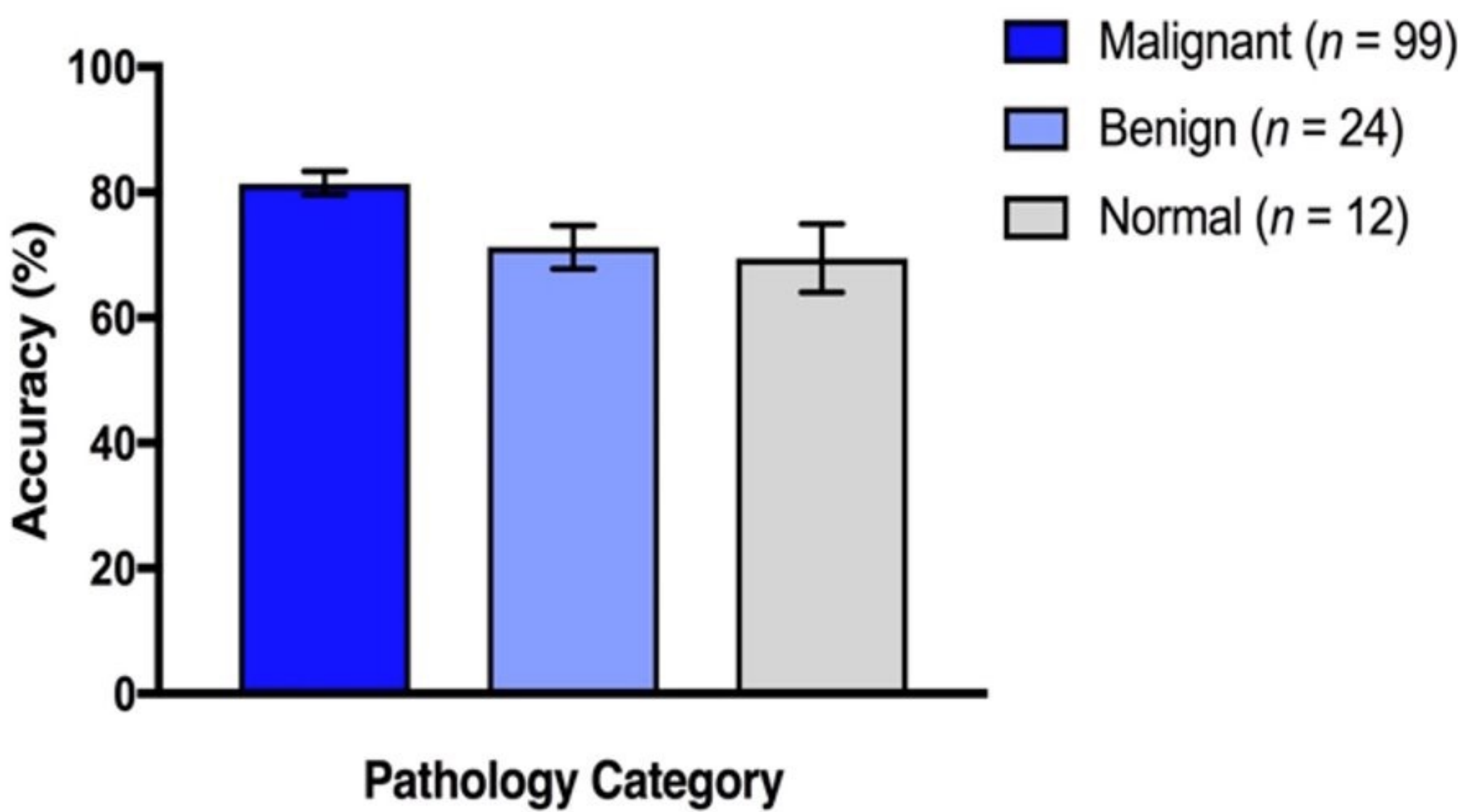


Figure 1. Accuracy on the diagnostic task (n=77). Error bars represent 95% confidence intervals.

- We also showed that those with higher cue utilisation recorded a lower positive response bias compared to those with lower cue utilisation (p=.02) (Fig. 2).

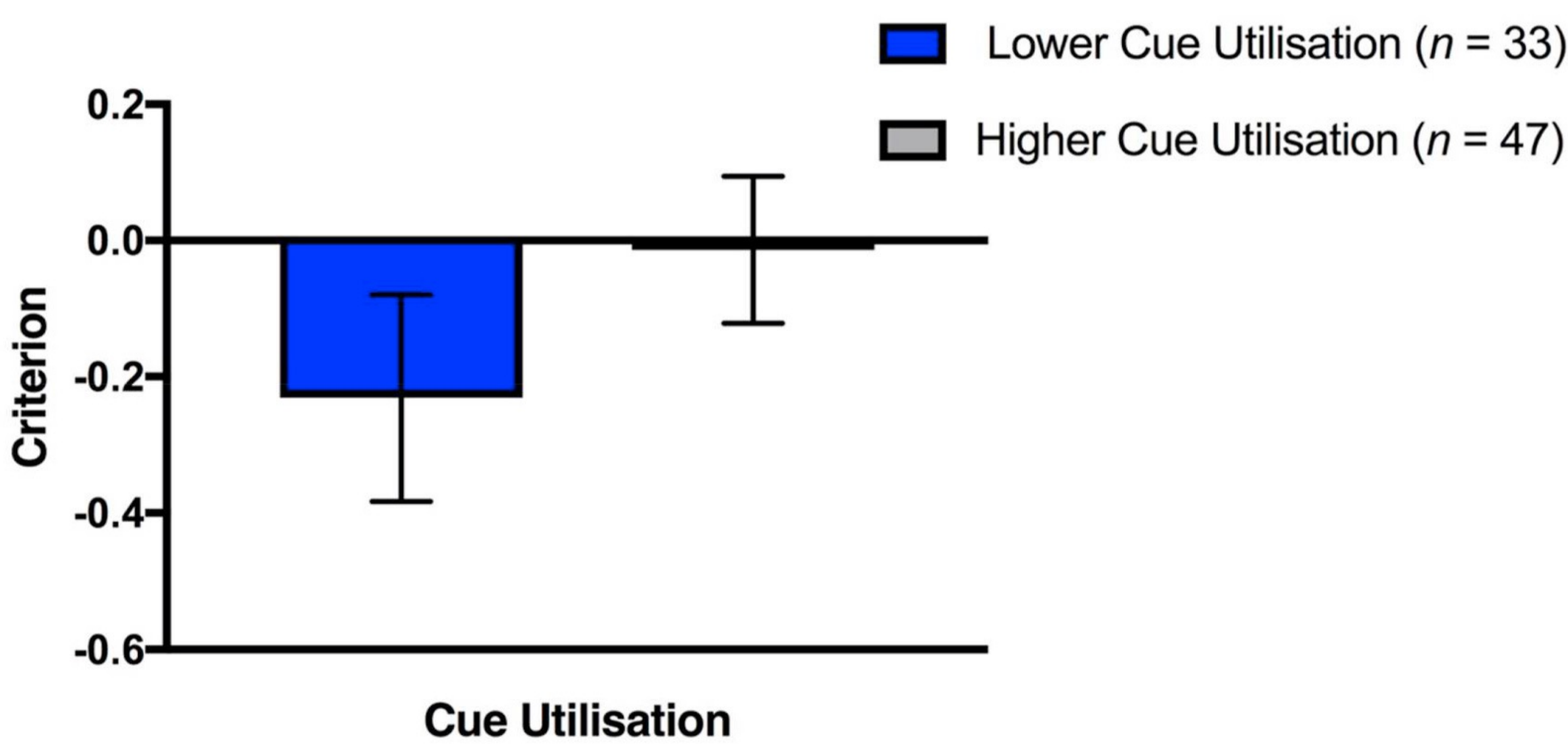


Figure 2. Criterion on the diagnostic task for eighty pathologists, distributed across cue utilisation groups. Errors bars represent 95% confidence intervals

NEW STUDY OBJECTIVES

- Carrigan et al.¹ was a lab-designed study using QAP slides in experimental conditions = low external validity.
- Histopathologists report cases very differently, examining the whole slide (not fixed photos), activating Type 2 thinking (slow, analytical), consulting reference material and colleagues.
- Current proficiency testing among histopathologists does not include normal cases.
- RQ: is the lower accuracy on pathology absent cases demonstrated in our lab experiment also demonstrated in proficiency testing?
- Examine across multiple modules in different organ systems – breast, head/neck, renal etc.

REFERENCE

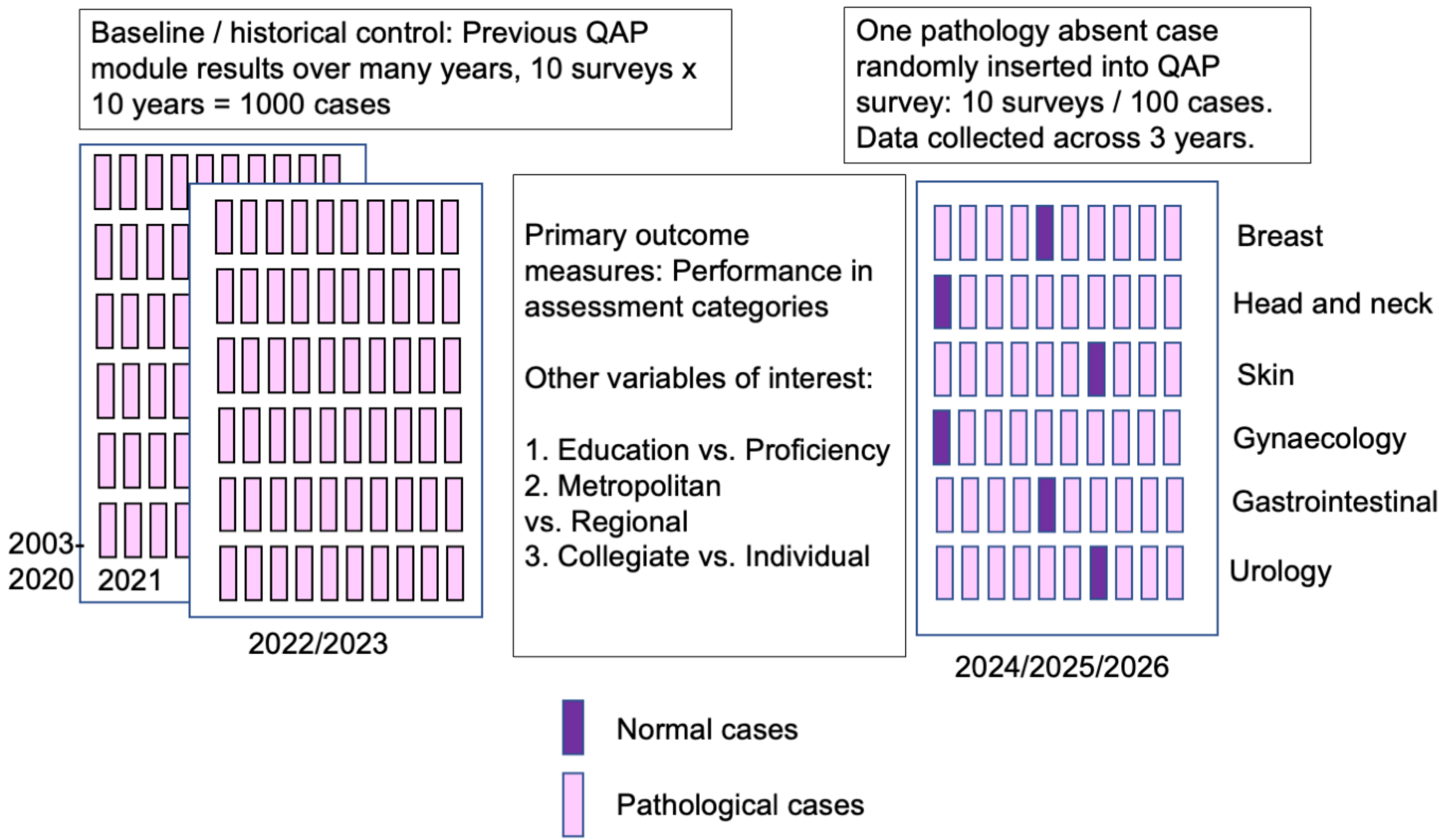
1. Carrigan AJ, Charlton A, Wiggins MW, Georgiou A, Palmeri T, & Curby KM. Cue utilisation reduces the impact of response bias in histopathology. Applied Ergonomics. 2022 Jan 1;98:103590.



METHODS

- In 2024, a series of studies will be conducted in collaboration with the Royal College of Pathologists of Australia’s Quality Assurance program.
- We will compare previous results across ten years that only presented abnormal cases, with 36 months of testing that will include normal cases inserted into a range of anatomical test sets.

STUDY DESIGN



EXPECTED OUTCOMES

- The outcomes of the proposed study will provide evidence for whether or not the previously reported response bias occurs in practice.
- This will have implications for educational initiatives within histopathology where target or disease prevalence is relatively high, compared with screening environments.
- Working with the RCPA QAP, we expect that current training protocols that focus on the identification of disease to support the confirmation of disease, will be adapted to include a range and variety of normal pathology.

CONCLUSION

It is crucial that trainees and experienced histopathologists develop and maintain their ability to recognise normal cases to avoid false positive errors and subsequent harm to patients.

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