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Introduction

- Colour effects argued to exert effects on psychology⁽¹⁾ and behaviour. (2)
- Hill & Barton found a 'winning red' effect at the Athens (2004) Olympics.
- Effect more pronounced when competition was 'close'.
- **Objective: Does red affect the** likelihood of winning in a large sample of Olympic combat sports / World Boxing Championships?

Methods

- We included data from 6 Olympic events (1996-2016) and 6 World Boxing Championships.
- For Olympic events, we coded Taekwondo, Greco-Roman Wrestling, Freestyle Wrestling, and Boxing.
- Following Hill & Barton, we agreed upon a pre-specified protocol for close contests, and selected the first quartile of closest matches.
- We used the 'meta' package⁽⁴⁾ to synthesise our findings (note that other analyses including Bayes Factors have also been used but are not reported here).

(Key) Results

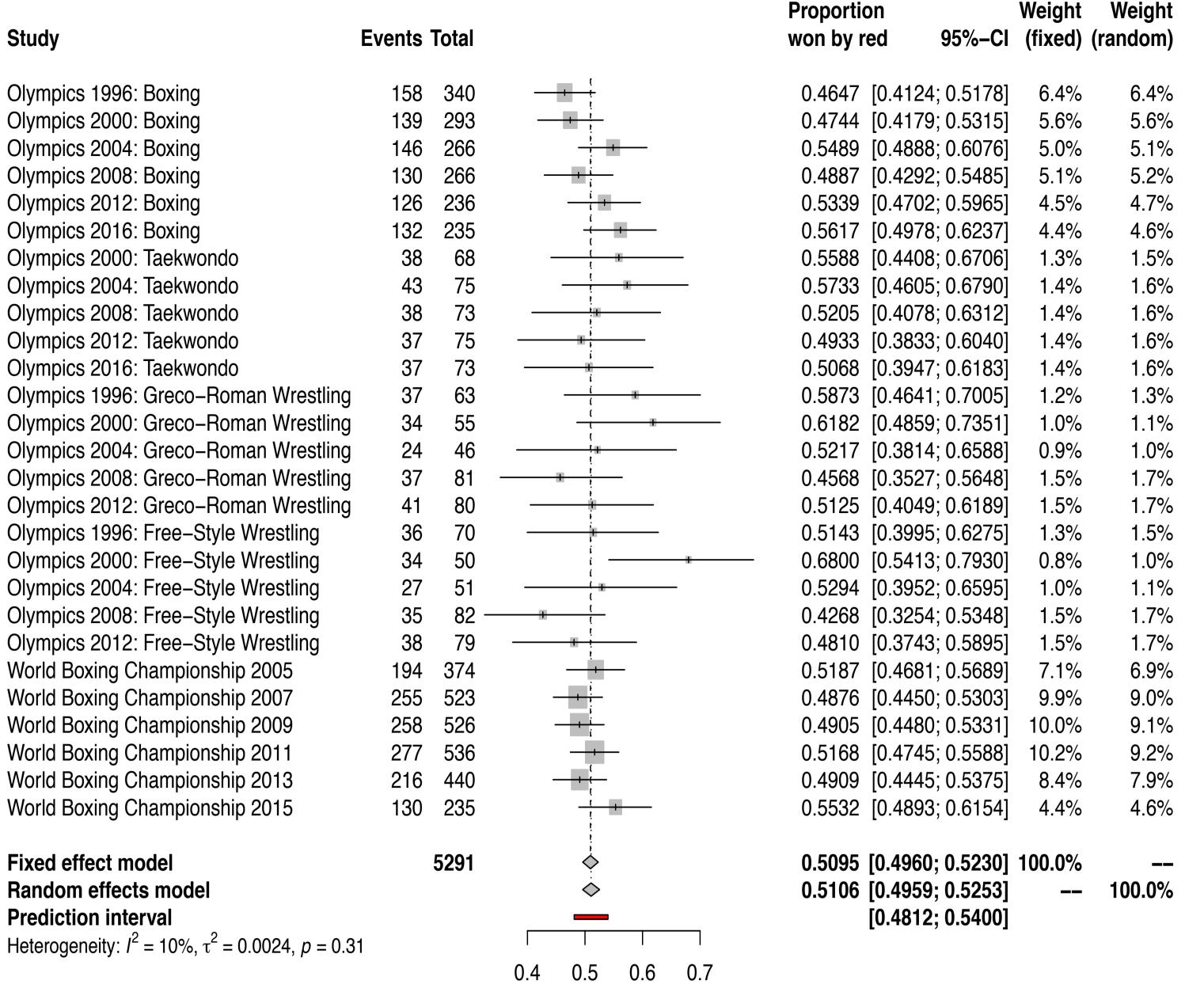
See Figures.

Discussion

- No statistically significant effects of colour (but suggestion of small effect when competition is close).
- Alternative explanations? (Time?, Small but noisy effect?, statistical outlier(s)?)



Does red enhance human performance in contests? A meta-analysis



Proportion

won by red

0.5278 [0.4140; 0.6387]

0.5283 [0.3966; 0.6562]

0.6379 [0.5090; 0.7497]

0.4630 [0.3369; 0.5940]

0.4545 [0.3302; 0.5848]

0.6136 [0.4660; 0.7431]

0.5652 [0.3679; 0.7439]

0.7059 [0.4657; 0.8701]

0.0000 [-0.0560; 0.6175]

0.5600 [0.3705; 0.7335]

0.6667 [0.4150; 0.8504]

0.5000 [0.2903; 0.7097]

0.6111 [0.3854; 0.7977]

0.7059 [0.4657; 0.8701]

0.4667 [0.2480; 0.6989]

0.5294 [0.3096; 0.7384]

0.4211 [0.2311; 0.6376]

0.6250 [0.3038; 0.8651]

0.4000 [0.1671; 0.6884]

0.6000 [0.3567; 0.8025]

0.5556 [0.3370; 0.7546]

0.5147 [0.3983; 0.6295]

0.4854 [0.3912; 0.5807]

0.4831 [0.3949; 0.5723]

0.5259 [0.4421; 0.6083]

0.4867 [0.3965; 0.5778]

0.5571 [0.4408; 0.6675]

0.5245 [0.4957; 0.5531]

0.5245 [0.4957; 0.5531] 100.0%

[0.4942; 0.5545]

Weight

95%-CI (fixed) (random)

4.6%

4.6%

1.6%

1.5%

1.6%

6.0%

Weight

4.7%

3.6%

0.2%

2.1%

1.2%

1.6%

1.5%

1.3%

1.5%

0.6%

1.2%

5.9%

8.9%

Forest plot for all contests

Study

Olympics 1996: Boxing

Olympics 2000: Boxing

Olympics 2004: Boxing

Olympics 2008: Boxing

Olympics 2012: Boxing

Olympics 2016: Boxing

Olympics 2000: Taekwondo

Olympics 2004: Taekwondo

Olympics 2008: Taekwondo

Olympics 2012: Taekwondo

Olympics 2016: Taekwondo

Olympics 1996: Greco-Roman Wrestling

Olympics 2000: Greco-Roman Wrestling

Olympics 2004: Greco-Roman Wrestling

Olympics 2008: Greco-Roman Wrestling

Olympics 2012: Greco-Roman Wrestling

Olympics 1996: Free–Style Wrestling

Olympics 2000: Free-Style Wrestling

Olympics 2004: Free-Style Wrestling

Olympics 2008: Free-Style Wrestling

Olympics 2012: Free–Style Wrestling

World Boxing Championship 2005

World Boxing Championship 2007

World Boxing Championship 2009

World Boxing Championship 2011

World Boxing Championship 2013

World Boxing Championship 2015

Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, p = 0.83

Fixed effect model

Prediction interval

Random effects model

Events Total

25

BONUS

- As expected, no suggestion of publication bias.
- No evidence for (strong) heterogeneity.
- We also conducted analyses with tertiles.
- These show an effect for close competitions but likely driven by outlier (see graph below).

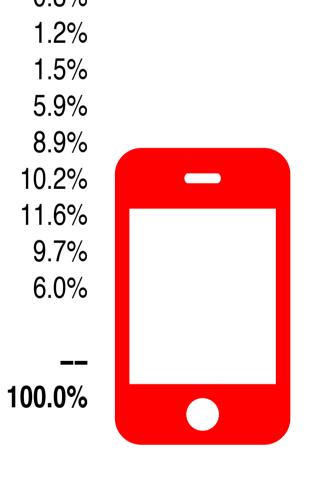
Alternative explanations / Questions / moving forward.

- Was Athens (2004), a statistical outlier? (Perhaps for close contests but not for overall effect)
- Potential non-independence issues?
- What is the effect of rule changes?
- Are we underpowered to detect a 'noisy' effect?
- Should we move toward more studies which experimentally manipulate colour? For example (5)

6.2% 4.6% 4.6% 4.6% 2.0%

Baujat plot for close contests (quartiles)

Olympics 2008: Taekwondo 🏻





Take a picture to download the poster

Forest plot for close contests (quartiles)

1181



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References

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[4] Schwarzer, G. Meta: Meta-Analysis with R. R Package Version 4.4–0.

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