



# Comparing classical, web-in-lab and online data recording through the replication of five experiments

Kilian Semmelmann and Sarah Weigelt  
Developmental Neuropsychology, Department of Psychology, Ruhr-Universität Bochum

## QUESTIONS

Online studies promise a large pool of participants, access to hard-to-reach populations and fast, cheap and parallel data acquisition. Yet, few systematic investigations tried to identify potential differences when comparing standard in-lab technology to web technology – especially with regard to reaction time measurements. **Here, we ask whether online psychophysics produces the same results as classical data acquisition and if not, whether potential differences are due to changes in technology (classical vs. web technology) or environment (in-lab vs. online) through the replication of five well-established experiments.**

The questions we want to answer are:

1) **Is there a fixed timing measurement offset?**

Prior studies found a timing offset of 25 - 60 ms in reaction time tasks when using web technology (JavaScript).

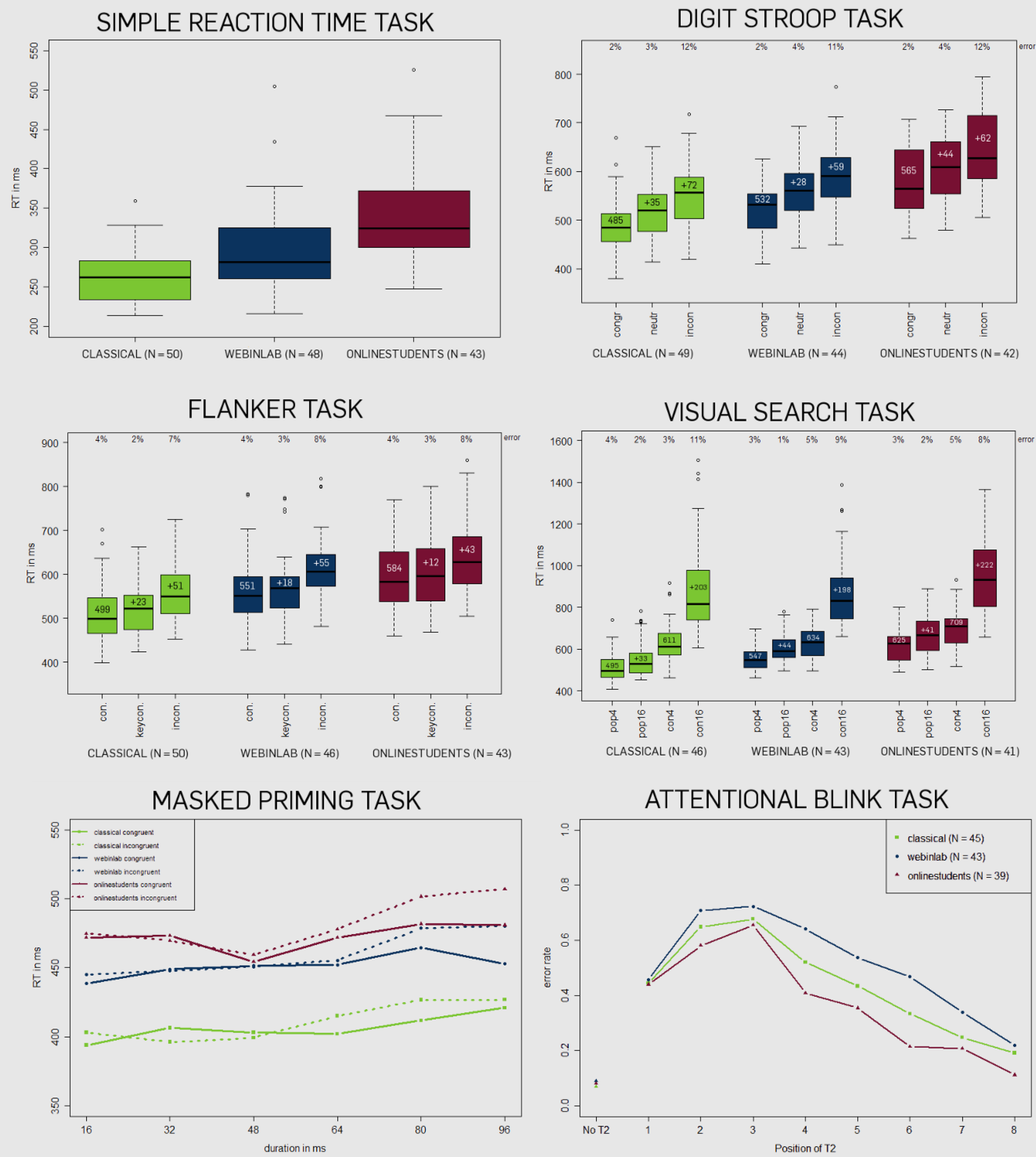
2) **Can task-specific effects be replicated?**

If the timing offset has an impact on the results, task-specific effects should not be replicated.

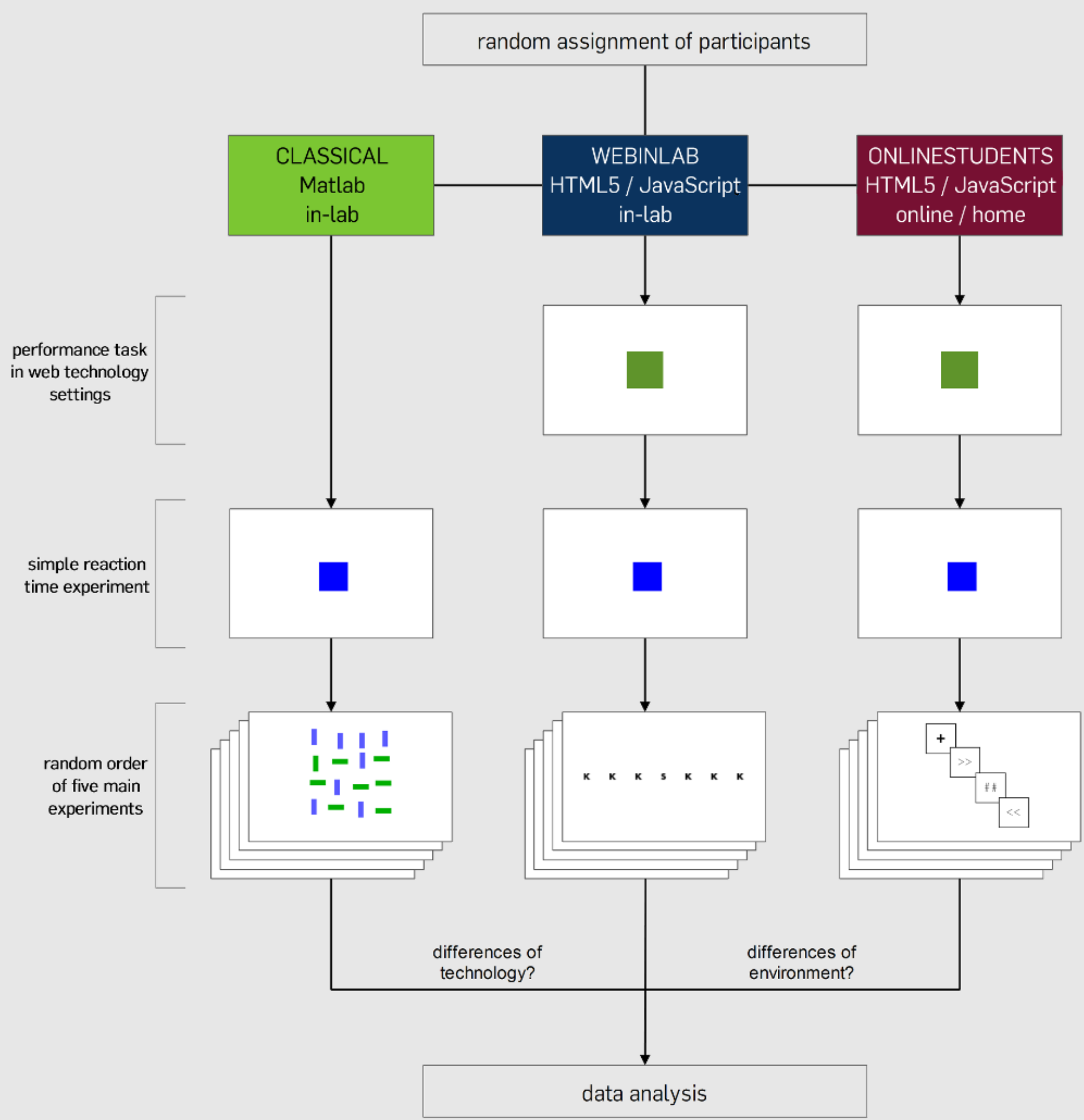
3) **Are error rates equal over stages?**

If concentration and motivation in participating from home is equivalent to the in-lab situation, no differences in error rates should be detected.

## RESULTS

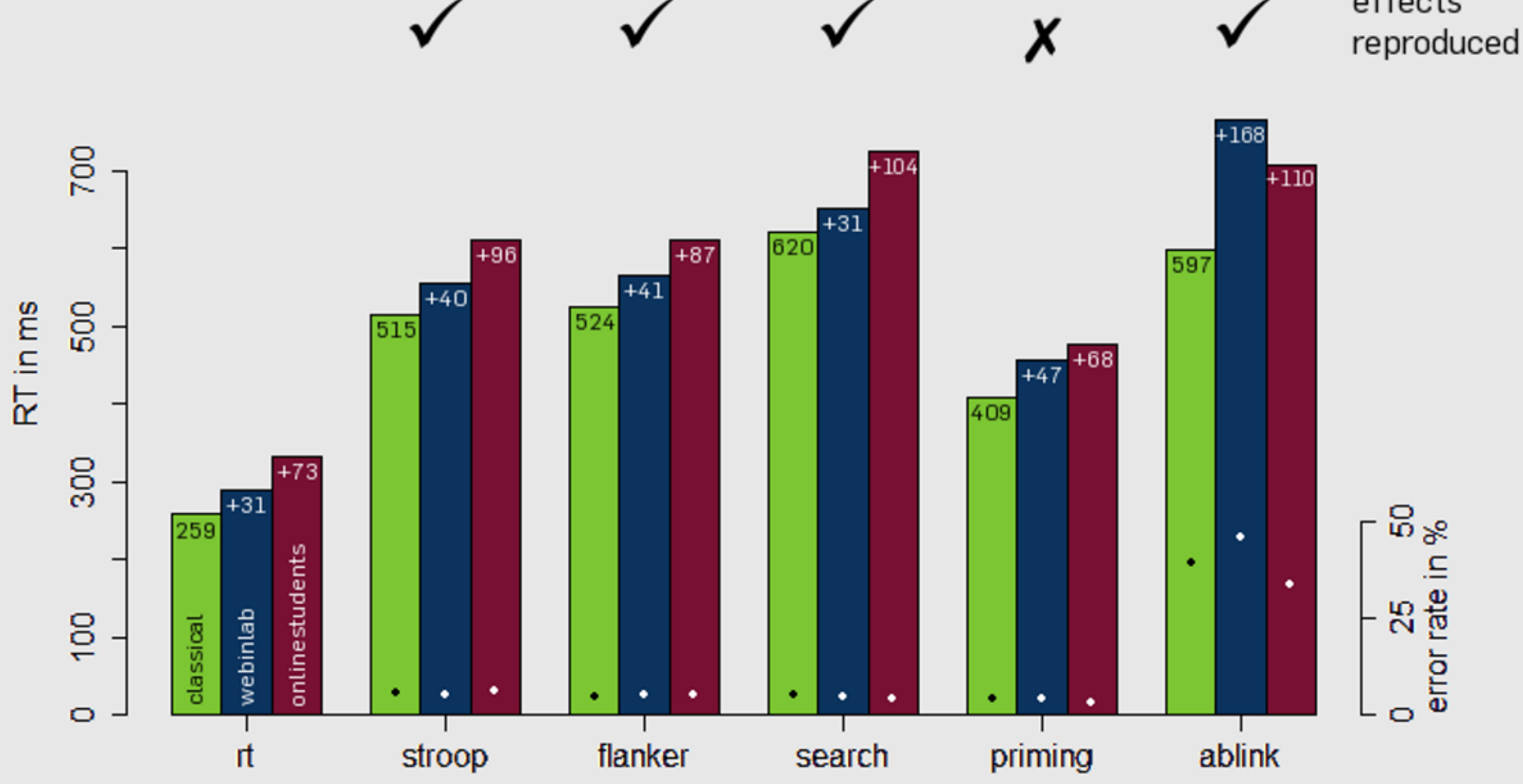


## DESIGN



## DISCUSSION

### SUMMARY



- 1) **Yes**, we found a fixed offset that matches earlier studies with 38 ms in webinlab and additional 47 ms in onlinestudents. It seems to be due to inherent JavaScript inaccuracies that already show in presentation timing.
- 2) **Yes**, task-specific effects can be replicated either in all stages (Stroop, Flanker, search, attentional blink) or in none (priming), thus no difference in method of data acquisition was found.
- 3) **Yes**, except a single condition (attentional blink) where online conduction is more accurate than in-lab, no differences in error rates have been found over stages.

Summed up, despite a fixed additive offset in timing measurement when using web technology, we found all paradigms producing the same results in each stage. Other metrics, like error rates, did not differ between in-lab or online data acquisition. Thus, we infer that within-subject studies can safely be conducted through web technology in- or off-lab. Taken together, these results contribute to the slowly but steadily growing literature that online psychophysics is a suitable complement - or even substitute - to classical data acquisition.

Literature:  
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