The Effects of Action Video Game Training on Visual Short-term Memory

Kara J. Blacker¹, Kim M. Curby², Elizabeth Klubosicky³, Jason M. Chein³
¹Johns Hopkins University, Baltimore, MD, USA
²Macquarie University, Sydney, NSW, Australia
³Temple University, Philadelphia, PA, USA

Background
- A fundamental characteristic of visual short-term memory (VSTM) is its capacity limited nature (e.g., Anzman & Cavanaugh, 2004; Bayles & Rusell, 2008; Luck & Vogel, 1997).
- The current study focused on the potential of action video game training to improve VSTM.
- Previous cross-sectional studies have demonstrated that avid action video game players have enhanced VSTM capacity and precision (Blacker & Curby, 2013; Boot et al., 2008; Sungur & Boduroglu, 2012).
- Findings regarding a causal link between action video game play and improved VSTM are inconsistent:
  - After 20hrs of action game training, Boot et al. (2008) found no significant improvement in VSTM, but Oei and Patterson (2013) did.

Study Goals
- Does action video game training improve:
  - VSTM capacity?
  - VSTM precision?
  - VWM capacity?
- Can group differences in motivation, engagement, or outcome expectations explain any positive transfer after training? (Boot, Blakely, & Simons, 2011)

Methods
- N = 34 male participants (Mage = 20.5, SD = 2.6)
- Participants had little or no prior video game experience.
- Randomly assigned to a video game group:
  - Call of Duty (Action group)
  - The Sims (Control group)
- Demographics + Video Game Questionnaire
- Pre-training Assessments
- 30 hours of video game training:
  - 1-2 hours/session, 5-8 hours/week
  - Over 30 days
- Post-training Assessments
- Exit Survey

Motivation & Engagement
- Participants self-reported motivation and engagement levels during each assessment and training session.
- Participants also completed an exit survey assessing expectations regarding the outcome of the study.

Conclusions
- Action video game training significantly improved VSTM performance.
- The action group demonstrated greater training gains in VSTM precision compared to the control group, but only at set size 4.
- Training improvements did not extend to VWM.
- Differences in motivation, engagement, or expectations could not account for the training-related gains in VSTM.

Pre-training Assessments
- Exit Survey
- 2 hours
- Post-training Assessments
- 2 hours
- 30 hours of video game training:
  - 1-2 hours/session, 5-8 hours/week
  - Over 30 days

References

Acknowledgements & Contact Info
We wish to thank Gabrielle Nicholas and Amanda Vianda for help with data collection.
For an e-copy of this poster please scan this code or email: kara.blacker@ju.edu