Mind over Body:
Investigating Cognitive Control of Cycling Performance with Dual-Task Interference

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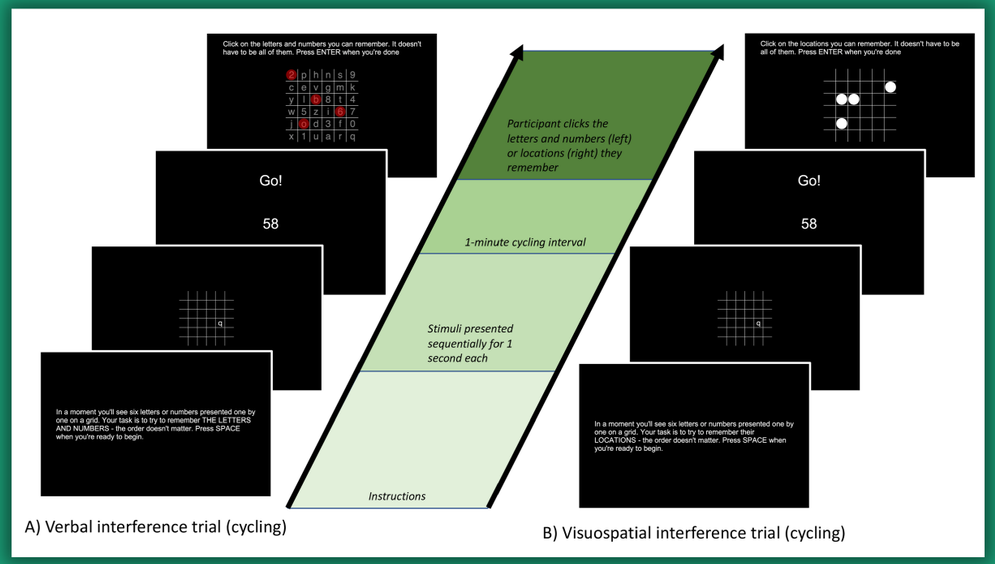
Introduction

- Verbal interference has been used in previous research to investigate the role of language in various cognitive functions.
- There is wide agreement in the sport psychology literature that inner speech can be recruited to improve physical performance. This has mainly been tested with intervention and questionnaire studies which each have limitations.
- We aimed to test whether interfering with inner speech had an effect on physical endurance performance on an exercise bike.

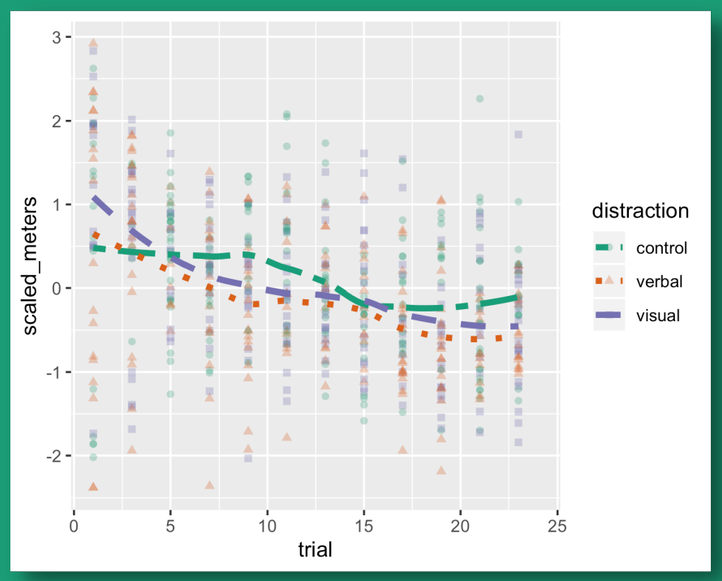
Method

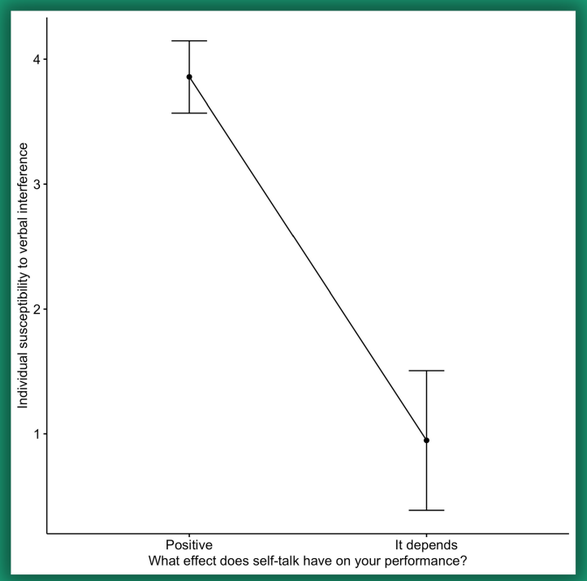
- 49 regularly exercising participants (mean age = 26.95, *SD = 10.2;* 29 men and 20 women).
- 12 1-minute cycling trials and 12 1-minute rest trials.
- Participants wore a heart-rate monitor on their wrist and were required to reach at least 70 % of their maximum heart rate within each cycling trial.
- For the interference conditions, participants saw six letters and numbers presented on a 6x6 grid and were required to remember either their locations (visuospatial interference) or the letters and numbers themselves (verbal interference) while cycling. The order of the conditions was pseudo-randomized within four blocks.



A) Verbal interference trial (cycling)

B) Visuospatial interference trial (cycling)





Results & Discussion

- Participants cycled a shorter distance in the verbal interference condition compared with the no-interference ($p < .001$; Cohen's d = 0.29) and the visuospatial inference conditions (nonsignificant: $p = .10$; Cohen's d = 0.22).
- Participants who said self-talk usually helps their performance were more affected by the verbal interference ($p < .001$; Cohen's d = 0.46).

Conclusion & Future directions

- Our study presents a first attempt at using dual-task interference to test the role of self-talk in physical performance.
- Future studies should test other types of interference to determine whether the difference between verbal and visuospatial interference is robust.

Key references: Alderson-Day & Fernyhough (2015), *Psychological bulletin*; Hatzigeorgiadis et al. (2011), *Perspectives on Psychological Science*; Tod et al. (2011), *Journal of Sport and Exercise Psychology*; Tullett & Inzlicht (2010), *Acta Psychologica*; Van Raalte et al. (2015), *The Sport Psychologist*; Vygotsky (1962), MIT Press.