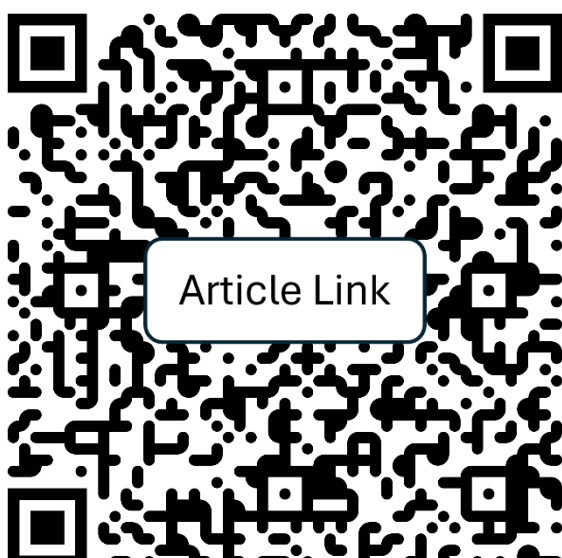


Evaluating the effect of action-like game play and of casual game play on anxiety in adolescents with elevated anxiety: protocol for a randomized controlled trial

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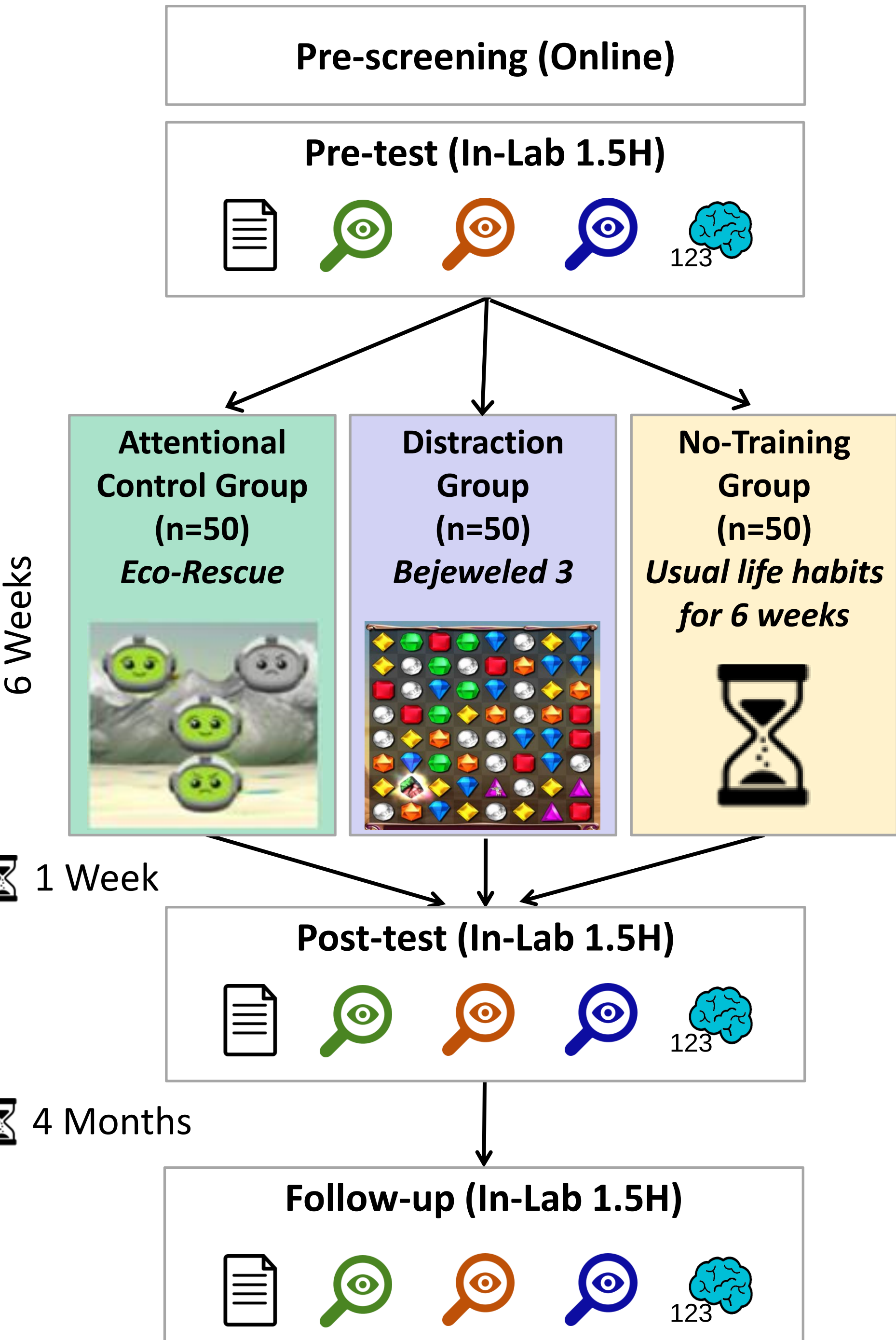
1. Background

- Adolescence is a critical period for the onset and maintenance of anxiety symptoms¹
- Emotion regulation strategies require Attentional Control⁴ and are linked to better outcomes in mental health⁵
- Previous studies used cognitive training² or casual video games³ to reduce stress, anxiety and depression
- Video games are motivating, engaging and easily accessible

Research Questions:

- Can we train attentional control with an action-like video game to decrease anxiety symptoms in adolescents?
- How do these changes compare to intervening with a Casual Video Game reported to reduce anxiety?

2. Study Design



3-arm multi-site randomized controlled trial

- Sample:** 150 adolescents (12-14 years old)
- Recruitment site:** Geneva (Switzerland), Haifa (Israel)
- Inclusion criteria:**
- Access to a computer and internet at home,
 - Anxiety symptoms (SCARED-Parent score ≥ 17)
- Training regimen:**
- 4 sessions of 30min per week for 6 weeks
 - Total: 12 hours

3. Behavioral Assessments

Primary outcome: Anxiety

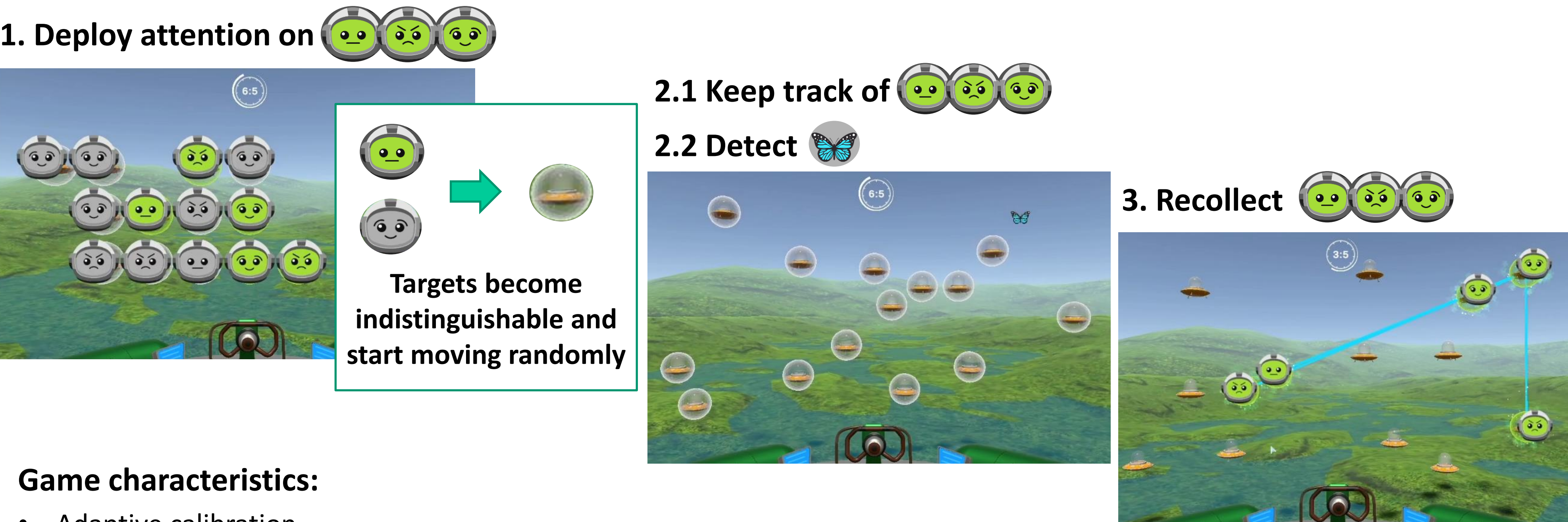
Screen for Child Anxiety Related Emotional Disorders⁶ - Child Version

Secondary outcomes:

Attentional Control:	Useful Field of View Task ⁴
	Test of Variables of Attention ⁵
	Multiple Object Tracking Task ⁴
Affective Working Memory Updating:	Affective Backward Digit Span Task ⁶

4.1 Eco-Rescue (Gamified Multiple Object Tracking Task + Detection task)

- 1st Goal:** Mentally track the formerly green ships and select them to depollute planets.
- 2nd Goal:** While tracking ships, detect butterflies appearing for a short period of time to reforest planets.



Game characteristics:

- Adaptive calibration
- Adaptive independent staircases
- 3240 trials in total (12h)
- Emotional stimuli (emoji faces)

Reward system:

- Collect stickers during the game

Action game features:

- Attention demanding: i.e. focused, distributed, divided
- Pacing: perception and action under time constraints
- Feedback: immediate and delayed
- Variability: i.e. different number of distractors and targets
- Zone of Proximal Development: difficulty scaffolding

Scan QR code for more information



Available on Steam

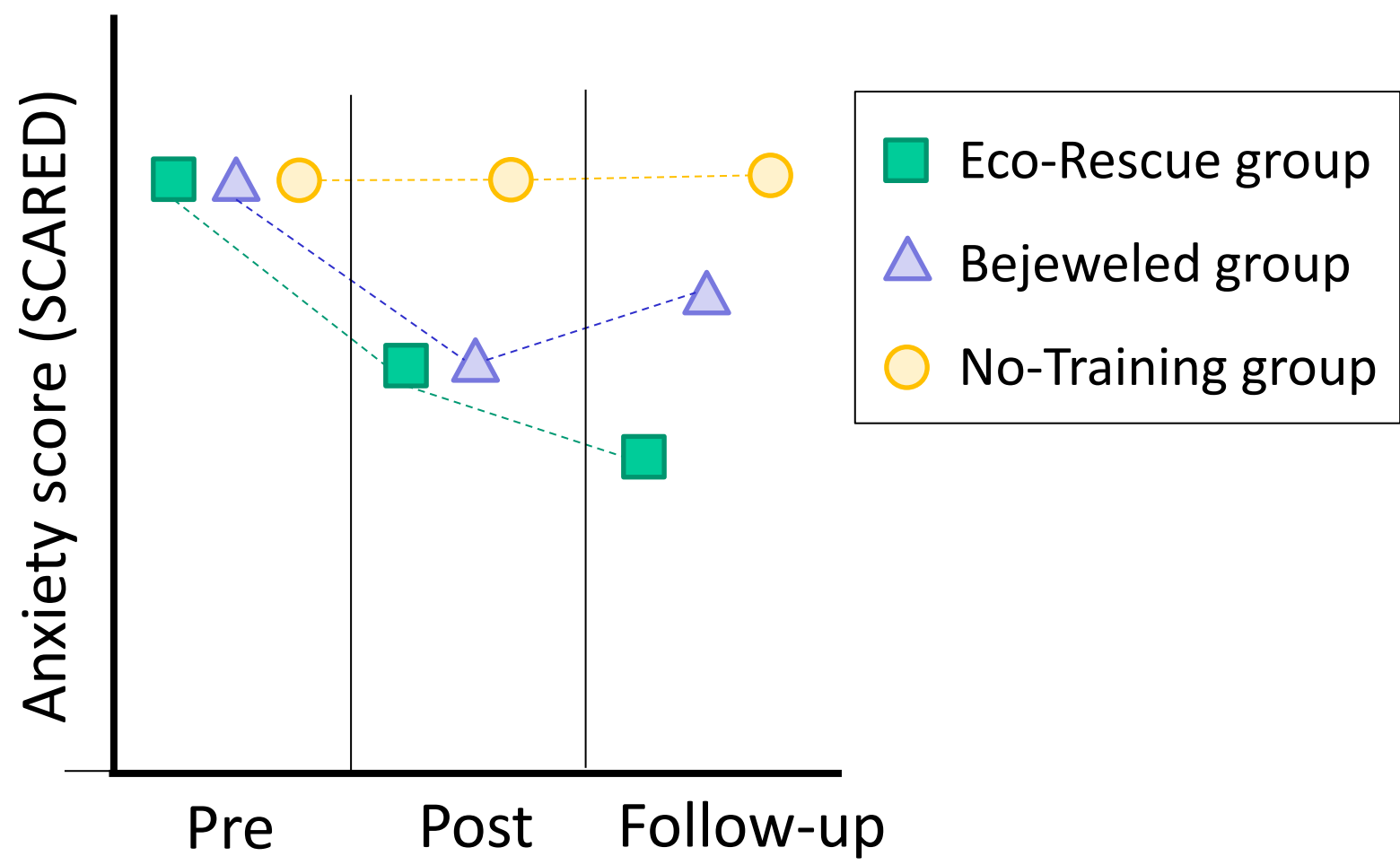
5. Expected Results (Anxiety)

Playing an action-like video game:

- will reduce anxiety at post-test because of their beneficial effects on attentional enhancement and/or the distraction away from anxious thoughts
- beneficial effect in anxiety will last in follow-up through improvement in attentional control

Playing a casual video game:

- will reduce anxiety at post-test because of their beneficial effects on the distraction away from anxious thoughts
- reduction in anxiety should not last in follow-up as the distraction is considered as a short-term effect.

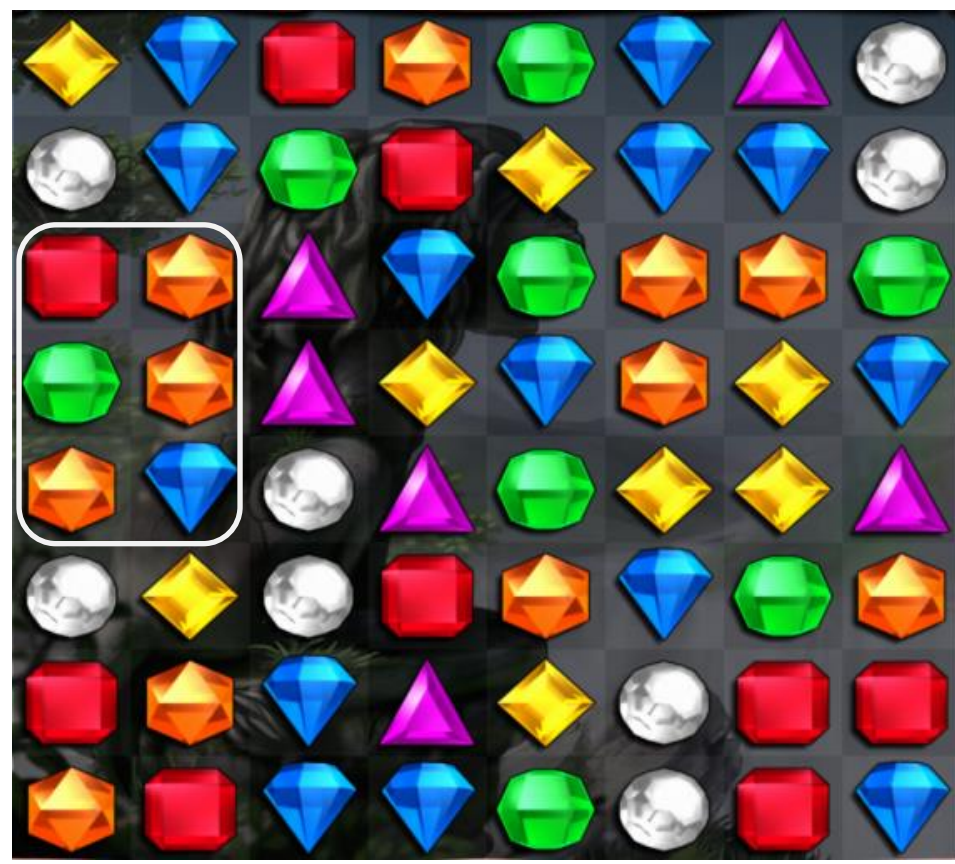


4.2 Bejeweled 3 (Puzzle Game)

Goal: Swap 2 adjacent gems to line up horizontally or vertically 3 or more gemstones of the same type to eliminate them from the board and gain points.

Casual video game:

- Game variability (different game modes)
- Requires few attentional resources



Bejeweled 3 game play



Available on Steam

6. Conclusion

This project aims to:

- Investigate the **causality of a link between attention control and anxiety**, using an adaptive gamified training task loading on attention and visuospatial working memory.
- Put in direct contrast the short-and long-lasting cognitive and emotional effects of **casual videogame play, acting as a positive distraction tool** and of **gamified cognitive training aiming to improve attentional control skills through action game features**.

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