



ELICITING PLAY IN VIRTUAL REALITY

We explored whether a Virtual Environment (VE) can invoke Panksepp's PLAY emotion system.



BACKGROUND

What is PLAY?

PLAY is the highly-pleasurable, fast-paced series of back and forth interactions between two or more beings and can be generalised to social joy.

Why it matters?

PLAY supports social and cognitive development, and reduced play is linked to conditions like depression and ADHD. A VE that elicits PLAY could support both research and therapy, yet to our knowledge no prior work has used VR to target it.

RESEARCH QUESTION: CAN A VIRTUAL ENVIRONMENT ELICIT PLAY?



OBJECTIVES

- 1 Decompose the definition of PLAY into measurable components to allow triangulation
- 2 Propose an affective VE design framework intended to support PLAY elicitation
- 3 Create and evaluate three virtual environments designed to elicit PLAY



PROCEDURE PER VIRTUAL ENVIRONMENT:



Within subjects user study

N = 25 participants per VE

1

Pre-tutorial

2

Post-tutorial

3

Post-affective

Measures: SAM, PANAS-X, ANSS, IPQ, Social and Co-Presence, Telemetry

Questionnaire

Measured

ANSS	PLAY
SAM: Valence	High pleasure
SAM: Arousal	Fast-paced
Co-presence	Reciprocity
SAM: Dominance	Responsiveness
Social-Presence	Social



THE VIRTUAL ENVIRONMENTS



1. Apple Interaction

A woodland meadow where players freely throw and catch apples with an NPC squirrel whose mood-driven FSM controls its behaviour (e.g. offering, chasing, evading) and expressions.

VALENCE

✓x

DOMINANCE

xx

AROUSAL

✓x

RECIPROCITY

✓

SOCIALITY

x

JOY

xx✓

PLAY

✓✓

Verdict: 2/7 parts met.



2. Water Balloon Fight

A water balloon fight across a backyard pool with a boy NPC that matches the player's throwing skill, so play passes through winning, losing and fair phases.

VALENCE

✓x

DOMINANCE

xx

AROUSAL

xx

RECIPROCITY

x

SOCIALITY

✓

JOY

✓✓

PLAY

✓✓

Verdict: 3/7 parts met.



3. Bunny Rally

A bat and ball interaction with a humanoid bunny in a forest where the bunny throws an acorn and the player hits it back to the bunny.

VALENCE

x✓

DOMINANCE

✓x

AROUSAL

xx

RECIPROCITY

✓

SOCIALITY

✓

JOY

xx✓

PLAY

xx

Verdict: 2/7 parts met.

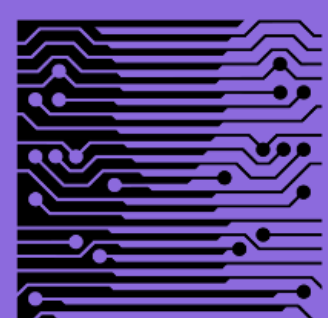


CONCLUSION

Across all three environments, our framework elicited pleasant, positive, and socially engaging experiences. This is partial but promising evidence for PLAY elicitation in VR

Future work should

- Measure physiological data to corroborate self-reported arousal
- Recruit a larger, more diverse sample for statistical power and generalisability
- Hold a VR familiarization session before the main session to reduce novelty effects
- Ensure the tutorial environment is affectively neutral



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