EP Theories and Interactive Art Appeal

Studies show that interactive art forms like video games engage evolutionary mechanisms related to motivation, cognition, and cultural transmission, explaining their distinctive appeal.

Abstract

Lonergan et al. (2018) show that playing an action role-playing game like The Elder Scrolls V: Skyrim elicits neurophysiological responses linked to motivational systems originally shaped by ancestral survival challenges. Their experimental observations indicate that aspects of game design, such as avatar characteristics, engage evolved emotional processing. In a broader analysis, Velikovsky (2014) argues that video games and transmedia storytelling platforms tap into evolutionary mechanisms by inducing flow states and enhancing cognitive functioning, thereby promoting adaptive play. He further posits that interactive media evolve through a biocultural creative process that mirrors selection and transmission dynamics observed in nature. Together, these studies suggest that evolutionary psychology theories—in particular, those concerning motivational activation, cognitive enhancement, and adaptive cultural transmission—offer a supported explanation for the distinctive appeal of interactive art forms.

Paper search

Using your research question "Can EP theories explain the distinctive appeal of interactive art forms like video games or VR experiences?", we searched across over 126 million academic papers from the Semantic Scholar corpus. We retrieved the 50 papers most relevant to the query.

Screening

We screened in papers that met these criteria:

- **Evolutionary Psychology Framework**: Does the study examine or apply evolutionary psychological theories in relation to interactive media?
- **Interactive Media Focus**: Does the research focus on interactive digital media (such as video games, virtual reality, or other interactive digital art forms)?
- **User Experience Analysis**: Does the study analyze user engagement, preferences, or appeal factors with psychological interpretation?
- **Study Design**: Is the study either empirical research (experimental, observational, or correlational) OR a systematic review/meta-analysis?
- **Theoretical Connection**: Does the study examine psychological mechanisms that connect evolutionary psychology with interactive media experiences?
- **Media Type Scope**: Does the study include analysis of interactive media (not exclusively focusing on traditional, non-interactive art forms)?
- **Theoretical Framework Scope**: Does the study include evolutionary considerations (not focusing solely on social or cultural factors)?
- **Evidence Base**: Is the study based on empirical evidence (not an opinion piece or purely theoretical paper)?

We considered all screening questions together and made a holistic judgement about whether to screen in each paper.

Data extraction

We asked a large language model to extract each data column below from each paper. We gave the model the extraction instructions shown below for each column.

- **Theoretical Framework**:

  Identify and list the primary theoretical perspectives used in the study to explain interactive art forms (e.g., evolutionary psychology, flow theory, cognitive play theory).

Extraction steps:

1. Scan the introduction and theoretical discussion sections
2. Look for explicit mentions of theoretical models or frameworks
3. If multiple theories are used, list them in order of prominence
4. If no clear theoretical framework is identified, write "Not specified"

Example formats:

- Evolutionary psychology (EP)
- Csikszentmihalyi's flow theory
- Combination of EP and flow theory

- **Research Methodology**:

  Describe the primary research methodology used in the study.

Extraction steps:

1. Examine the methods section carefully
2. Categorize the methodology as:
   - Theoretical/conceptual analysis
   - Empirical study (quantitative)
   - Empirical study (qualitative)
   - Mixed methods
3. If multiple methodological approaches are used, list them in order of prominence
4. Provide a brief (1-2 sentence) description of the specific approach

Example formats:

- Theoretical analysis using comparative framework
- Experimental study with participant gameplay observations
- Neurophysiological analysis of gameplay behaviors

- **Primary Focus of Analysis**:

  Identify the specific interactive art form or media type analyzed in the study.

Extraction steps:

1. Look in the introduction and methods sections
2. Specify the exact interactive medium studied
3. If multiple media are discussed, list them
4. Note any specific characteristics or genres examined

Example formats:

- Video games (general)
- Virtual reality experiences
- Transmedia storytelling platforms
- Specific game genre (e.g., first-person shooter, narrative adventure)
- **Key Findings Related to Evolutionary Perspectives**:

  Extract the primary findings that connect interactive art forms to evolutionary psychological explanations.

Extraction steps:

1. Carefully review results and discussion sections
2. Look for explicit statements about how the interactive medium relates to:
   - Cognitive development
   - Evolutionary adaptation
   - Problem-solving mechanisms
3. Summarize key findings in 2-3 concise sentences
4. If no clear evolutionary perspective findings are present, write "No specific evolutionary findings identified"

Example format: "Study argues that video game play potentially enhances cognitive flexibility through simulated problem-solving scenarios that mimic ancestral survival challenges."

Results

Characteristics of Included Studies

Study	Study Design	Theoretical Framework	Interactive Media Focus	Key Concepts	Full text retrieved
Lonergan et al., 2018	Experimental study with participant gameplay observations and physiological data collection	Gender Schema Theory and Limited Capacity Model of Motivated Mediated Message Processing	Action role-playing game (RPG) - The Elder Scrolls V: Skyrim	Neurophysiological perspective, evolved psychological mechanisms, motivational systems	Yes

Study	Study Design	Theoretical Framework	Interactive Media Focus	Key Concepts	Full text retrieved
Velikovsky, 2014	Theoretical/conceptual analysis	Combination of systems model of creativity, evolutionary epistemology, biocultural evolutionary creative algorithm, Csikszentmihalyi's flow theory, narrative transportation theory, and Boyd's cognitive play theory	Video games (general), Transmedia storytelling platforms	Evolutionary epistemology, biocultural evolutionary creative algorithm, flow theory, narrative transportation	No

The table presents information on study design, theoretical frameworks, and interactive media focus for two studies. These studies employ different methodological approaches and theoretical foundations to explore the appeal of interactive art forms:

- Theoretical Approaches : The studies draw on diverse theoretical frameworks, ranging from gender and cognitive processing theories to evolutionary and creativity-focused models. This diversity suggests a multifaceted approach to understanding the appeal of interactive media.
- Interactive Media Focus : While one study focuses specifically on a single role-playing game, the other takes a broader view of video games and transmedia storytelling. This range of focus allows for both depth and breadth in exploring interactive art forms.

Thematic Analysis

Evolutionary Foundations of Interactive Engagement

- Activation of Motivational Systems :
  - Lonergan et al. (2018) propose that video game play activates motivational systems rooted in evolutionary psychology.
  - Certain game features are motivationally relevant due to their ties to ancestral survival challenges.
  - This aligns with the concept of evolved psychological mechanisms (EPMs) as general functions that have evolved to help humans solve problems in their environment.
- Potential for Cognitive Enhancement :
  - Velikovsky (2014) suggests that gameplay may enhance both animal and human intelligence.

  - This implies that engagement with interactive art forms could serve an adaptive function.
  - The potential improvement of cognitive abilities could confer evolutionary advantages.

- Adaptive Functions of Play :
  - Both studies implicitly address the adaptive functions of play:
    * Lonergan et al. (2018) focus on how game elements engage motivational systems, which could be seen as a form of adaptive play.
    * Velikovsky's (2014) argument about gameplay enhancing intelligence suggests that interactive art forms might serve as a modern context for adaptive play behaviors.

Neurophysiological Substrates of Interactive Experience

- Neurophysiological Perspective :
  - Lonergan et al. (2018) explicitly adopt a neurophysiological perspective to complement traditional communication theories.
  - Their study examines how the sex of an avatar and its salience affect emotional processing in video games.
  - This approach suggests that these elements engage specific neural mechanisms.

- Flow States and Neural Activity :
  - While Velikovsky (2014) does not directly address neural mechanisms, the inclusion of Csikszentmihalyi's flow theory indirectly relates to cognitive processing.
  - Flow states have been associated with specific patterns of neural activity.
  - This connection suggests that the appeal of interactive art forms might be partially explained by their ability to induce flow states.
  - These flow states could have roots in evolutionary adaptations for focused attention and task engagement.

Biocultural Evolution of Interactive Art Forms

- Biocultural Evolutionary Creative Algorithm :
  - Velikovsky (2014) introduces this concept, focusing on selection, variation, and transmission-with-heredity.
  - This framework suggests that the development and appeal of interactive art forms like video games can be understood through an evolutionary lens.
  - Successful elements are selected, varied, and transmitted across generations of games and players.

- Dynamic Process of Creation and Reception :
  - The study considers both game design (creation) and gameplay experience (audience reception).
  - This implies that the evolution of interactive art forms involves both creators and consumers.
  - Cultural transmission patterns play a crucial role in the development and popularity of interactive media.

- Cultural Selection in Game Design :
  - While Lonergan et al. (2018) do not explicitly address biocultural evolution, their focus on how game elements engage evolved motivational systems suggests a form of cultural selection.

– Games that better engage evolutionary-based motivations may be more likely to succeed and influence future game designs.

In conclusion, these two studies provide insights into how evolutionary psychology theories might explain the appeal of interactive art forms. The engagement of evolved motivational systems, the potential for cognitive enhancement, and the alignment with biocultural evolutionary processes all contribute to our understanding of why these media forms are compelling. However, the limited number of studies and their methodological differences highlight the complexity of this research area.

References

Chelsea Lonergan, Britney Craighead, and René Weber. "Hardwired to Play." *Evolutionary Psychology and Digital Games*, 2018.

J. Velikovsky. "Flow Theory, Evolution & Creativity: Or, 'Fun & Games'." *Australasian Conference on Interactive Entertainment*, 2014.