

Psychology of games

Part 3: Emotion

Aalto University Game Analysis course, 2024
Prof. Perttu Hämäläinen

Material also contributed by Prof. Elisa Mekler (ITU)

Disclaimer: This content is perpetually work-in-progress, updated every year.

Please answer this short questionnaire

<https://urly.fi/3ES1>

You can submit the questionnaire more than once – it would be great to get 3-5 answers from each student.

Contents

- What and why are emotions?
- Emotions and conflict (emotions in game development teams)
- Emotions in game design

Some emotion theories

- Basic categorical emotions: Fear, Joy, Anger, Disgust, Sadness, Surprisal
- Appraisal theory: Emotions are elicited by appraisals (evaluations) of aspects such as valence, arousal, approach vs. avoid, personal relevance
- Constructivist emotion theory: Emotions are not universal but instead social constructs



Human Affectome

- Emotion, feeling, mood, affect have all been used to describe aspects of the same, often in a confusing way
- 2024: Human Affectome, a research project and “consensus paper” by 100+ scientists
- Teleological view: Emotions must have a purpose, from an evolutionary perspective



The Human Affectome

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Highlights

- The affective sciences have grown disparate due to differing assumptions.
- A teleological principle for human affective phenomena can organize the field's assumptions.
- Some affective phenomena adjust based on the comfort zone (*affective concerns*).
- Others monitor that adaptive process (*affective features*).
- This Human Affectome framework organizes existing research and provides a research agenda.

Evolution of emotions

We inherit emotional states and neuromodulators like dopamine and serotonin all the way back from the earliest animals

The origin of intelligence is in steering (chasing food, avoiding predators)

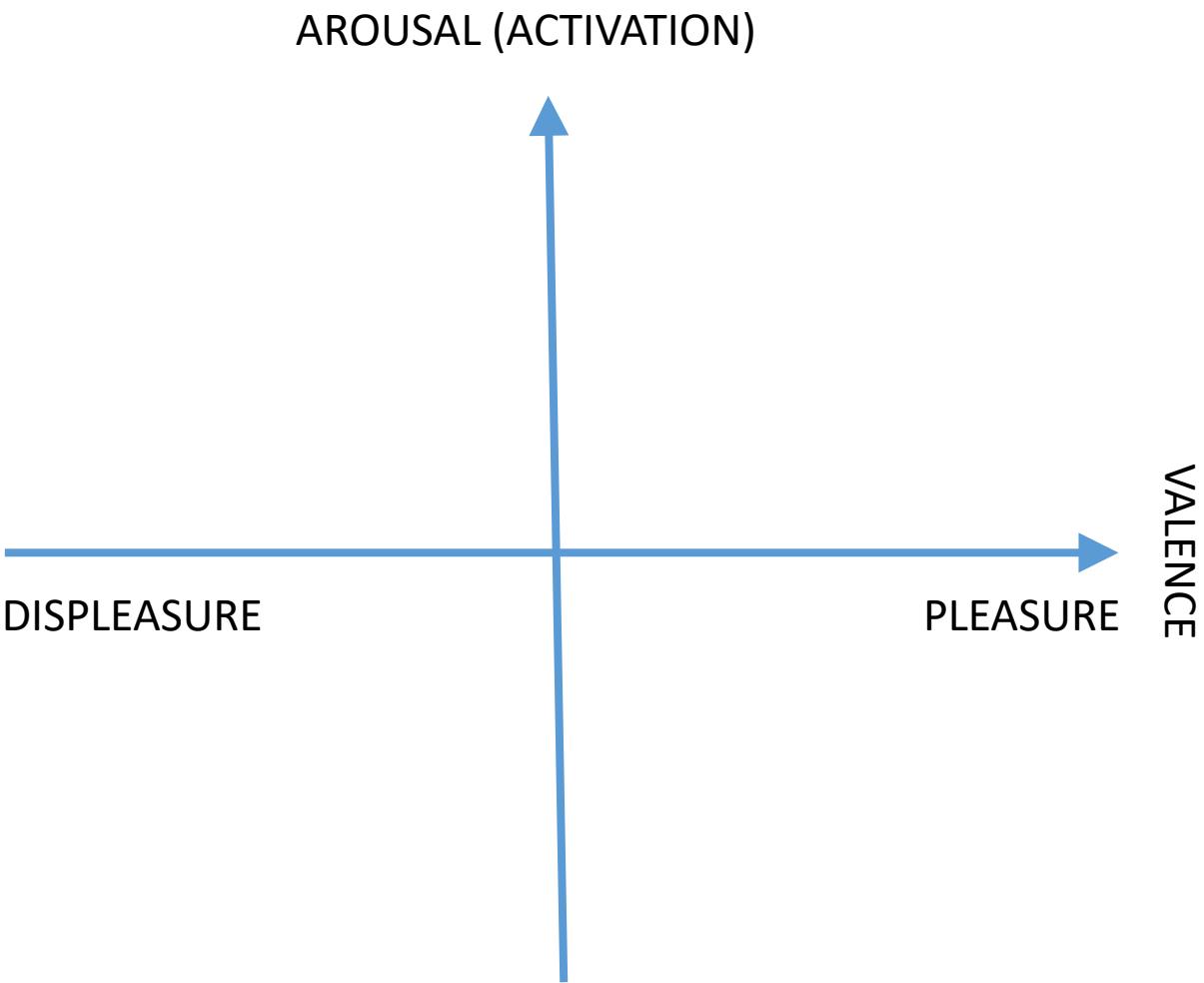
Emotions and intelligence evolved hand-in-hand: Emotions guide/motivate behavior and provide information crucial to survival.

EVOLUTION, AI, AND THE
FIVE BREAKTHROUGHS
THAT MADE OUR BRAINS

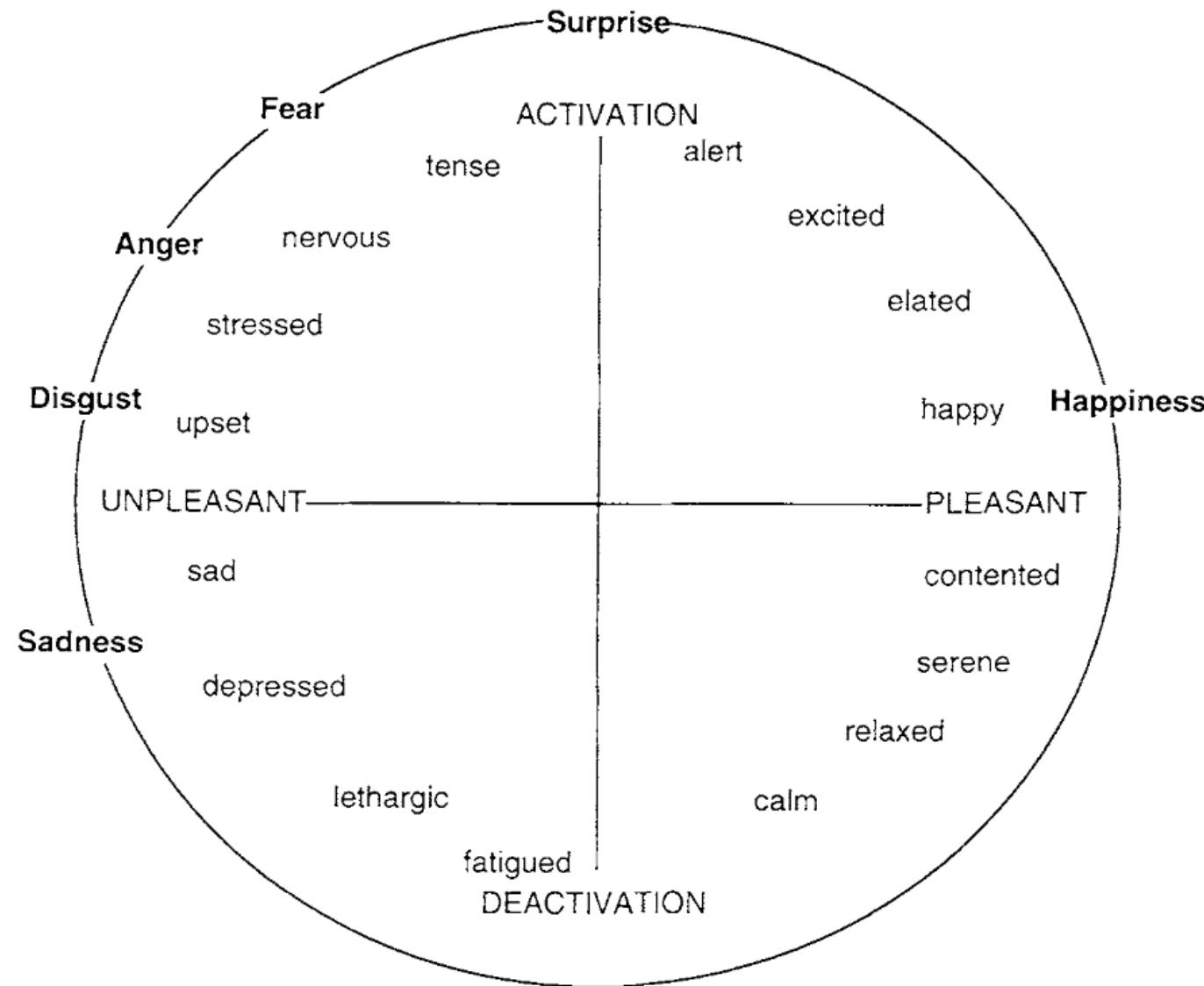
A BRIEF HISTORY
OF INTELLIGENCE

MAX BENNETT

Evolution of emotions: Valence and Arousal



Evolution of emotions: Valence and Arousal

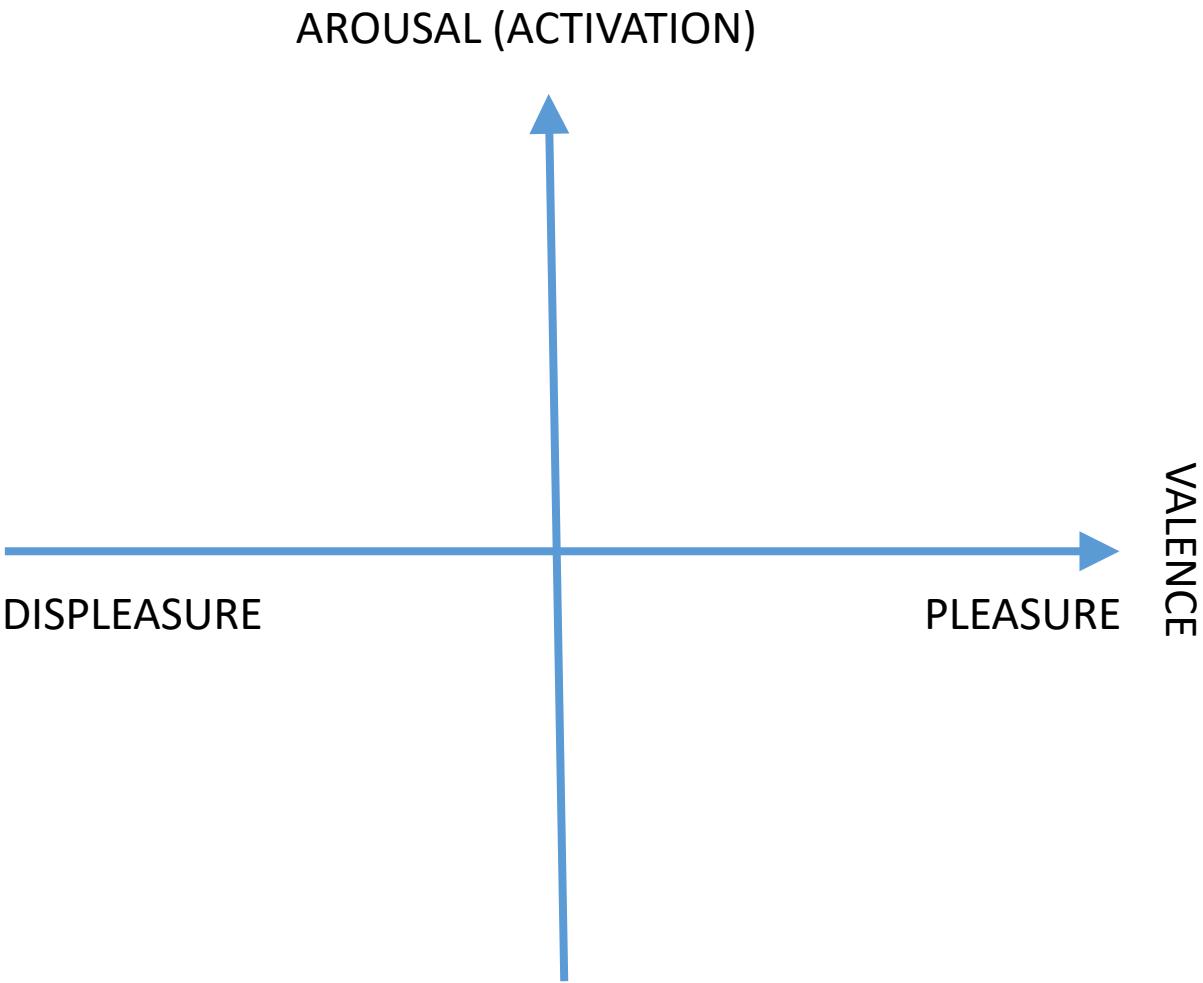




Evolution of emotions: Valence and Arousal



C. Elegans is believed to be similar to the earliest bilaterals capable of multicellular steering

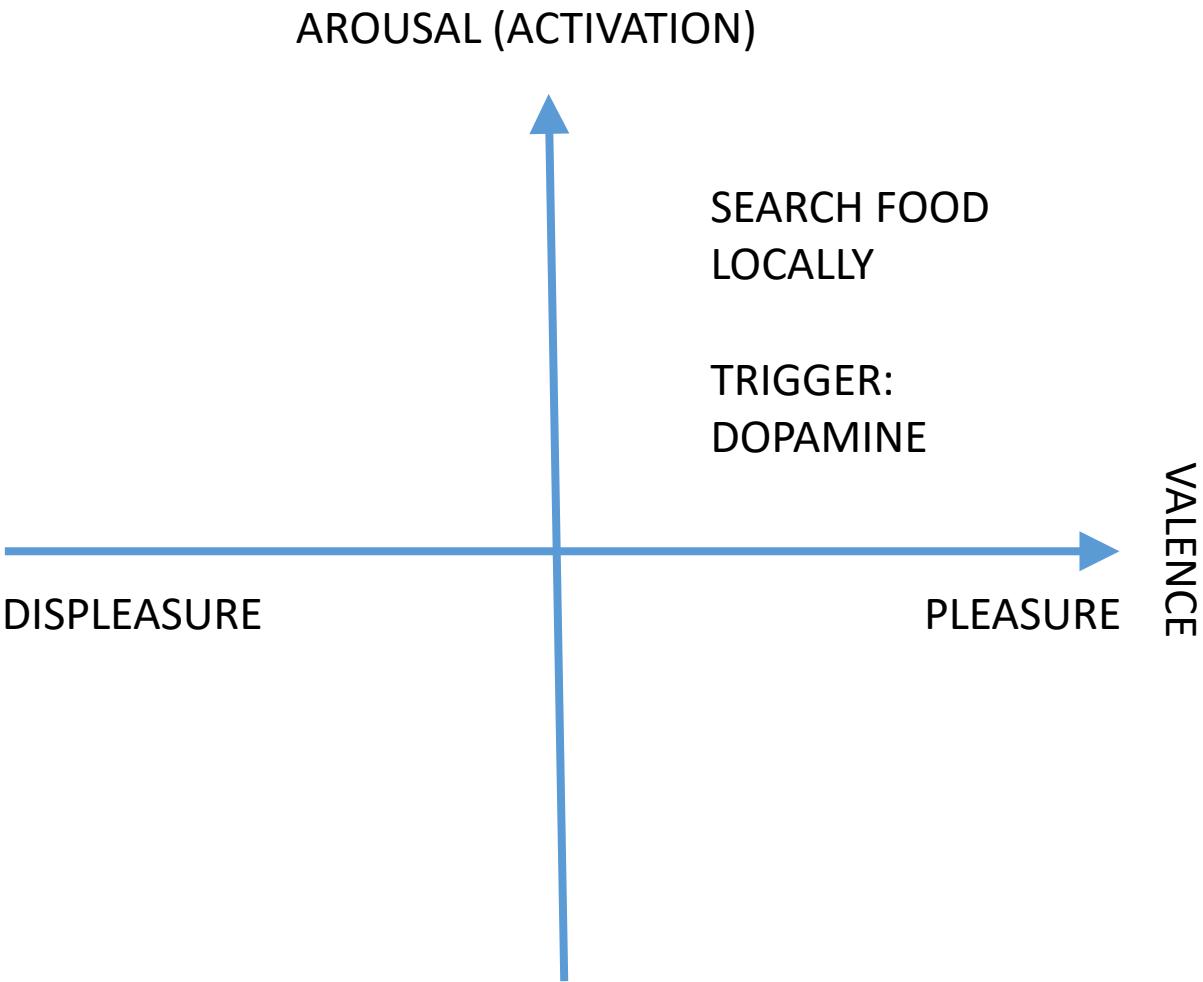




Evolution of emotions: Valence and Arousal



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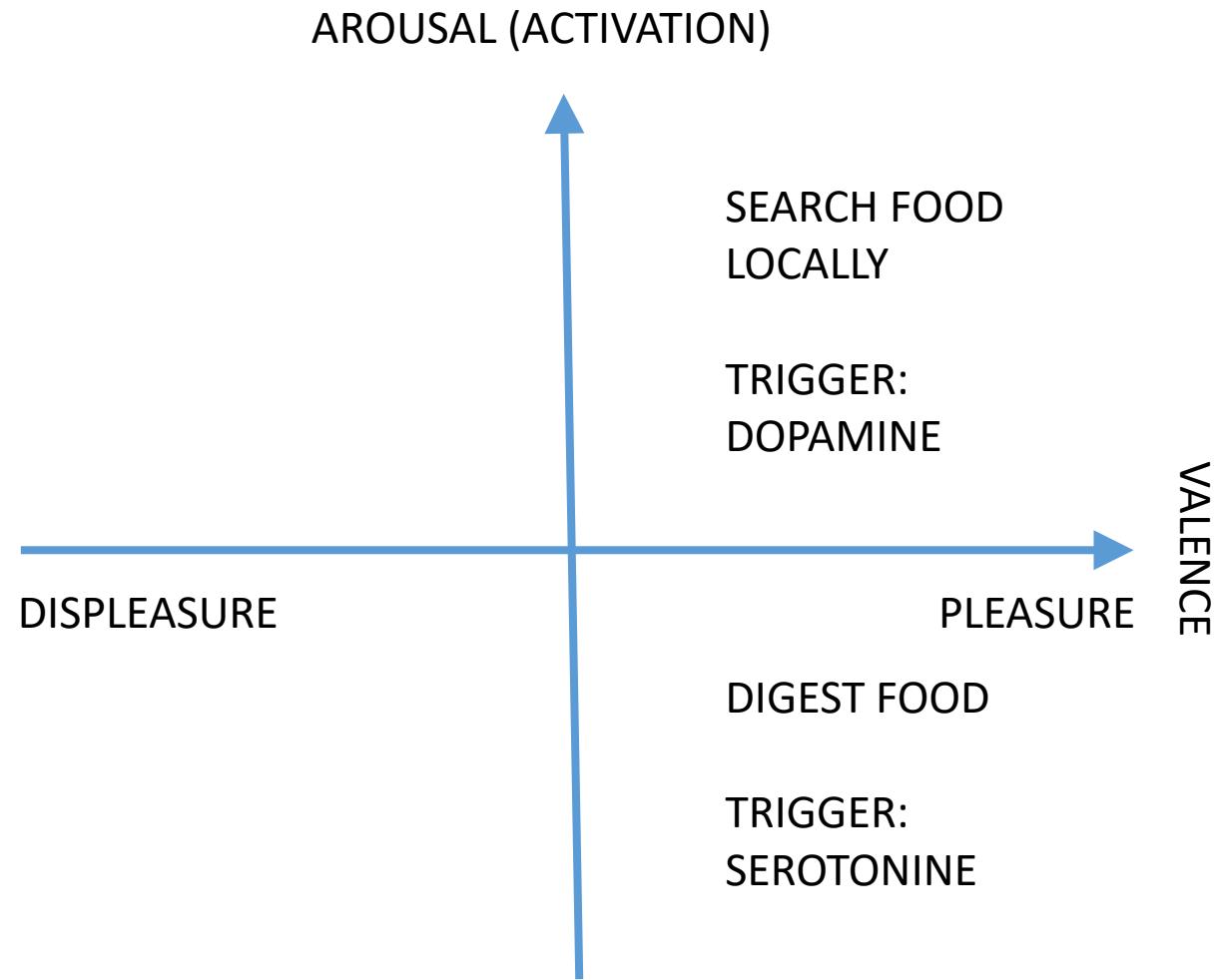




Evolution of emotions: Valence and Arousal



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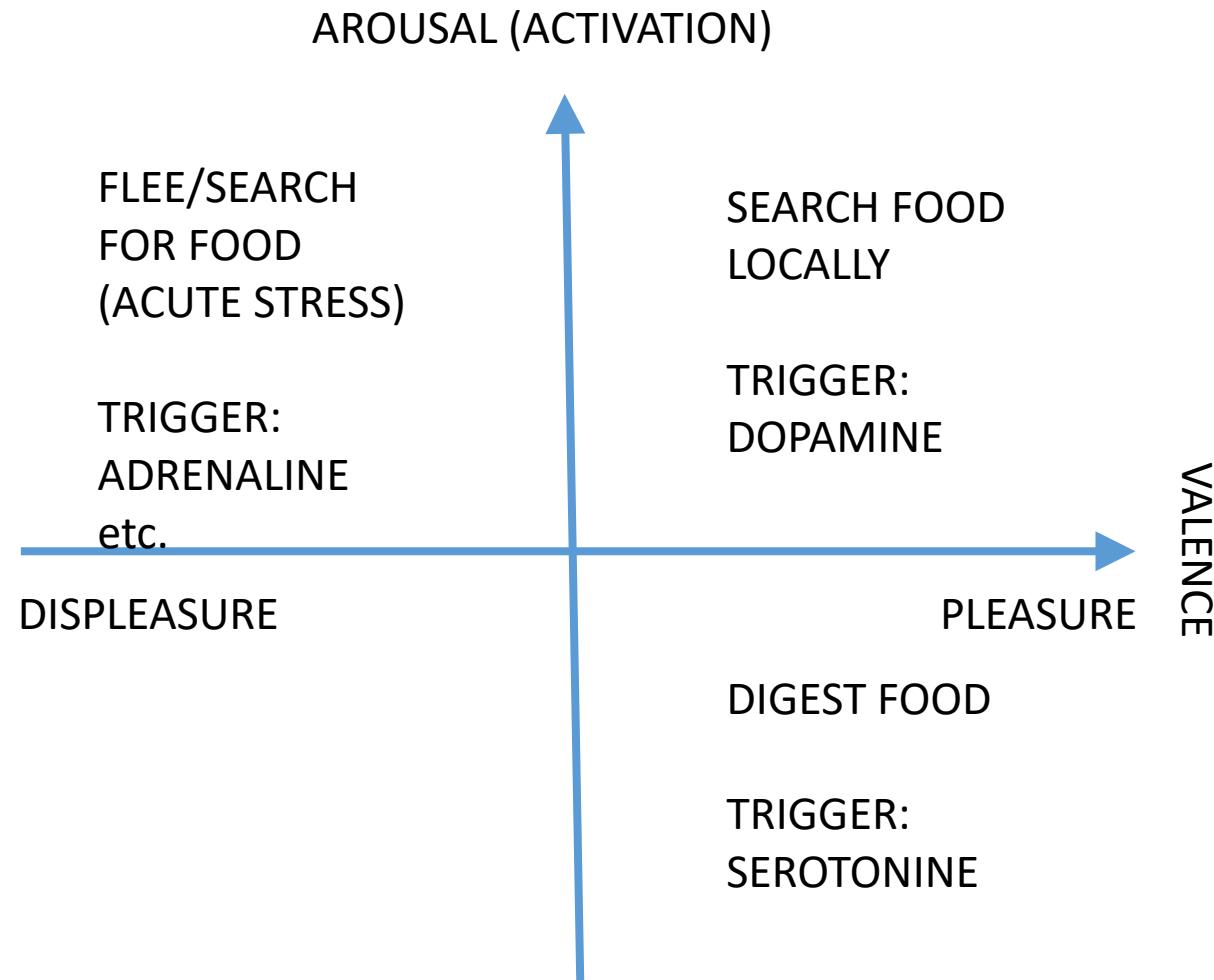




Evolution of emotions: Valence and Arousal



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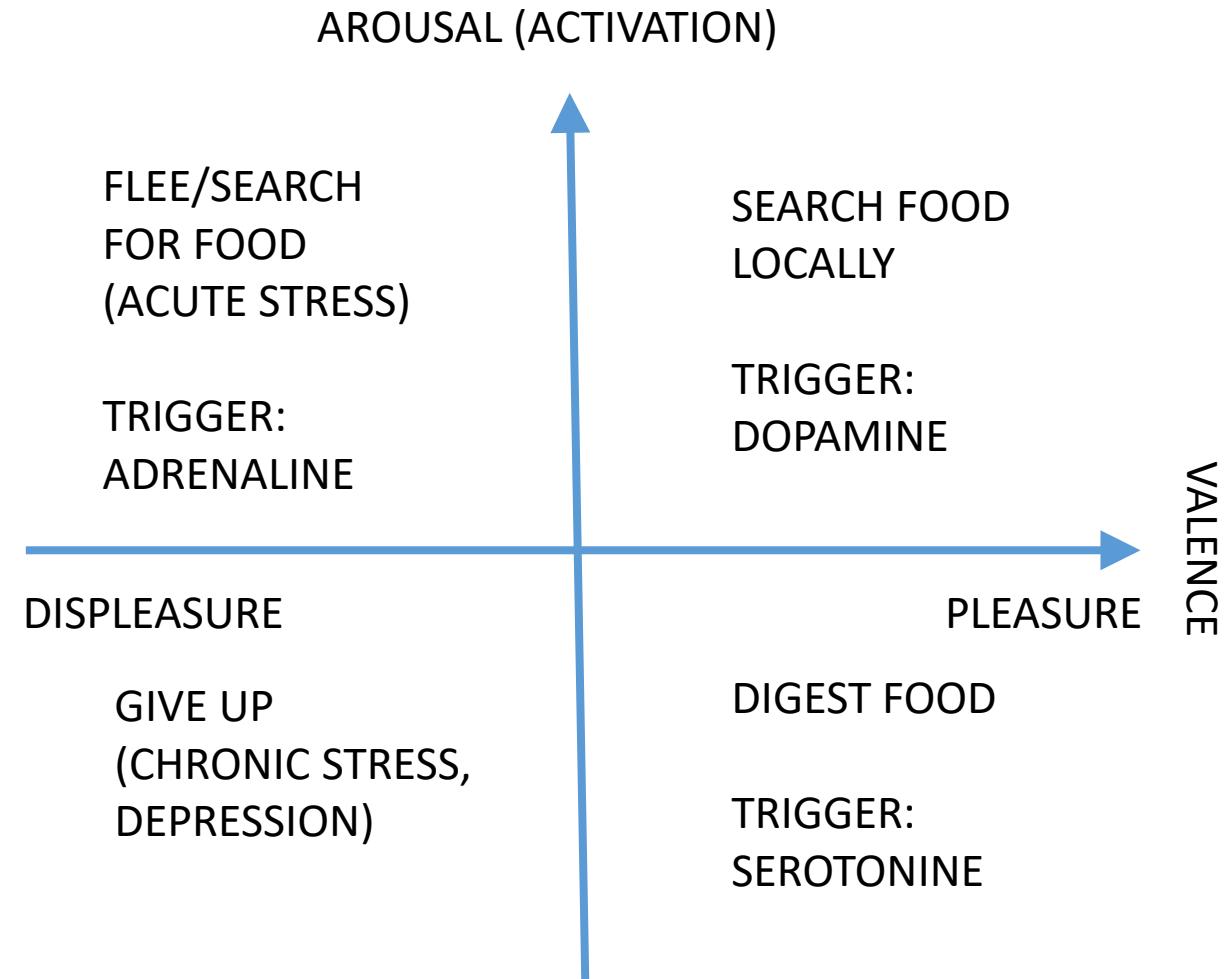




Evolution of emotions: Valence and Arousal

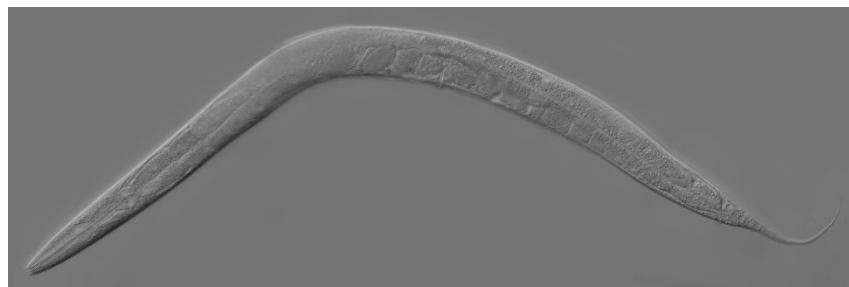


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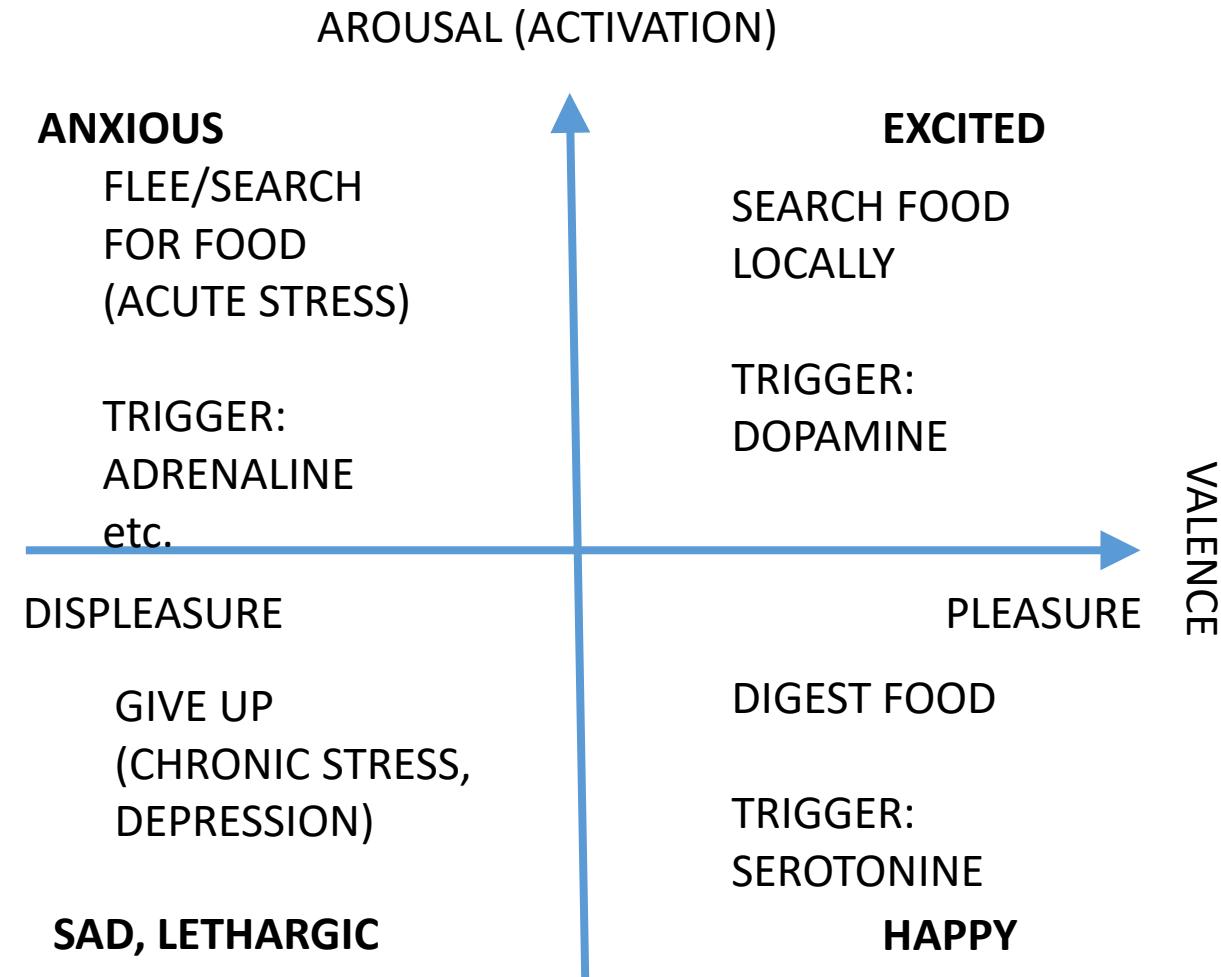




Evolution of emotions: Valence and Arousal



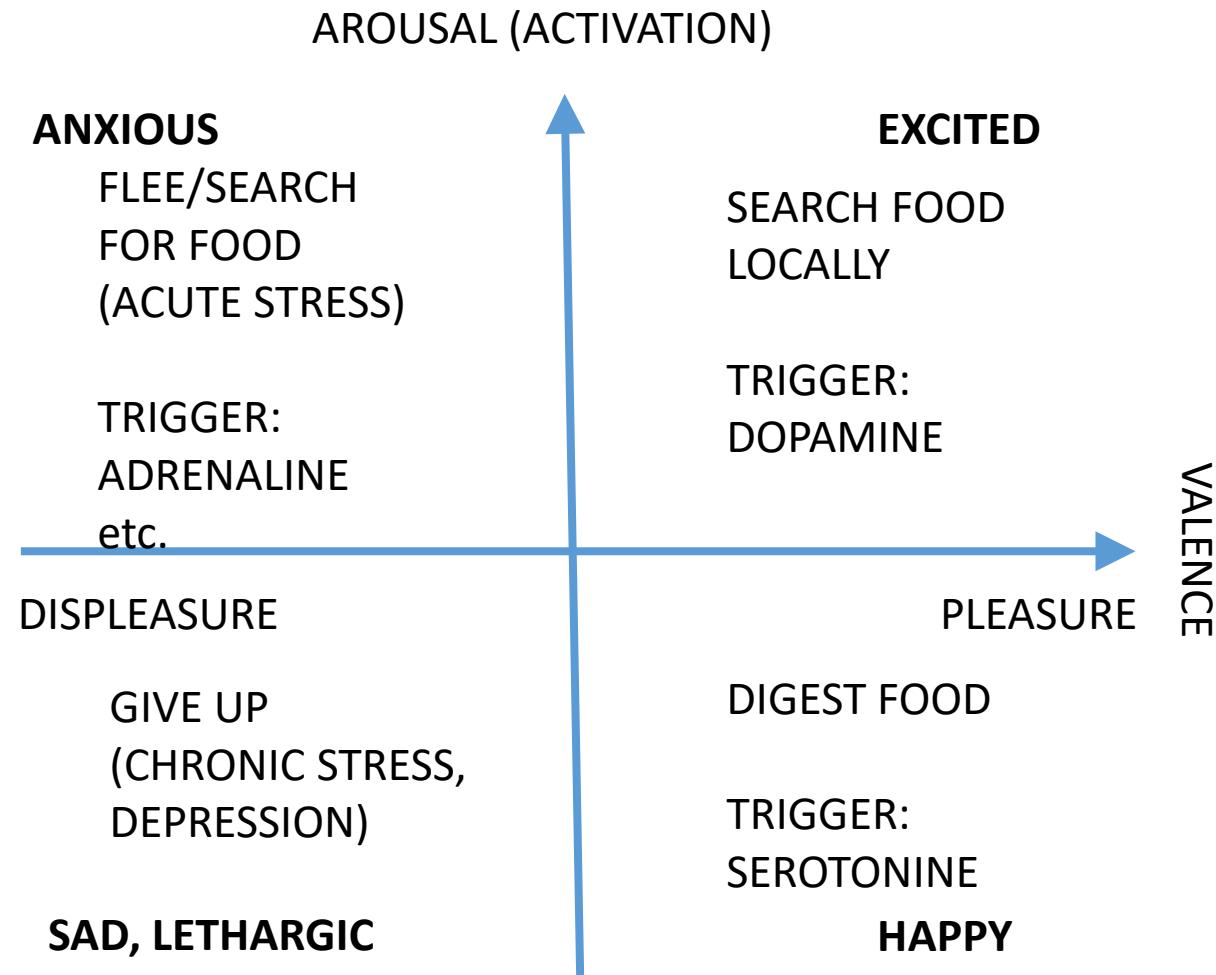
C. Elegans is believed to be similar to the earliest bilaterals capable of multicellular steering



Evolution of emotions: Valence and Arousal



SSRI = Selective Serotonin Reuptake Inhibitor

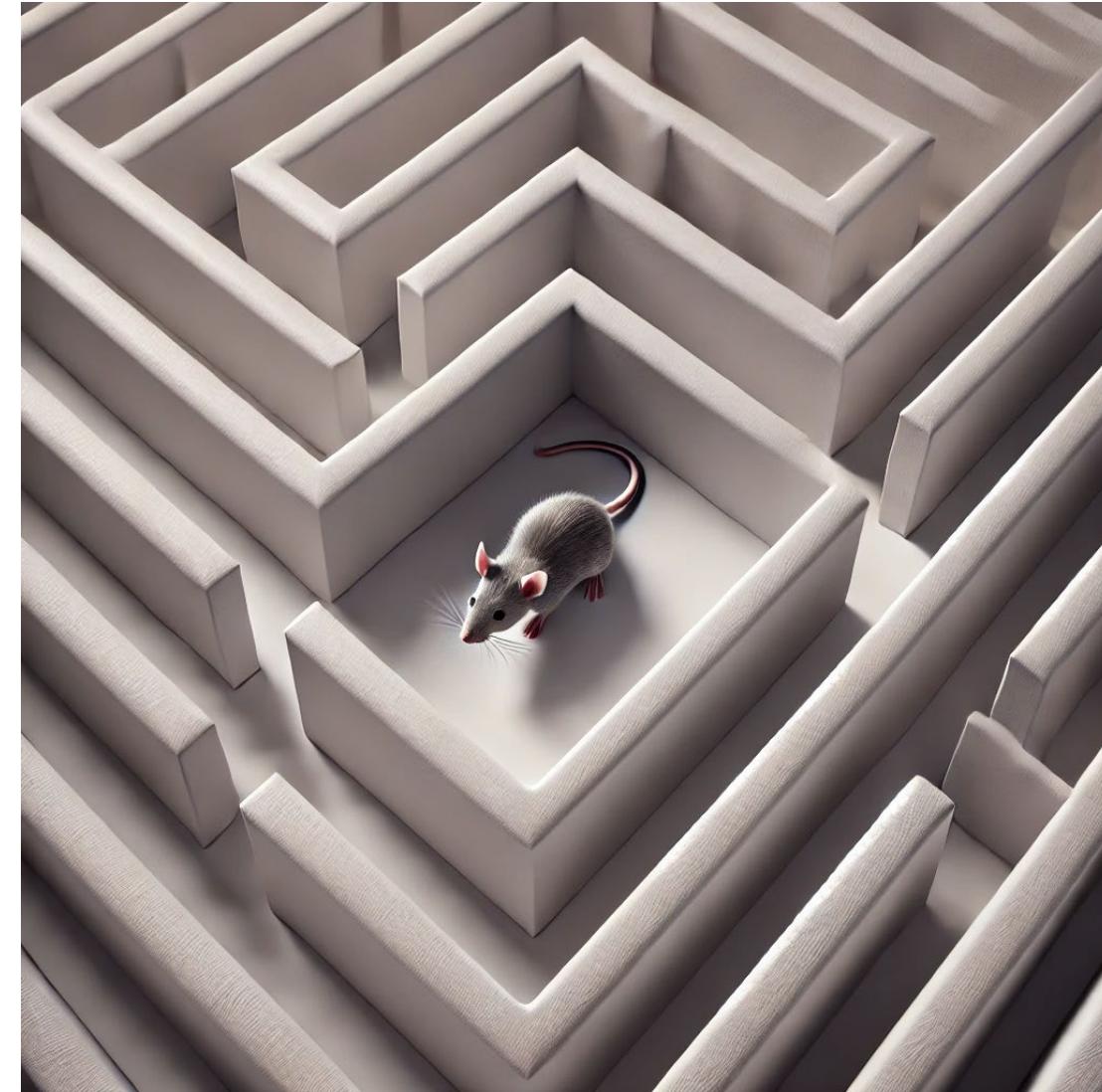




Evolution of emotions: Repurposing of dopamine for reinforcement learning

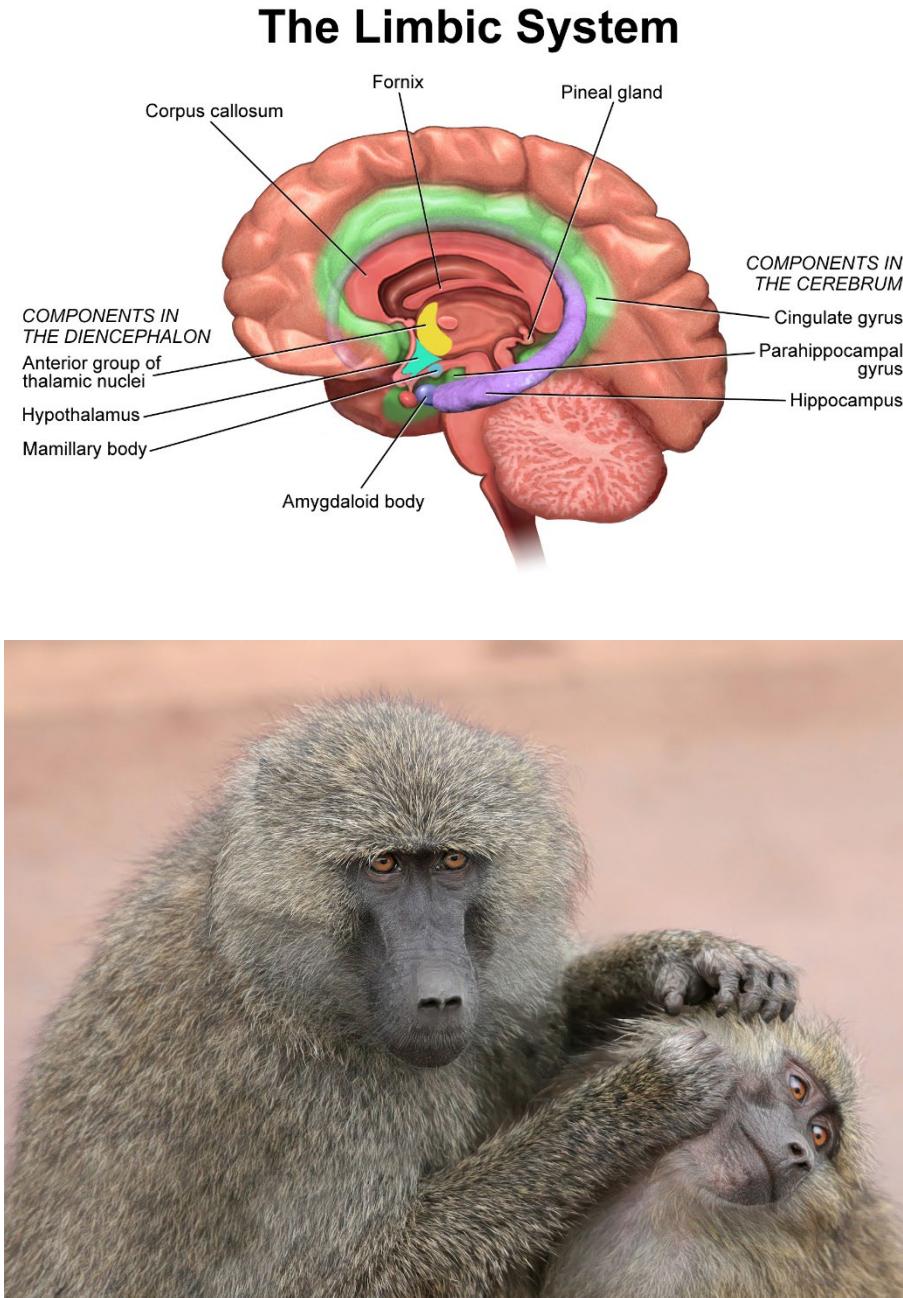
Vertebrates: Dopamine signals reward
with respect to a learned prediction.

Emotions: Curiosity, surprise,
disappointment, relief



Evolution of emotions: Social emotions & emotional expressions

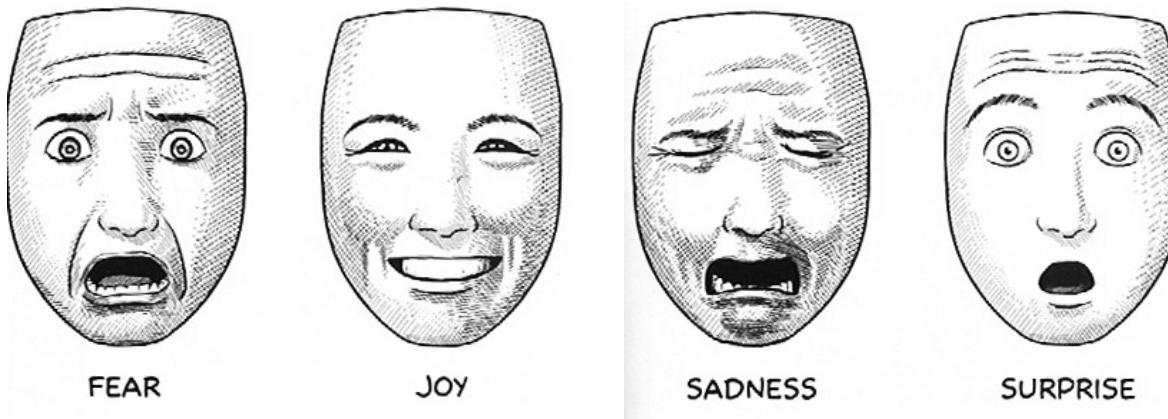
- More complex emotions originate from the Limbic system shared by all mammals including humans (not present in early vertebrates)
- Mammals experience and express emotions such as happiness, sadness, affection/love, anger, fear
- A key function of emotions in mammals: Minimum viable nonverbal social communication





Universality of facial expressions

Although emotion vocabulary is cultural, emotional expressions are somewhat universal and innate.



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<https://www.nature.com/articles/s41586-020-3037-7>

Article | Published: 16 December 2020

Sixteen facial expressions occur in similar contexts worldwide

Alan S. Cowen , Dacher Keltner, Florian Schroff, Brendan Jou, Hartwig Adam & Gautam Prasad

Nature 589, 251–257 (2021) | [Cite this article](#)

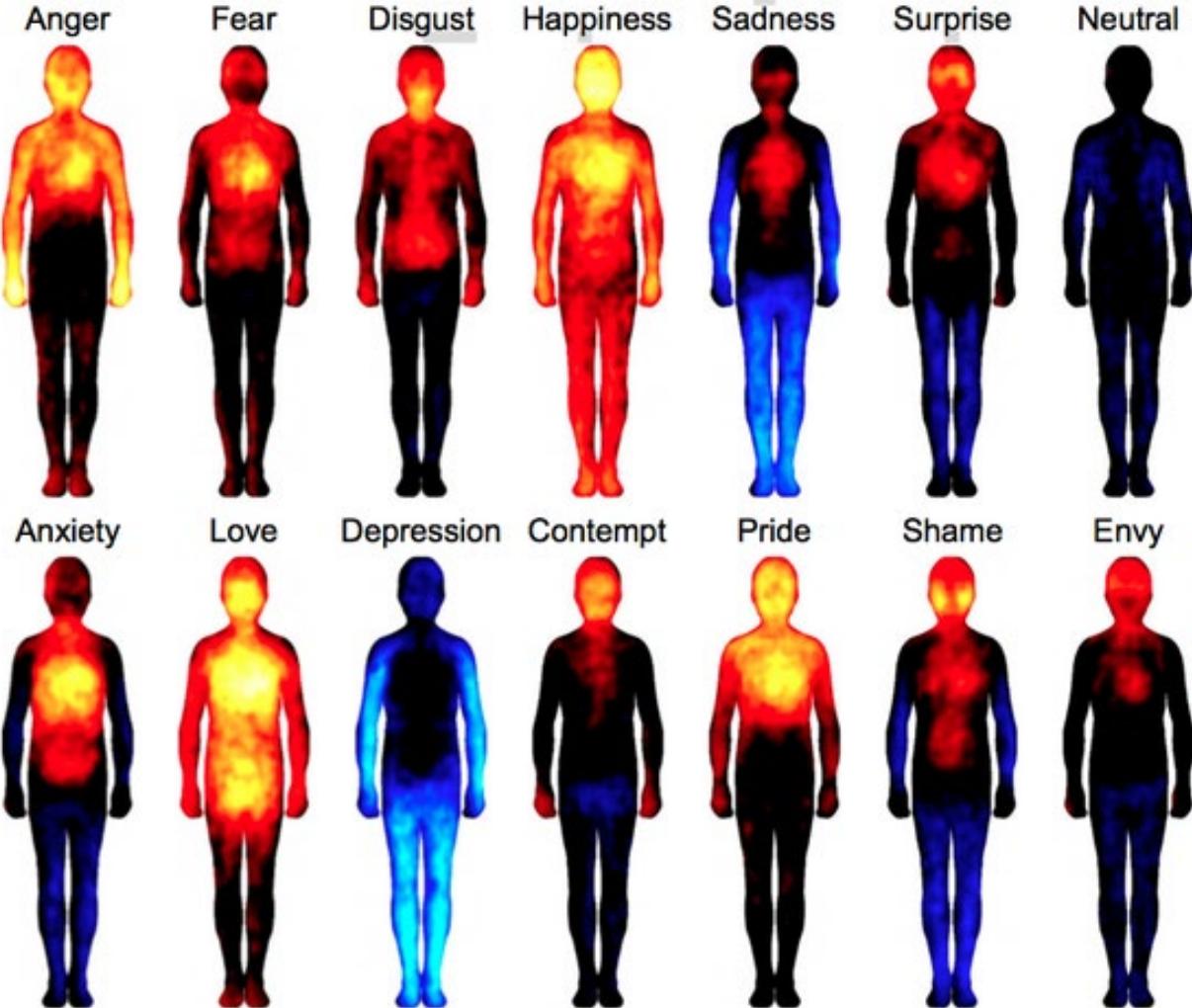
26k Accesses | 115 Citations | 688 Altmetric | [Metrics](#)

Abstract

Understanding the degree to which human facial expressions co-vary with specific social contexts across cultures is central to the theory that emotions enable adaptive responses to important challenges and opportunities^{1,2,3,4,5,6}. Concrete evidence linking social context to specific facial expressions is sparse and is largely based on survey-based approaches, which are often constrained by language and small sample sizes^{7,8,9,10,11,12,13}. Here, by applying machine-learning methods to real-world, dynamic behaviour, we ascertain whether naturalistic social contexts (for example, weddings or sporting competitions) are associated with specific facial expressions¹⁴ across different cultures. In two experiments using deep neural networks, we examined the extent to which 16 types of facial expression occurred systematically in thousands of contexts in 6 million videos from 144 countries. We found that each kind of facial expression had distinct associations with a set of contexts that were 70% preserved across 12 world regions. Consistent with these associations, regions varied in how frequently different facial expressions were produced as a function of which contexts were most salient. Our results reveal fine-grained patterns in human facial expressions that are preserved across the modern world.



Emotions and the body



Bodily maps of emotions

Lauri Nummenmaa , Enrico Glerean, Riitta Hari , and Jari K. Hietanen [Authors Info & Affiliations](#)

Contributed by Riitta Hari, November 27, 2013 (sent for review June 11, 2013)

December 30, 2013 | 111 (2) 646-651 | <https://doi.org/10.1073/pnas.1321664111>

↗ 2,487,209 | 313



Significance

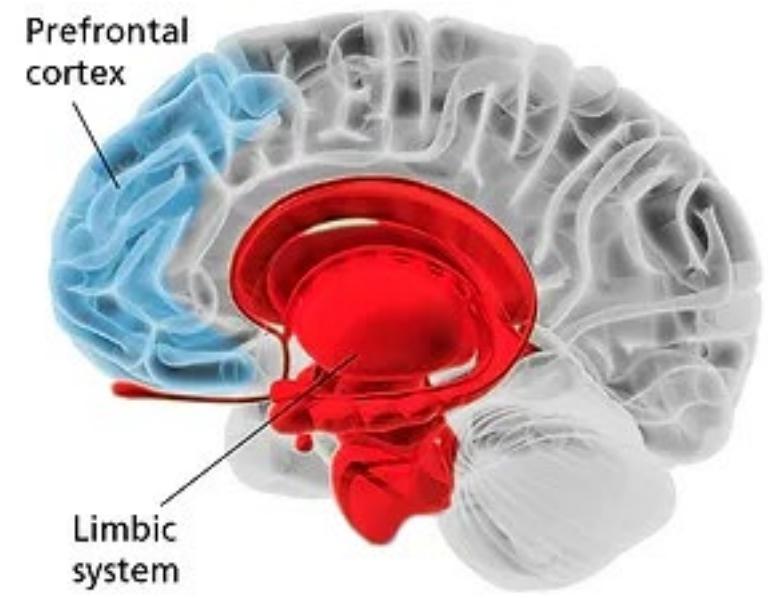
Emotions coordinate our behavior and physiological states during survival-salient events and pleasurable interactions. Even though we are often consciously aware of our current emotional state, such as anger or happiness, the mechanisms giving rise to these subjective sensations have remained unresolved. Here we used a topographical self-report tool to reveal that different emotional states are associated with topographically distinct and culturally universal bodily sensations; these sensations could underlie our conscious emotional experiences. Monitoring the topography of emotion-triggered bodily sensations brings forth a unique tool for emotion research and could even provide a biomarker for emotional disorders.

Abstract

Emotions are often felt in the body, and somatosensory feedback has been proposed to trigger conscious emotional experiences. Here we reveal maps of bodily sensations associated with different emotions using a unique topographical self-report method. In five experiments, participants ($n = 701$) were shown two silhouettes of bodies alongside emotional words, stories, movies, or facial expressions. They were asked to color the bodily regions whose activity they felt increasing or decreasing while viewing each stimulus. Different emotions were consistently associated with statistically separable bodily sensation maps across experiments. These maps were concordant across West European and East Asian samples. Statistical classifiers distinguished emotion-specific activation maps accurately, confirming independence of topographies across emotions. We propose that emotions are represented in the somatosensory system as culturally universal categorical somatotopic maps. Perception of these emotion-triggered bodily changes may play a key role in generating consciously felt emotions.

Evolution of emotions: Humans

- Prefrontal cortex interacts with the limbic system
- Inhibition of emotional impulses
- Consciously thinking about emotions
- Verbalizing emotions
- Mentalization: Interpreting and predicting the thoughts, emotions, and motivations of others. Considering multiple interpretations.



Emotional expressions and consciousness





Human Affectome

Let's now check some terms and definitions following the affectome

The Human Affectome

Daniela Schiller ^{a 1} , Alessandra N.C. Yu ^{b 1} , Nelly Alia-Klein ^c, Susanne Becker ^{d e}, Howard C. Cromwell ^f, Florin Dolcos ^{g h}, Paul J. Eslinger ⁱ, Paul Frewen ^j, Andrew H. Kemp ^k, Edward F. Pace-Schott ^{l m}, Jacob Raber ^{n o}, Rebecca L. Silton ^p, Elka Stefanova ^{q r}, Justin H.G. Williams ^s, Nobuhito Abe ^t, Moji Aghajani ^{u v}, Franziska Albrecht ^{w x y z}, Rebecca Alexander ^{aa ab}, Silke Anders ^{ac ad}, Oriana R. Aragón ^{ae af} ... Leroy Lowe ^{ft}

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Highlights

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- A teleological principle for human affective phenomena can organize the field's assumptions.
- Some affective phenomena adjust based on the comfort zone (*affective concerns*).
- Others monitor that adaptive process (*affective features*).
- This Human Affectome framework organizes existing research and provides a research agenda.

Vocabulary

- **Homeostasis:** Control process for maintaining the “comfort zone” of an organism
 - Example: When cold, shiver to increase body temperature
- **Allotasis:** Modern view of homeostasis including **prediction**
 - Example: When going out, predict coldness and dress accordingly (fear/dislike of cold motivates us to avoid it)
 - Prediction requires intelligence. Emotions provide information relevant to allotasis.

Vocabulary

- **Affective phenomena:** Processes that control allostasis or provide information about it
- **Affect:** The “core” of emotions/feelings, characterized by valence and arousal. Also a general term for all “affective phenomena” such as feelings and emotions
- **Feeling:** Affective experience, relating to affective concerns (allostatic needs)
- **Emotion:** A subset of feelings



Affective concerns

- Physiological (food, pain/physical integrity...)
Feelings: full, hungry, starving, rejuvenated, nauseous...
- Operational (safety, information, social connection...)
Feelings: fear, anger, curiosity, loneliness...
- Global (life satisfaction, authenticity, fulfilment, and self-actualization...)
Feelings: accomplished, fulfilled...

IMMEDIATE
ALLOSTATIC
IMPACT



DISTAL
ALLOSTATIC
IMPACT

Affective concerns

- Physiological (food, pain/physical integrity...)
Feelings: full, hungry, starving, rejuvenated, nauseous...
- **Operational (safety, information, social connection...)**
Feelings: fear, anger, curiosity, loneliness...
- Global (life satisfaction, authenticity, fulfilment, and self-actualization...)
Feeling accomplished, fulfilled...

Human Affectome: Feelings relating to operational concerns are what we typically call emotions.

IMMEDIATE
ALLOSTATIC
IMPACT



DISTAL
ALLOSTATIC
IMPACT

Operational concerns according to the Affectome

Concern	Examples of emotions
Safety	joy, happiness, exhilaration
Danger	fear, worry, dread
Obstruction	frustration, annoyance, anger
Loss	disappointment, sadness, grief
Epistemic (knowledge)	curiosity, intrigue, fascination
Cooperation	care, love, belonging, trust, empathy
Moral	pride, admiration, shame, moral disgust
Aesthetics	awe, appreciation, beauty

Emotions, motivation, and rewards

- Human Affectome: All feelings and emotions are motivational
- Self-determination Theory & psychological needs: Same operational and global affective concerns and associated feelings (e.g., autonomy, competence), but slightly different terminology.
- Computational Rationality: Feelings and emotions can be considered as reward function components. Valence denotes reward sign.



Toward Believable Acting for Autonomous Animated Characters

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ABSTRACT

This paper describes design principles and a system, based on reinforcement learning and procedural animation, to create an autonomous character capable of believable acting—exhibiting a responsive and expressive illusion of interactive life, grounded in its subjective experience of its world. The design principles incorporate knowledge from animation, human-computer interaction, and psychology, articulating guidelines that, when followed, support a viewer’s suspension of disbelief. The system’s reinforcement learning brain generates action, emotion, and attention signals based on motivational drives, and its procedural animation system translates those signals into expressive biophysical movement in real time. We demonstrate the system on a stylized quadruped character in a virtual habitat. In a user study, participants rated the character favorably on animacy and ability to experience emotions, which is consistent with finding the character believable.

CCS CONCEPTS

- Computing methodologies → Procedural animation; Reinforcement learning; Intelligent agents.

KEYWORDS

believability, acting, autonomous characters, synthetic characters, animation, reinforcement learning



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ACM Reference Format:

Cassidy Curtis, Sigurdur Orn Adalgeirsson, Horia Stefan Ciurdar, Peter F McDermott, JD Velásquez, W. Bradley Knox, Alonso Martinez, Dei Gaztelumendi, Norberto Adrian Goussies, Tianyu Liu, and Palash Nandy. 2022. Toward Believable Acting for Autonomous Animated Characters. In *ACM SIGGRAPH Conference on Motion, Interaction and Games (MIG '22)*, November 3–5, 2022, Guanajuato, Mexico. ACM, New York, NY, USA, 15 pages. <https://doi.org/10.1145/3561975.3562941>

1 INTRODUCTION

*Suspension of disbelief*¹ is a remarkable human gift: it allows a viewer to believe in a fictional character despite knowing that it is not real. It unlocks the viewer’s ability to be fully immersed in the story, relate to the character’s point of view, and feel empathy for its plight. A key requirement is that the fiction be internally consistent—particularly, the character’s behavior must be believable within the rules of its world.

To create a performance that sustains the viewer’s suspension of disbelief requires simultaneous command of the physical and psychological aspects of the character’s behavior, in a way that reveals its inner life, grounded in its relationship to its past, future, fellow characters, and surroundings. The craft of creating such a performance is known as *acting* [Strasberg and Chaillet 2021].

A believable autonomous character—one that you can relate to and empathize with as easily as any other fictional character—has been a dream for decades. But in interactive media like games, such characters remain rare. Standard game animation techniques require developers to specify a stimulus-response mapping in advance, and it is impractical to prepare a bespoke response for every combination of contingencies a character could possibly encounter. Thus game characters tend to alternate between two modes: full interactive autonomy with limited acting ability, and non-interactive clips (or cutscenes) featuring more nuanced acting captured from

¹Sometimes also characterized as *secondary belief* [Tolkien and Tolkien 1984].

Simulating Emotions With an Integrated Computational Model of Appraisal and Reinforcement Learning

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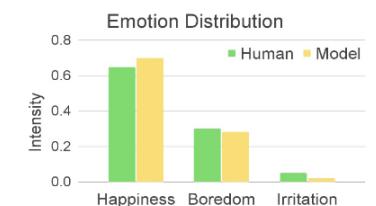


Figure 1: This paper develops and evaluates a computational model of emotion that is based on temporal difference reinforcement learning and appraisal theory. It predicts emotional responses to events by integrating reward processing and cognitive appraisal. In an illustration of a task carried out by human participants, the user tries to achieve a goal using a computer. Multiple successful attempts at the problem result in a self-evaluated feeling of happiness, which our computational model matches. We model interaction as a decision process, where an evaluation of interactive events results in a value prediction update. The appraisal process of emotion is modeled based on different computations that are carried out during this evaluation.

ABSTRACT

Predicting users’ emotional states during interaction is a long-standing goal of affective computing. However, traditional methods based on sensory data alone fall short due to the interplay between users’ latent cognitive states and emotional responses. To address this, we introduce a computational cognitive model that simulates emotion as a continuous process, rather than a static state, during interactive episodes. This model integrates cognitive-emotional appraisal mechanisms with computational rationality, utilizing value predictions from reinforcement learning. Experiments with human participants demonstrate the model’s ability to predict and explain the emergence of emotions such as happiness, boredom, and irritation during interactions. Our approach opens the possibility of designing interactive systems that adapt to users’ emotional states, thereby improving user experience and engagement. This work also deepens our understanding of the potential of modeling the

relationship between reward processing, reinforcement learning, goal-directed behavior, and appraisal.

CCS CONCEPTS

- Human-centered computing → HCI theory, concepts and models.

KEYWORDS

Emotion Modeling, Reinforcement Learning, Appraisal Theory, Computational Rationality

ACM Reference Format:

Jiayi Eurus Zhang, Bernard Hilpert, Joost Broekens, and Jussi P.P. Jokinen. 2024. Simulating Emotions With an Integrated Computational Model of Appraisal and Reinforcement Learning. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*, May 11–16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 12 pages. <https://doi.org/10.1145/3613904.3641908>



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1 INTRODUCTION

Emotions have a significant influence on interpersonal dynamics and outcomes in daily interactions. Similar effects are also present in human-computer interaction (HCI) [3], where users exhibit emotions akin to face-to-face interactions [46]. Consequently, emotions shape perceptions of interactive systems and impact the success of interactions [5, 11, 13]. It is therefore a long-standing goal of HCI



Questions?

Emotions and Conflict

Things to remember when making games in a (student) team

Also: Understanding conflict psychology is useful for writing and narrative design.



So many things to negotiate
Be prepared to kill your darlings.



Kill your egos – game comes first



Agree on rules for conflict resolution

Recommended: Try to reach decisions together, but decide who breaks ties



Lead designer?

A good lead designer makes everyone feel heard



Team motivation beats “perfect” design



What makes a motivated team?

- Feeling of competence
- Feeling of autonomy
- Feeling of social connection/relatedness

<https://www.nature.com/articles/s44159-022-00056-w>

<https://journals.sagepub.com/doi/full/10.1177/1523422318756954>



Importance of Psychological safety

<https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html>





Positive mood and atmosphere are essential for creative problem solving

Isen, Alice M., Kimberly A. Daubman, and Gary P. Nowicki. "Positive affect facilitates creative problem solving." *Journal of personality and social psychology* 52.6 (1987): 1122.

Russ, Sandra W., and Ethan D. Schafer. "Affect in fantasy play, emotion in memories, and divergent thinking." *Creativity Research Journal* 18.3 (2006): 347-354.

Vosburg, Suzanne K. "The effects of positive and negative mood on divergent-thinking performance." *Creativity research journal* 11.2 (1998): 165-172.

Duan, Haijun, et al. "Effects of acute stress on divergent and convergent problem-solving." *Thinking & Reasoning* 26.1 (2020): 68-86.

Lerner, Jennifer S., et al. "Emotion and decision making." *Annual review of psychology* 66 (2015): 799-823.

Emotions and conflict

Emotions are natural and it's never wrong to feel them.
They provide valuable information.

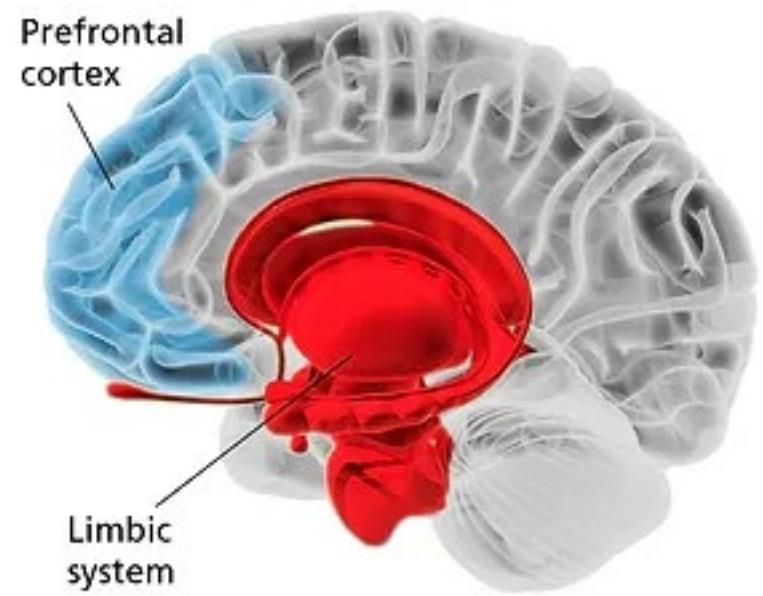
However, expressing one's emotions can easily go wrong.

Emotions and conflict

Experiencing danger reduces prefrontal cortex activity – no time to think, must act!

Mentalization reduces to a single interpretation (often incorrect)

Impulses from the Limbic system no longer inhibited.

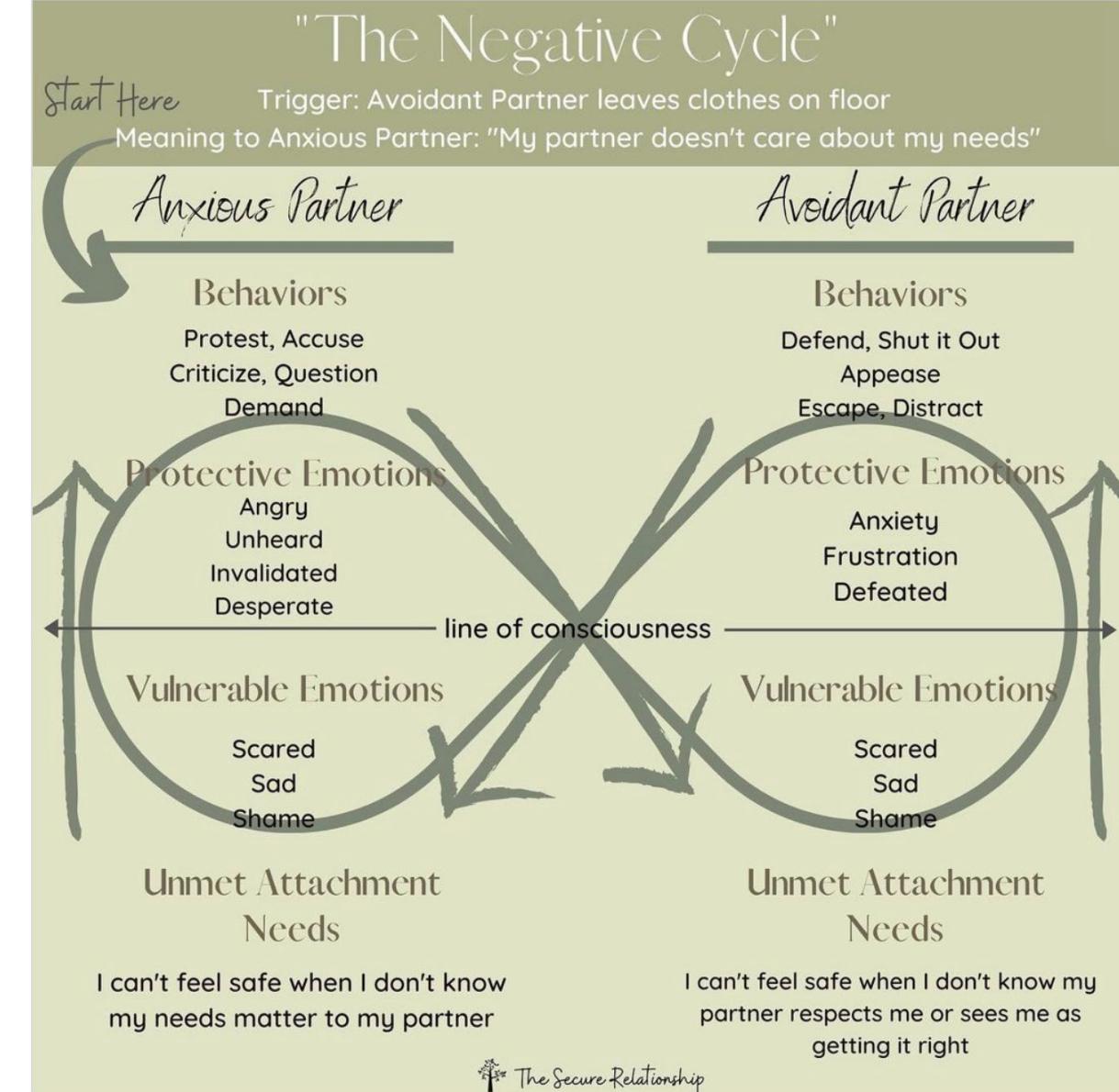


Emotions and conflict

Expressing emotions in an uncontrolled manner provokes protective emotion in others => negative cycle.

Often, there are unconscious, invisible vulnerable emotions hiding under the visible protective emotions.

Everyone has shared responsibility to notice negative cycles and avoid fueling them.

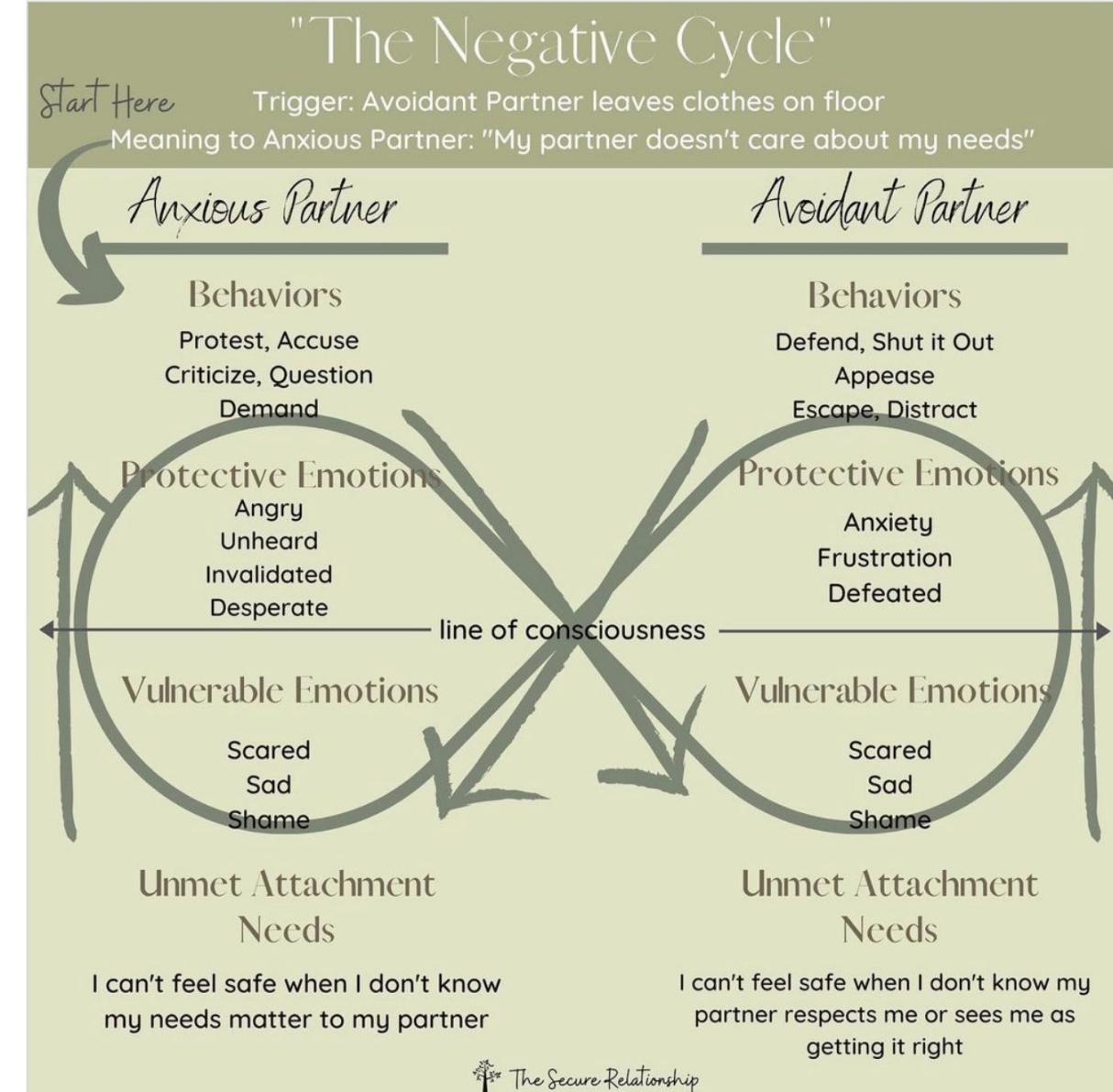


Breaking the cycle

Avoid raised voice, defensiveness (“I was only trying to...”) and unnecessary snipes (“But what about your...”)

Use non-violent communication.

When you notice you are in a cycle, take a 20 minute break to cool down and re-engage the pre-frontal cortex



Non-violent communication (NVC)

Expressing emotions and hurt:

I feel <emotion> when <what triggers the emotion> because I have a need for <psychological need>.

Listening and validating:

I hear that you <rephrase to make sure you understood>. I understand and see where you're coming from.

What's wrong here?

“I feel misunderstood because you...”

“misunderstood” is a judgement or thought instead of a feeling

⇒ easily perceived as blame

⇒ elicits shame (vulnerable emotion under the surface)

⇒ shame easily leads to reactive anger or indignation (protective emotion over the surface)

⇒ negative cycle accelerates unless the other side can avoid the protective emotions or communicate them non-violently

⇒ shifts the responsibility of breaking the cycle to the other side

Negative cycle example: Love relationship

Partner 1	Partner 2
	Have to work and cancel dinner or other family activity because of a deadline
Vulnerable emotion: Loneliness	
Protective emotion: Anger	
Expressing protective emotion: “You’re never there for me, you always work”	
	Vulnerable emotion: Shame
	Protective emotion: Indignation
	Expressing protective emotion: “You don’t understand the pressure I’m under. People depend on me.”
Expressing protective emotion: “Yeah, it’s not exactly news that I’m not a priority”	
	“You are – I’ve already sacrificed so much for you. What about the time when...”

Problems

Not communicating
the vulnerable
emotion

- ⇒ More likely to trigger strong protective emotion in the other
- ⇒ Negative cycle accelerates

Partner 1	Partner 2
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	“You are – I’ve already sacrificed so much for you. What about the time when...”



Problems

Defensiveness, blame

- ⇒ More likely to trigger strong protective emotion in the other
- ⇒ Negative cycle accelerates

Partner 1	Partner 2
	Have to work and cancel dinner or other family activity because of a deadline
Vulnerable emotion: Loneliness	
Protective emotion: Anger	
Expressing protective emotion: “You’re never there for me, you always work”	
	Vulnerable emotion: Shame
	Protective emotion: Indignation
	Expressing protective emotion: “You don’t understand the pressure I’m under. People depend on me.”
Expressing protective emotion: “Yeah, it’s not exactly news that I’m not a priority”	
	"You are – I've already sacrificed so much for you. What about the time when..."

NVC version?

Recognize and communicate your vulnerable emotion(s).

This is much easier to relate and respond to by the other side.

Partner 1	Partner 2
	Have to work and cancel dinner or other family activity because of a deadline
Vulnerable emotion: Loneliness	
Protective emotion: Anger	
Expressing emotion: "I feel angry and lonely when you cancel our plans because I have a need for connection with you."	
	Vulnerable emotion: Shame
	Protective emotion: Irritation
	Expressing emotion: "I hear you and I can see how this makes you angry and lonely. I feel ashamed that I've let you down. I would love to try and re-establish our connection but I also feel pressured to handle this work thing - can we talk about this <suggest time>?"

NVC version?

Validate the other's emotion, make them feel heard.

Recognize and communicate your vulnerable emotion(s).

Agree on time to continue the discussion if needed.

Partner 1	Partner 2
	Have to work and cancel dinner or other family activity because of a deadline
Vulnerable emotion: Loneliness	
Protective emotion: Anger	
Expressing emotion: "I feel angry and lonely when you cancel our plans because I have a need for connection with you."	
	Vulnerable emotion: Shame
	Protective emotion: Irritation
	Expressing emotion: "I hear you and I totally get that you feel angry and lonely. I feel ashamed that I've let you down. I would love to try and re-establish our connection but I also feel pressured to handle this work thing - can we talk about this <suggest time>?"

Danger zone

Learn to recognize flooding
=> time to take a break



Read how emotional flooding ignites your fight-or-flight mode and ways to avoid this so you don't derail your conflict management.

Est. reading time: 4 min.



<https://www.gottman.com/blog/making-sure-emotional-flooding-doesnt-capsize-your-relationship/>

Does this sound familiar? You are in the middle of a conflict or disagreement when your partner says or does something. Suddenly you fall down a deep dark rabbit hole of rage, hurt, panic, and fear.

Emotional Flooding: The riptide

When caught in one of these riptides, you may have the physical sensation of something taking hold of your body. Your muscles clench, your temperature skyrockets, or your stomach turns. With a mind in overdrive, you are deaf to anything your partner says. Sometimes when you're all caught up, your thought process is not sound. However, that is not likely to dampen your urge to fight (or flight).

Taking a break

Don't: "I don't want to talk about it." "I don't need to deal with your shit." "Fuck it I'm out of here." (Stonewalling, not validating the other's grievances and emotions)

Do: "I feel too emotional and probably can't process this now. Can we get back to this <suggest a time>"

If the other side asks for a break, you should absolutely respect it.



Emotions and conflict

The origin of negative emotions and communication cycles is often in past experiences and trauma.

The Secure Love Podcast:

Real Time Couples Therapy

<https://juliemenanno.com/podcasts/>

WITH JULIE
MENANNO

Unraveling the Roots of the Negative Cycle Pt. 2

This week's episode of The Secure Love Podcast opens with Drew reflecting on the early years of their marriage. His reflection leads to a heartfelt apology to Melissa for not showing up the way she needed, eliciting both an emotional reaction and a tremendous sense of relief for her. This moment of understanding and Drew's willingness to own his part in their past disconnect highlights his growth, yet Julie points out that this is still within the bounds of their 'negative cycle'. Drew's efforts, though well-intentioned, stem from a partial grasp of the underlying issues, including his unprocessed grief, fears about loss, and struggles with vulnerability.

Julie guides the couple through understanding how Drew's past experiences of loss and his inability to seek help have shaped his responses to Melissa's needs. In this episode, we also hear from Julie's longtime colleague, George Faller, who provides insight into what Drew has been experiencing. Although Drew apologized to Melissa for not being emotionally available in those early years, George highlights that Drew hasn't had much experience sharing his emotions, which also means he doesn't have much experience having his own emotions validated.

Emotions and conflict

More on how the brain processes trauma and how to heal.

Trauma triggers make the Limbic system react as if the trauma was not in the past but experienced right now.

Calming down one's body and re-engaging the pre-frontal cortex can be supported through techniques such as mindfulness meditation.

THE BODY KEEPS THE SCORE

BRAIN, MIND, AND BODY
IN THE HEALING OF TRAUMA



BESSEL VAN DER KOLK, M.D.

"A MASTERPIECE THAT COMBINES THE BOUNDLESS CURIOSITY
OF THE SCIENTIST, THE ERUDITION OF THE SCHOLAR, AND THE PASSION
OF THE TRUTH TELLER." —JUDITH HERMAN, M.D.

Mindfulness meditation

- Learn to acknowledge all thoughts and feelings, let them come and go
- Slowly breathing out calms down the nervous system (heart rate increases when breathing in, decreases when breathing out)
- Can make it easier to process reactive/protective emotions and avoid flooding => can help in resolving conflicts
- Many free resources online, e.g.,
<https://healthlibrary.stanford.edu/books-resources/mindfulness-meditation.html>
- Popular meditation apps (subscription fee): Calm, Headspace

Emotions and Game Design

Emotions and game design: Beyond fun?

- For a long time, games were focused on and considered as "fun"
- Modern games: Similarly emotionally rich experiences as movies and books
- Games vs other media: Unique 1st person experiences of emotions such as regret, pride, guilt



CAN A COMPUTER MAKE YOU CRY?

■ Right now, no one knows. This is partly because many would consider the very idea frivolous. But it's also because whoever successfully answers this question must first have answered several others.

● Why do we cry? Why do we laugh, or love, or smile? What are the touchstones of our emotions?

▲ Until now, the people who asked such questions tended not to be the same people who ran software companies. Instead, they were writers, filmmakers, painters, musicians. They were, in the traditional sense, artists.

■ We're about to change that tradition. The name of our company is Electronic Arts.

SOFTWARE WORTHY OF THE MINDS THAT USE IT.

We are a new association of electronic artists united by a common goal — to fulfill the enormous potential of the personal computer.

● In the short term, this means transcending its present use as a facilitator of unimaginative tasks and a medium for blasting aliens. In the long term, however, we can expect a great deal more.

▲ These are wondrous machines we have created, and in them can be seen a bit of their makers. It is as if we had invested them with the image of our minds. And through them, we are learning more and more about ourselves.

■ We learn, for instance, that we are more entertained by the involvement of our imaginations than by passive viewing and listening. We learn that we are better taught by experience than by memorization. And we learn that the traditional

distinctions — the ones that are made between art and entertainment and education — don't always apply.

TOWARD A LANGUAGE OF DREAMS. In short, we are finding that the computer can be more than just a processor of data.

● It is a communications medium: an interactive tool that can bring people's thoughts and feelings closer together, perhaps closer than ever before. And while fifty years from now, its creation may seem no more important than the advent of motion pictures or television, there is a chance it will mean something more.

▲ Something along the lines of a universal language of ideas and emotions. Something like a smile.

■ The first publications of Electronic Arts are now available. We suspect you'll be hearing a lot about them. Some of them are games like you've never seen before, that get more out of your computer than other games ever have. Others are harder to categorize — and we like that.

WATCH US. We're providing a special environment for talented, independent software artists. It's a supportive environment, in which big ideas are given room to grow. And some of America's most respected software artists are beginning to take notice.

● We think our current work reflects this very special commitment. And though we are few in number today and apart from the mainstream of the mass software marketplace, we are confident that both time and vision are on our side.

▲ Join us. We see farther. ELECTRONIC ARTS™



<https://www.eurogamer.net/seeing-farther-the-advert-that-changed-the-games-industry>

<https://www.polygon.com/a/how-ea-lost-its-soul/chapter-5>



**“THE REAL INDICATOR
[OF GAMES BEING ART]
WILL BE WHEN
SOMEBODY
CONFESSES THAT THEY
CRIED AT LEVEL 17”**

STEVEN SPIELBERG (2004)



Emotional gratification in entertainment experience

- Experiencing positive emotions can be rewarding as such:
 - Pleasure, excitement, sentimentality
- Negative emotions can contribute to the gratification of psychological needs / affective concerns
 - Painful and unpleasant feelings may stimulate social discussion and connectedness, or self-reflection and insight
 - Short-term punishment, long-term reward

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 Routledge
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Emotional Gratification in Entertainment Experience. Why Viewers of Movies and Television Series Find it Rewarding to Experience Emotions

ANNE BARTSCH

*Department of Media and Educational Technology, University of Augsburg,
Augsburg, Germany*

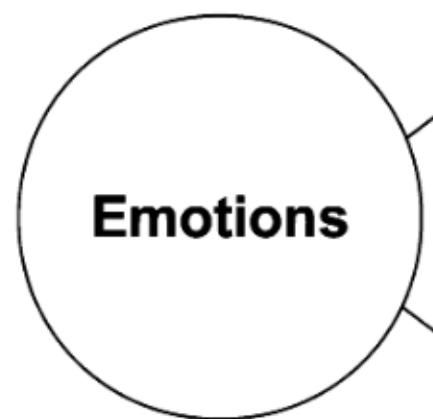
This article presents four studies designed to assess different types of gratifications that can be associated with the experience of emotions in movie and television audiences. Exploratory and confirmatory factor analyses of a pool of statements derived from qualitative interviews revealed three factors that reflect rewarding feelings: 1) fun, 2) thrill, and 3) empathic sadness, and four factors that reflect the role of emotional media experiences within the broader context of individuals' social and cognitive needs: 4) contemplative emotional experiences, 5) emotional engagement with characters, 6) social sharing of emotions, and 7) vicarious release of emotions. Validation analyses showed that the scales developed to assess these factors are predicted by the experience of emotions and meta-emotions and served in turn to predict different aspects of positive content evaluation. Results are discussed with regard to theoretical issues including entertainment audiences' voluntary exposure to unpleasant feelings, and the role of entertainment in psychosocial need satisfaction and eudaimonic wellbeing.

Emotions are often assumed to be the heart of media entertainment, be it in the form of movies, novels, television programs, music videos, or computer

The author wishes to thank Reinhold Viehoff, Roland Mangold, and Peter Vorderer for their generous support and advice concerning the present research. She also extends her appreciation to the German Research Foundation for providing financial support. This work was supported by the German Research Foundation [grant number Vi 95/17].

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<https://www.tandfonline.com/doi/full/10.1080/15213269.2012.693811>



Intrinsically Gratifying Aspects of Entertainment Experience

Rewarding Feelings

- positive affect
- arousal
- empathic sadness

Psychosocial Functions

- relationship functions
- character engagement
- (self-)reflection

Contribution of Entertainment to Personal Well-Being

Short term:
Affect regulation

Long term:
Sense of meaning and social connectedness

Gratifications tested in the paper (“It was good to experience these feelings...”)

- “*because it inspires new insights*” (Contemplative experiences)
- “*because it makes me laugh*” (Fun)
- “*because I like the tension associated with it*” (Thrill)
- “*because I like to live through and share the characters’ experiences*” (Character engagement)
- “*because it allows me to experience emotions that I avoid in real life*” (Vicarious release of emotions, novelty, curiosity)
- “*because I like being moved to tears*” (Emphatic sadness)
- “*because it encourages me to discuss issues with others*” (Social sharing of emotions)



Full details in the paper

It was good to experience these feelings ...	EFA							CFA
	F1	F2	F3	F4	F5	F6	F7	
<i>F1: Contemplative experiences</i>								
... because it encourages me to focus on things that are important to me.	.72	.12	.20	.19	.15	.12	.06	.72
... because it inspires me to think about meaningful issues.	.72	.08	.09	.02	.21	.07	.27	.71
... because it inspires new insights.	.72	-.10	.05	.12	.11	.08	.10	.57
... because it makes me think about myself.	.61	.09	.04	.18	.23	.31	.06	.68
<i>F2: Fun</i>								
... because it makes me laugh.	-.03	.82	-.21	.05	-.04	.06	.12	.90
... because it puts me in a good mood.	.03	.78	.10	.02	.13	-.02	.03	.61
... because it amuses me.	-.05	.77	-.08	-.02	-.04	-.08	.11	.70
... because it is funny.	.21	.56	-.09	.04	-.12	-.12	-.08	.55
<i>F3: Thrill</i>								
... because I like the adrenaline I get from it.	.07	-.08	.82	.15	.18	.13	.08	.83
... because I enjoy the thrill of it.	.14	-.18	.80	.14	.10	.08	.11	.78
... because I enjoy the excitement of it.	.06	.05	.74	.16	.13	.26	.20	.76
... because I like the tension associated with it.	.07	-.10	.71	.16	.18	.24	.07	.74
<i>F4: Character engagement</i>								
... because I like to feel with characters.	.10	.03	.19	.80	.12	.26	.12	.87
... because I like to slip into the role of characters.	.07	-.06	.23	.78	.19	.06	.12	.79



Gratifications as quality predictors

- Artistic value & lasting impression: contemplative experiences, character engagement, social sharing
- Good movie: all gratifications, especially fun, contemplative experiences, and character engagement

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Emotional Gratification in Entertainment Experience. Why Viewers of Movies and Television Series Find it Rewarding to Experience Emotions

ANNE BARTSCH

*Department of Media and Educational Technology, University of Augsburg,
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This article presents four studies designed to assess different types of gratifications that can be associated with the experience of emotions in movie and television audiences. Exploratory and confirmatory factor analyses of a pool of statements derived from qualitative interviews revealed three factors that reflect rewarding feelings: 1) fun, 2) thrill, and 3) empathic sadness, and four factors that reflect the role of emotional media experiences within the broader context of individuals' social and cognitive needs: 4) contemplative emotional experiences, 5) emotional engagement with characters, 6) social sharing of emotions, and 7) vicarious release of emotions. Validation analyses showed that the scales developed to assess these factors are predicted by the experience of emotions and meta-emotions and served in turn to predict different aspects of positive content evaluation. Results are discussed with regard to theoretical issues including entertainment audiences' voluntary exposure to unpleasant feelings, and the role of entertainment in psychosocial need satisfaction and eudaimonic wellbeing.

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Hedonic vs. eudaimonic

- Hedonic enjoyment: mostly derived from positive emotions
- Eudaimonic appreciation: moving, heartbreak, or thought-provoking experiences, search for deeper insight, meaning, and purpose in life.

ORIGINAL ARTICLE

Entertainment as Pleasurable and Meaningful: Identifying Hedonic and Eudaimonic Motivations for Entertainment Consumption

Mary Beth Oliver¹ & Arthur A. Raney²

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² School of Communication, Florida State University, Tallahassee, FL 32306-2664, USA

The purpose of this research is to broaden the conceptualization of entertainment selection to identify not only pleasure-seeking (hedonic concerns) as a motivator, but to also recognize that individuals may choose media as a means of “truth-seeking” (eudaimonic concerns). This article conceptualized and developed measures to illustrate that entertainment can be used as a means of experiencing not only enjoyment, but also as a means of grappling with questions such as life’s purpose and human meaningfulness. Four studies were conducted in the development of these measures, providing evidence for their validity in terms of entertainment preference and individual differences, and illustrating how these motivations predict preferences for entertainment that elicits unique affective experiences.

doi:10.1111/j.1460-2466.2011.01585.x

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1460-2466.2011.01585.x>

Media scholars agree that viewers are motivated to consume entertainment for a variety of reasons. For example, research from a uses-and-gratifications perspective over the past 35 years has sought to delineate (via self-report) a variety of viewing motivations, including surveillance/information, personal relationships/social interaction and integration, personal identity, and diversion/escapism/entertainment (for overviews, see Rubin, 2008; Ruggiero, 2000). Acknowledging that motivations for entertainment consumption are recognized to be diverse, we also note that the ultimate “goal” or pursued “outcome” of entertainment has generally assumed to be that of enjoyment, and has therefore formed the basis of a great deal of theorizing in media psychology (Vorderer, Klimmt, & Ritterfeld, 2004). Such a focus undoubtedly not only has great intuitive appeal, but also empirical and anecdotal support as well, as farcical comedies, thrilling action movies, and romantic love stories likely form the vast majority of entertainment offerings. At the same time, however, there exist



ORIGINAL ARTICLE

Appreciation as Audience Response: Exploring Entertainment Gratifications Beyond Hedonism

Mary Beth Oliver¹ & Anne Bartsch²

1 Department of Film/Video & Media Studies, Penn State University, University Park, PA 16801, USA

2 Department of Media and Communication Studies, Martin Luther University Halle, 06108 Halle, Germany

This article elaborates upon the notion of media enjoyment in the context of film viewing by proposing a complementary type of gratification that we conceptualize as appreciation. Three studies were conducted to tap into the multidimensionality of viewers' entertainment gratifications with a special focus on the domain of more serious, poignant, and pensive media experiences typically associated with genres such as drama, history, documentary, or art films. These studies provide evidence of and measurement for gratifications related to fun and suspense, but also gratifications related to moving and thought-provoking entertainment experiences, with all three gratifications leading to perceptions of entertainment having a more long-lasting or enduring effect. The results are discussed with regard to the theoretical conceptualization of entertainment gratification.

What about games?

Ways to convey and/or elicit emotion in games

- Visuals, sound, and music: audiovisual aesthetic emotions such as awe and wonder, overall valence & arousal
- Story, characters: complex social emotions
- Mechanics and dynamics: Interacting with the above, also enabling emotional challenge, regret and guilt over one's actions...



Similar to movies



Beyond movies

Music & emotion

Music can be emotionally moving
and elicit awe.

Does Music Induce Emotion? A Theoretical and Methodological Analysis

Vladimir J. Konečni
University of California, San Diego

Is music ubiquitous in part because it is causally linked to emotion? In this article, a comprehensive theoretical and methodological reevaluation is presented of a classical problem: The direct induction of emotion by music ($M \rightarrow E$). The author's Prototypical Emotion-Episode Model (PEEM) is used in the conceptual critique. A close scrutiny of the major published studies, and the author's new data regarding some substantive and methodological issues in several of these, reveal weak support for the $M \rightarrow E$ model. The conclusion seems justified that music may induce low-grade basic emotions through mediators, such as dance and cognitive associations to real-world events. However, it is suggested—on the basis of the recently developed Aesthetic Trinity Theory (ATT; Konečni, 2005) and its further development in the present article—that *being moved* and *aesthetic awe*, often accompanied by *thrills*, may be the most genuine and profound music-related emotional states.

Keywords: music and emotion, Prototypical Emotion-Episode Model (PEEM), Aesthetic Trinity Theory (ATT), awe, thrills/chills

An important aspect of the recent surge of interest in affective science (e.g., Barrett, 2006a, 2006b; Buck, 1999; Davidson, Scherer, & Goldsmith, 2003; Ekman & Davidson, 1994; Izard, 2007; Lewis & Haviland-Jones, 2000; Panksepp, 2007; Russell, 2003; Scherer, Schorr, & Johnstone, 2001; Zajonc, 1998) has been the study of the relationship between music and emotion (hereafter M-E; e.g., Gabrielsson, 2001-2002; Grewe, Nagel, Kopiez, & Altenmüller, 2007; Juslin & Sloboda, 2001b; Konečni, 2003; Konečni, Brown, & Wanic, in press; Konečni, Wanic, & Brown, 2007; Krumhansl, 1997; Panksepp, 1995; Scherer, Zentner, & Schachet, 2001-2002). Historically, and limiting oneself to Mediterranean civilizations, opinions concerning M-E can be found as early as in Plato, who, in Book III of *The Republic*, insists on tethering music to high-minded words and banishing from his ideal city-state several modes, such as the Ionian and Lydian, which—through their alleged effects on emotion—are “associated with drinking and laxity... softness [and] indolence” (trans. 1985, p. 96).

There subsequently arose a long tradition of speculative writing on M-E by aestheticians and musicologists, with notable contributions by Avison (1752/2003), Hanslick (1854/1957), Gurney (1880/1966), Langer (1942) and Meyer (1956), whose ideas are

very much alive in the contemporary thought of philosophers of music, such as Davies (1994, 2001); Kivy (1989, 1990); Levinson (1990, 1996); London (2001-2002), and Zangwill (2004). In *The Descent of Man*, Darwin (1871/1902, pp. 735-737) famously addressed M-E with regard to sexual selection—an idea recently pursued by Miller (2000).

In perusing this voluminous literature, one is struck equally by the brilliant insights of the authors (sophisticated music lovers, as well as first-rate scholars, all) and the frequency of quirky errors, such as seeming to forget that music is not a sentient being. In addition, arguments often seem overly influenced by folk parlance and music teachers' implicit and explicit M-E “theories” and stereotypes. It is not an exaggeration to say that with regard to M-E, romanticism and sentimentalism often obscure both the facts and their absence even in highly technical papers.

Perhaps the central analytical and empirical M-E issues are expression and induction of emotion by music. In addressing this issue, Kivy (1989; 1990, p. 146) has outlined the *cognitivist* versus *emotivist* dichotomy to contrast the view toward M-E in which music is thought merely to represent or “express” emotion from the one in which it is also seen as an *inducer* of emotion in the listener ($M \rightarrow E$). Psychologists (e.g., Grewe et al., 2007, p. 774; Krumhansl, 1997, p. 338; Scherer & Zentner, 2001, p. 361) generally cite this dichotomy—which undoubtedly has a classical pedigree—approvingly, as a basic issue. Although Kivy's dichotomy will turn out to be an oversimplification and that even viewing these terms as poles of a continuum (Gabrielsson, 2001-2002, p. 124) is unsatisfactory, the fact remains that music's ability to express emotion will in a sense form the backdrop for the discussion of induction.

The present article will demonstrate that, in contrast to the remarkable popularity, seemingly of long standing, among both music psychologists and the general public of the view that music can directly induce emotion in the listener, the body of research that purports to support M-E is recent and unconvincing. The actual number of relevant studies is quite small. The common

Vladimir J. Konečni, Department of Psychology, University of California at San Diego.

I thank the following UCSD students who provided invaluable assistance in the collection of the data reported in this article during the period 2001-2007: Melia C. Avansino, Amy Gonzales, Laura Lindberg, Scott T. Mitten, Jay Moses, Kim Nguyen, Kevin Rainey, Rayik Samara, Liana Salaymeh, Shadi Sedighzadeh, and Sally A. Smith.

My thanks are also due to Alf Gabrielsson of Uppsala University, Sweden, for the permission to quote two brief excerpts from our personal correspondence.

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Music, emotion & motivation

Outside games, music is known to boost physical exercise intensity and positive valence

Surprisingly little research on games, but it's clear that music matters and has an effect on player experience

Music in the exercise domain: a review and synthesis (Part I)

Costas I. Karageorghis* and David-Lee Priest

School of Sport and Education, Brunel University, London, UK

(Received 8 June 2011; final version received 6 October 2011)

Since a 1997 review by Karageorghis and Terry, which highlighted the state of knowledge and methodological weaknesses, the number of studies investigating musical reactivity in relation to exercise has swelled considerably. In this two-part review paper, the development of conceptual approaches and mechanisms underlying the effects of music are explicated (Part I), followed by a critical review and synthesis of empirical work (spread over Parts I and II). Pre-task music has been shown to optimise arousal, facilitate task-relevant imagery and improve performance in simple motoric tasks. During repetitive, endurance-type activities, self-selected, motivational and stimulative music has been shown to enhance affect, reduce ratings of perceived exertion, improve energy efficiency and lead to increased work output. There is evidence to suggest that carefully selected music can promote ergogenic and psychological benefits during high-intensity exercise, although it appears to be ineffective in reducing perceptions of exertion beyond the anaerobic threshold. The effects of music appear to be at their most potent when it is used to accompany self-paced exercise or in externally valid conditions. When selected according to its motivational qualities, the positive impact of music on both psychological state and performance is magnified. Guidelines are provided for future research and exercise practitioners.

Keywords: pre-task music; asynchronous music; synchronous music; post-task music

The authors have spent the last two decades systematically investigating the effects of music in exercise, sport and other physical activity contexts (e.g., physiotherapy rehabilitation). The proposed benefits of music in such contexts have intrigued researchers for over 40 years. The purpose of this two-part article is to review and synthesise the extant literature with a primary focus on exercise-related activities; Daniel Bishop produced a comprehensive review of the sport-related literature recently in the *Sport and Exercise Psychology Review* (2010). The authors will critically evaluate some of the assumptions and methods that have underpinned the work they have conducted with their principal collaborators (Bishop, Jones, Lane, Lim and Terry) and appraise the exercise-related studies since the 1997 review of Karageorghis and Terry. The present review will aim to identify important trends, provide recommendations for future research endeavours and spawn firm evidence-based principles for exercise practitioners.

VADER'S REDEMPTION

STAR
WARS



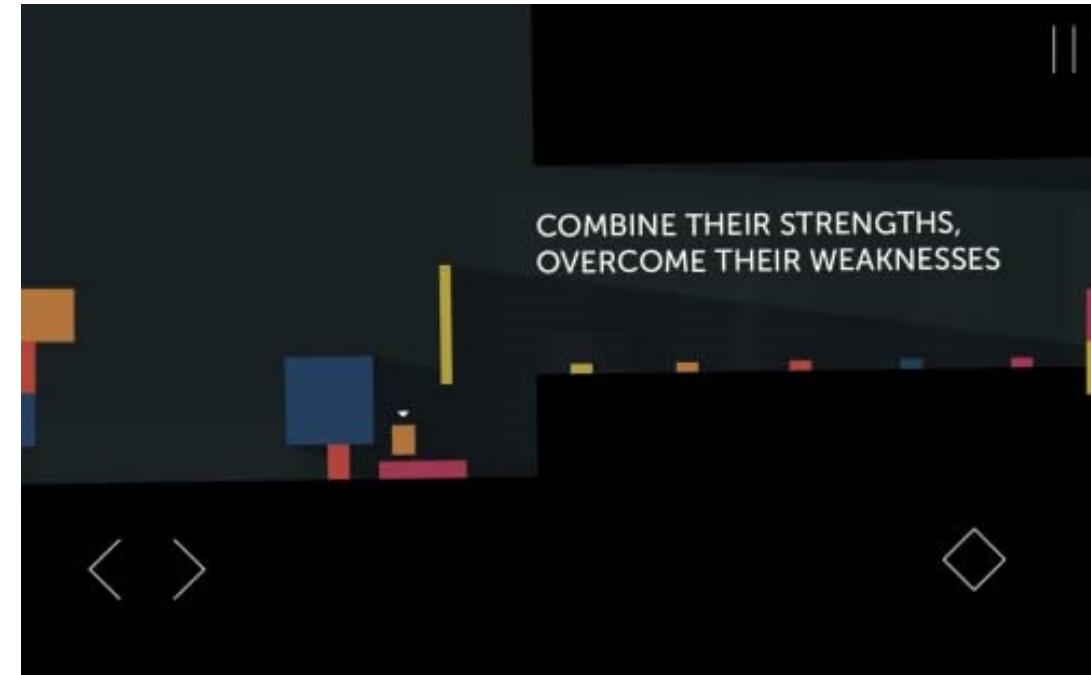
*THE IMPERIAL MARCH
IN A MAJOR KEY*

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▶ 🔍 ⚙️ 🎖️ 📺 🎵

Creating emotion on a budget

- Facial expressions are powerful in communicating emotion, but realistic in-game facial animation can be expensive
- Nuances of voice acting are also efficient, and cheaper than realistic in-game faces
- Thomas was alone: Abstract visuals + good voice acting and music



Screenshot: Thomas Was Alone

All voices are not equal

Well chosen voices can really elevate an experience. Don't wing it yourself.

For example, check this audiobook sample narrated by Nathan Osgood:
<https://www.amazon.com/Dogs-War-Book/dp/B0BT39P9CF/>

Online marketplace:
<https://voice123.com/>

The attractive voice: What makes it so?

Published: June 1993

Volume 17, pages 119–135, (1993) [Cite this article](#)

Miron Zuckerman & Kunitate Miyake

1612 Accesses 72 Citations 9 Altmetric 1 Mention [Explore all metrics →](#)
<https://link.springer.com/article/10.1007/bf01001960>

Abstract

Previous research has shown that more attractive voices are associated with more favorable personality impressions. The present study examined which acoustic characteristics make a voice attractive. Segments of recorded voices were rated on various dimensions of voice quality, attractiveness, and personality impressions. Objective measures of voice quality were obtained from spectrogram analysis. Overall, the subjective ratings of voice quality predicted vocal attractiveness better than the objective measures. When vocal attractiveness was regressed onto both subjective and objective measures, the final regression equation included 8 subjective measures, which together accounted for 74% of the variance of the attractiveness scores. It also was found that the measures of voice quality accounted for variance in favorableness of personality impressions above and beyond the contribution of vocal attractiveness. Thus, attractiveness captures an important dimension of the voice but does not cover all aspects of voice quality.



The attractive voice: What makes it so?

[M Zuckerman, K Miyake - Journal of nonverbal behavior, 1993 - Springer](#)

... The purpose of the present study is to examine what makes a **voice attractive**. The search for acoustic correlates of vocal attractiveness may start with vocal and speech cues already ...

☆ Tallenna 99 Viittaa Viittausten määärä 230 Aiheeseen liittyviä artikkeleita Kaikki 8 versiota Web

Prosodic aspects of the attractive voice

[A Rosenberg, J Hirschberg - Voice Attractiveness: Studies on Sexy ..., 2021 - Springer](#)

... survey the prosodic qualities of different types of **attractive voices**. ... **attraction** to a conversational partner demonstrate the same qualities. So should we consider this **voice** to be **attractive** ...

☆ Tallenna 99 Viittaa Viittausten määärä 17 Aiheeseen liittyviä artikkeleita Kaikki 3 versiota

Dominant voices and attractive faces: The contribution of visual and auditory information to integrated person impressions

[C Rezlescu, T Penton, V Walsh, H Tsujimura... - Journal of Nonverbal ..., 2015 - Springer](#)

... , per trait, for **voice** stimuli. The ratings ranged ... /**attractive/dominant**) to 9 (extremely trustworthy/**attractive/dominant**). The trials were blocked as follows: WB **voices**, WB faces, OT **voices**, ..

☆ Tallenna 99 Viittaa Viittausten määärä 113 Aiheeseen liittyviä artikkeleita Kaikki 10 versiota Web

[HTML] Relationships between vocal characteristics and body size and shape in human males: an evolutionary explanation for a deep male voice

[S Evans, N Neave, D Wakelin - Biological psychology, 2006 - Elsevier](#)

... of a **deep voice** in ... **deep voice** indicates aspects of body size and shape in the human male.

Further research will be necessary to examine male and female perceptions of **deep voices** ...

☆ Tallenna 99 Viittaa Viittausten määärä 292 Aiheeseen liittyviä artikkeleita Kaikki 11 versiota

Web of Science: 143

Vocal attractiveness increases by averaging

[L Bruckert, P Bestelmeyer, M Latinus, J Rouger... - Current biology, 2010 - cell.com](#)

... a **voice** owner's success at mating, job applications, and/or elections. The prevailing view holds that **attractive voices** ... for the less **attractive voices** than for the more **attractive voices** (see ...

☆ Tallenna 99 Viittaa Viittausten määärä 236 Aiheeseen liittyviä artikkeleita Kaikki 17 versiota Web

Men's voices and women's choices

[SA Collins - Animal behaviour, 2000 - Elsevier](#)

... were judged as being more **attractive**, older and heavier, ... for male vocal characteristics, **deeper voices** being preferred. ... the **voice** belonged (scale of 1–10: 10 being the most **attractive**), (...

☆ Tallenna 99 Viittaa Viittausten määärä 566 Aiheeseen liittyviä artikkeleita Kaikki 11 versiota

Web of Science: 248

Prosody, Phonology and Phonetics

Benjamin Weiss

Jürgen Trouvain

Melissa Barkat-Defradas

John J. Ohala *Editors*

Voice Attractiveness

Studies on Sexy, Likable, and Charismatic Speakers

Low-cost emotional voice acting pipeline

(your mileage may vary, but worth testing)



Record your voice and face with an iPhone,
animate using Unreal Metahumans

ElevenLabs

TRY FOR FREE

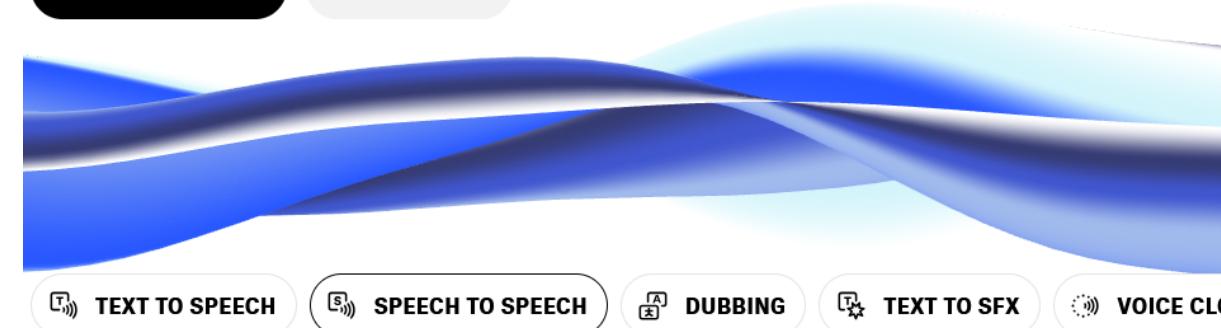


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TEXT TO SPEECH

SPEECH TO SPEECH

DUBBING

TEXT TO SFX

VOICE CL

Transform your voice with ElevenLabs speech-to-speech

Creating emotion on a budget



Thomas Was Alone Longplay [Full Playthrough, No Commentary, Original Audio]



Retro Game Hacks
642 tilaajaa

<https://www.youtube.com/watch?v=uMYgmpO-aoY>

Creating emotion on a budget

Gone Home: 3d but no visible characters, excellent writing, emotional voice acting, and music

(applies to many other successful walking simulators)



Creating emotion on a budget

Journey: abstract characters, no voice acting. Why does it still work as an emotional experience?





Thought of You - by Ryan Woodward

<https://www.youtube.com/watch?v=OBk3ynRbtsw>



Negative emotion, positive experience

- Players enjoy and appreciate experiencing negative emotions such as sadness
- Emotions evoked by aspects such as in-game loss, character attachment and (lack of) agency, and were often accompanied by (self-)reflection
- Personal life experience and memories modulate the emotional experience

Negative Emotion, Positive Experience? Emotionally Moving Moments in Digital Games

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ABSTRACT

Emotions are key to the player experience (PX) and interest in the potential of games to provide unique emotional, sometimes uncomfortable experiences is growing. Yet there has been little empirical investigation of what game experiences players consider emotionally moving, their causes and effects, and whether players find these experiences rewarding at all. We analyzed 121 players' accounts of emotionally moving game experiences in terms of the feelings and thoughts they evoked, different PX constructs, as well as game-related and personal factors contributing to these. We found that most players enjoyed and appreciated experiencing negatively valenced emotions, such as sadness. Emotions were evoked by a variety of interactive and non-interactive game aspects, such as in-game loss, character attachment and (lack of) agency, but also personal memories, and were often accompanied by (self-)reflection. Our findings highlight the potential of games to provide emotionally rewarding and thought-provoking experiences, as well as outline opportunities for future research and design of such experiences. They also showcase that negative affect may contribute to enjoyment, thereby extending our notion of positive player experience.

Author Keywords

Emotion; Player Experience; Enjoyment; Appreciation.

ACM Classification Keywords

J.4 Social and Behavioral Sciences: Sociology, Psychology;
K.8.0 Personal Computing: Games

Please note that this paper contains major spoilers for several games.

INTRODUCTION

People play games for the experience [20], and one of the aims of player experience (PX) research is to understand what constitutes and contributes to positive gaming experiences [23]. Emotions are commonly considered a key component of good PX [6, 20, 22, 30, 31]. Fun and enjoyment, in particular, are some of the most frequently explored constructs in player experience [6, 24]. Negative affective gaming experiences, however, are far less researched, because they are

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DOI: <http://dx.doi.org/10.1145/2858036.2858227>

seemingly at odds with the focus on fun [20], positive affect and enjoyment [24]. Unfortunately, this may suggest that all negative affective experiences cannot by definition be considered positive, and implies that it is not worthwhile to design for such experiences [23], thereby restricting the spectrum of possible emotional experiences in games [6, 23]. Yet other forms of media such as literature or film are often acclaimed for their ability to convey a wide spectrum of emotional experiences [2, 3], and it has been argued that negative affect may also contribute to engaging player experiences [6, 10, 25]. Moreover, recent research on serious games suggests that emotionally challenging game experiences have the potential to stimulate reflection, thereby raising awareness of real world issues [16] and facilitating prosocial behavior [32].

While research on negative experiences and negatively valenced emotions in digital games is growing (e.g., [11, 15, 35]), the focus often lies on individual games or game aspects. Moreover, while several studies on serious games and uncomfortable experiences imply that players might value such experiences [9, 16, 32], it remains unclear how this relates to core PX concepts, such as enjoyment or need satisfaction.

The present paper reports on a study, in which 121 players reported an emotionally moving experience with a digital game. Employing both psychometric scales and open-ended questions, we explored what emotions were evoked, why players felt this way, what game components contributed to this, and whether players considered these experiences as rewarding. The contribution of this study is threefold: First, we provide evidence of the emotional and personal impact of games, highlighting the potential of emotional game experiences to stimulate (self-)reflection. Second, we identify a variety of interactive and non-interactive game aspects, but also personal factors as a possible source of emotions in games, which may provide a starting point for future research and design of emotional game experiences. Third, we contribute to a better understanding of the interplay between (negative) emotions and (positive) experiences in games, thereby broadening our notion of positive PX.

RELATED WORK

Emotions are oftentimes considered a core component of the media experience [2, 12, 33]. Consequently, a sizable amount of research has been conducted on the role of emotions for the entertainment experience, especially why many people seem to value media experiences evoking negatively valenced emotions, such as horror or drama movies. Oliver and Bartsch [26], for instance, introduced *appreciation* as a possible explanation for why people are drawn towards these genres. Ap-

What predicts appreciation and enjoyment?

- Enjoyment predicted by both happy and sad affect
- Appreciation predicted by sad and meaningful affect

		Appreciation	Enjoyment
Affect	Happy	-.02	.51**
	Sad	.45**	.32**
Needs	Meaningful	.40**	.02
	Autonomy	.02	.25*
	Character Engagement	.09	.29*
	Competence	-.17	.22*
	Contemplativeness	.46**	-.04
	Experiencing Emotions	.29*	.21*
	Social Sharing	.05	.02
	Vicarious Release	.02	-.11

Table 2. β weights of affect and need measures for appreciation and enjoyment.* Significant at $p < .05$. ** Significant at $p < .01$.

Relation of game challenge and emotions?



“An Odd Kind of Pleasure”: Differentiating Emotional Challenge in Digital Games

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ABSTRACT

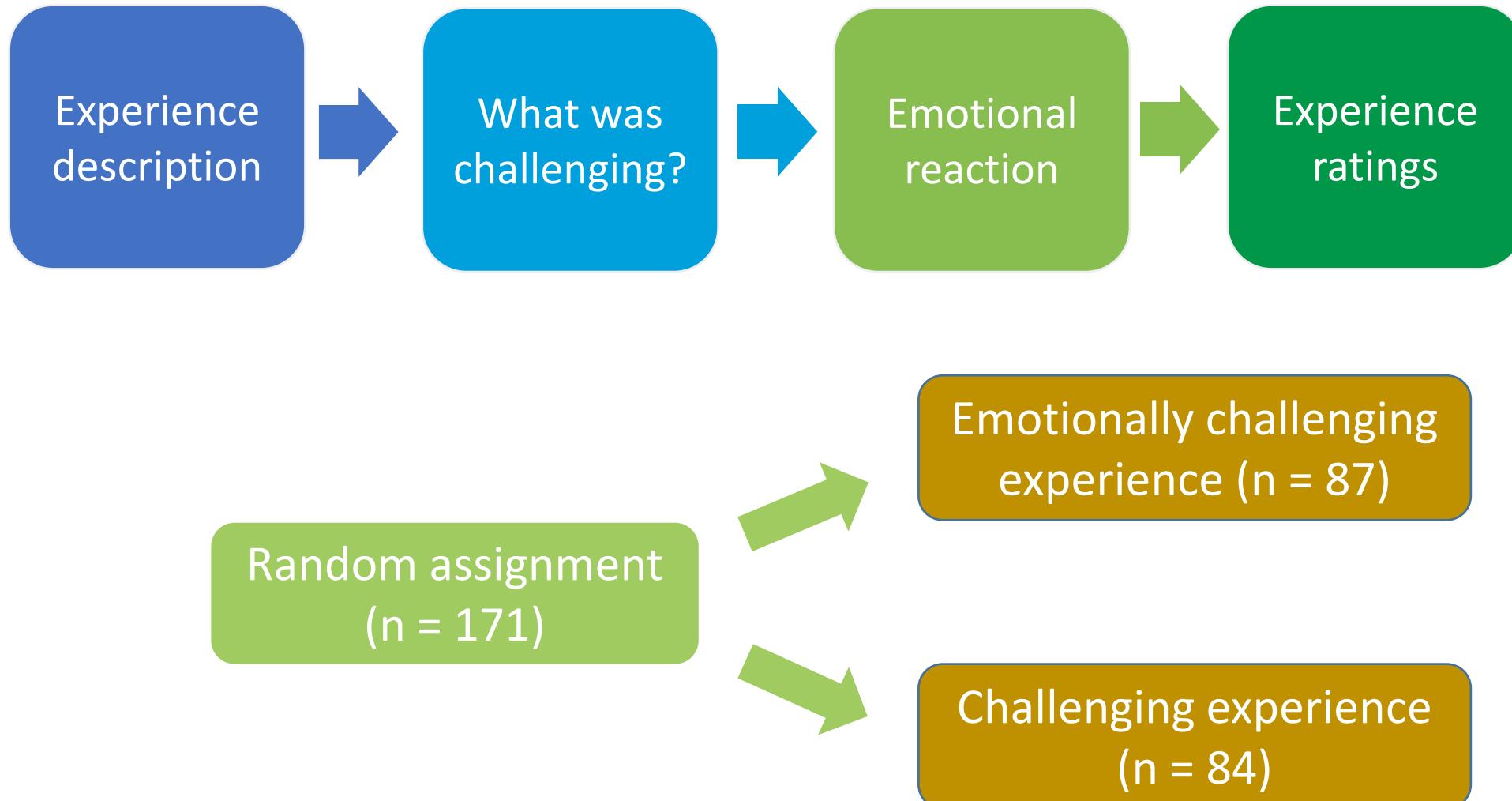
Recent work introduced the notion of *emotional challenge* as a means to afford more unique and diverse gaming experiences. However, players’ experience of emotional challenge has received little empirical attention. It remains unclear whether players enjoy it and what exactly constitutes the challenge thereof. We surveyed 171 players about a challenging or an emotionally challenging experience, and analyzed their responses with regards to what made the experience challenging, their emotional response, and the relation to core player experience constructs. We found that emotional challenge manifested itself in different ways, by confronting players with difficult themes or decisions, as well as having them deal with intense emotions. In contrast to more ‘conventional’ challenge, emotional challenge evoked a wider range of negative emotions and was appreciated significantly more by players. Our findings showcase the appeal of uncomfortable gaming experiences, and extend current conceptualizations of challenge in games.

that emotional challenge plays a crucial role for the entertainment experience of film viewers [3]. Similarly, the notion of emotional challenge holds great promise for a better understanding of the player experience (PX). First, several scholars have emphasized the importance of exploring and understanding diverse types of game experiences [43], specifically with regards to the emotional spectrum games may evoke [16, 29, 35]. Indeed, emotional challenge was suggested to afford a wider range of emotions, beyond the frustration-fiero cycle [26] typical of more ‘conventional’ challenge [9]. Second, it may contribute to a more nuanced understanding of challenge in games, which was argued to be insufficient in current player experience research [11]. Third, as emotional challenge typically involves players confronting difficult subject matters [9], it may inspire the design of games aimed at raising awareness about real-world issues [15, 29]. Similarly, previous research has discussed the potential of games for emotional learning [27, 40]. A clearer understanding of what constitutes emotional challenge may hence inform the design and evalua-

Emotional Challenge

- Confronting players with difficult themes by using strong characters and narratives
- Cannot be readily overcome by skill or dexterity
- Demand players to explore emotional and narrative ambiguities
- Difficult choices

Bopp et al. Study Procedure





*“Bring to mind
an (emotionally)
challenging
experience
you had with a
digital game.”*

No. No, that's not.... No. No. NO. NO!

Examples (both from The Witcher 3)

Emotionally Challenging experience

- „*(...) Then things go wrong, you make the wrong choice. You're not perfect. A woman, the ex-wife to a Baron, is now dead.* (...) And the Baron who hired you to save his wife *has hung himself out of grief*. That is an emotionally challenging experience.“

Challenging experience

- „*To kill the monster, I first had to travel through 3 different areas, which in itself provided challenges. There I had to collect different ingredients and swords to prepare myself, so I can beat the monster's weakness with my strength.*“

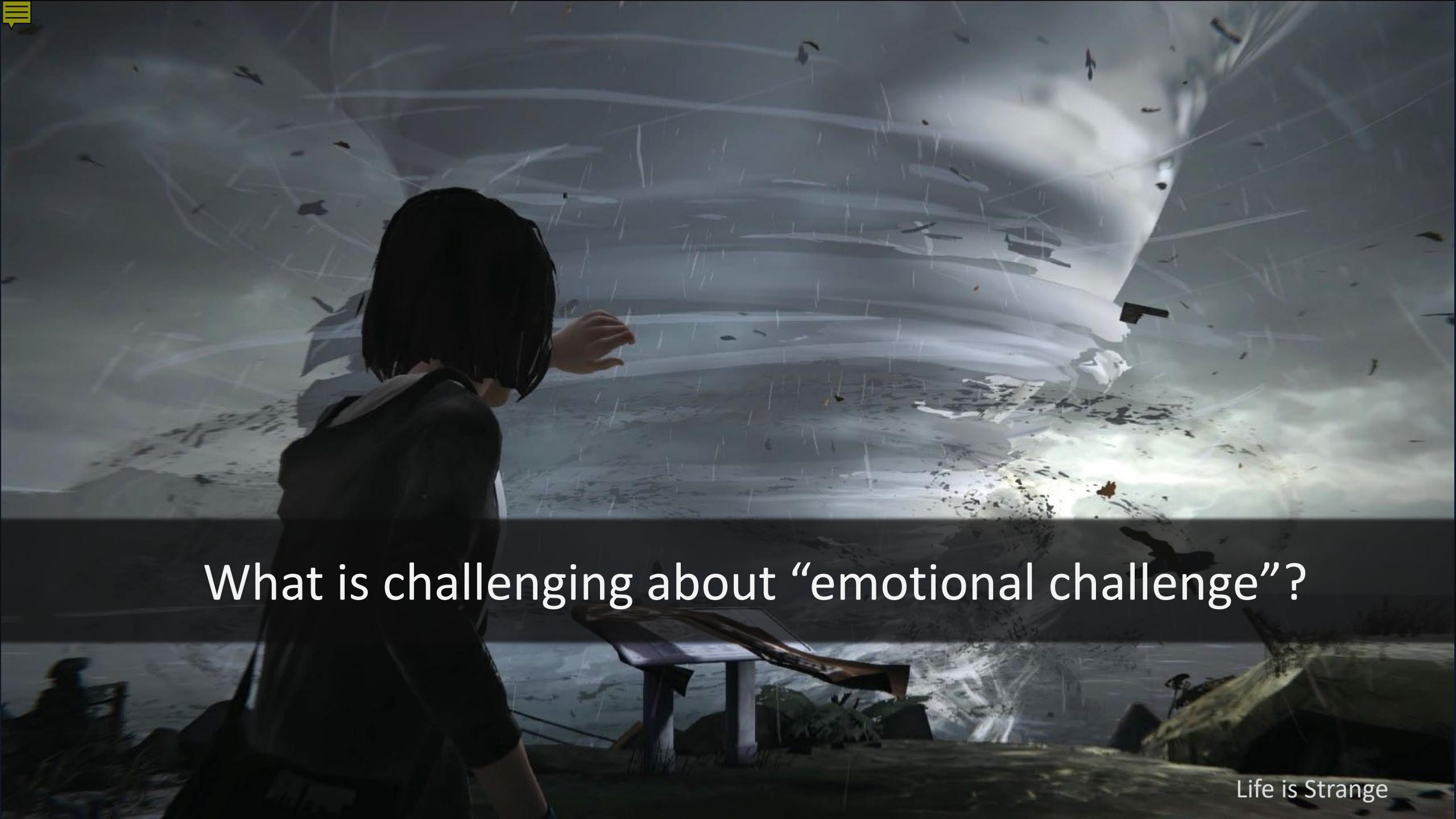
Example (both from The Witcher 3)

Emotionally Challenging
experience

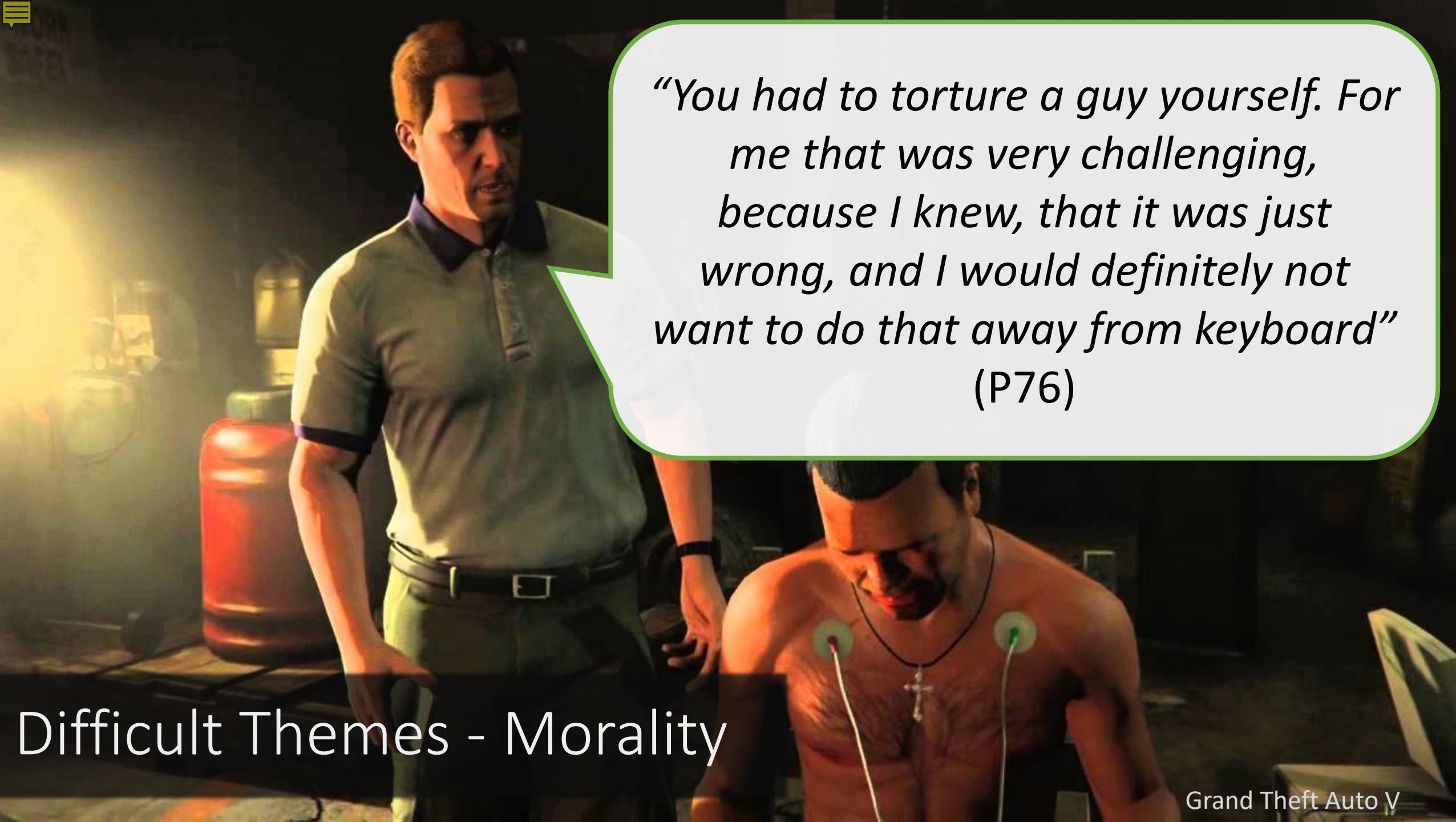
*„Very uncomfortable,
actually went online to see
if there was a way to
avoid torturing the
character.“*

Challenging experience

*„At first I felt hopelessness,
because I simply couldn't even
get close, as I got closer and
closer I felt more frustrated than
hopeless, because I started to
believe I could do it, but I just
kept messing up. Right after
killing the boss I felt super
relieved and happy.“*



What is challenging about “emotional challenge”?

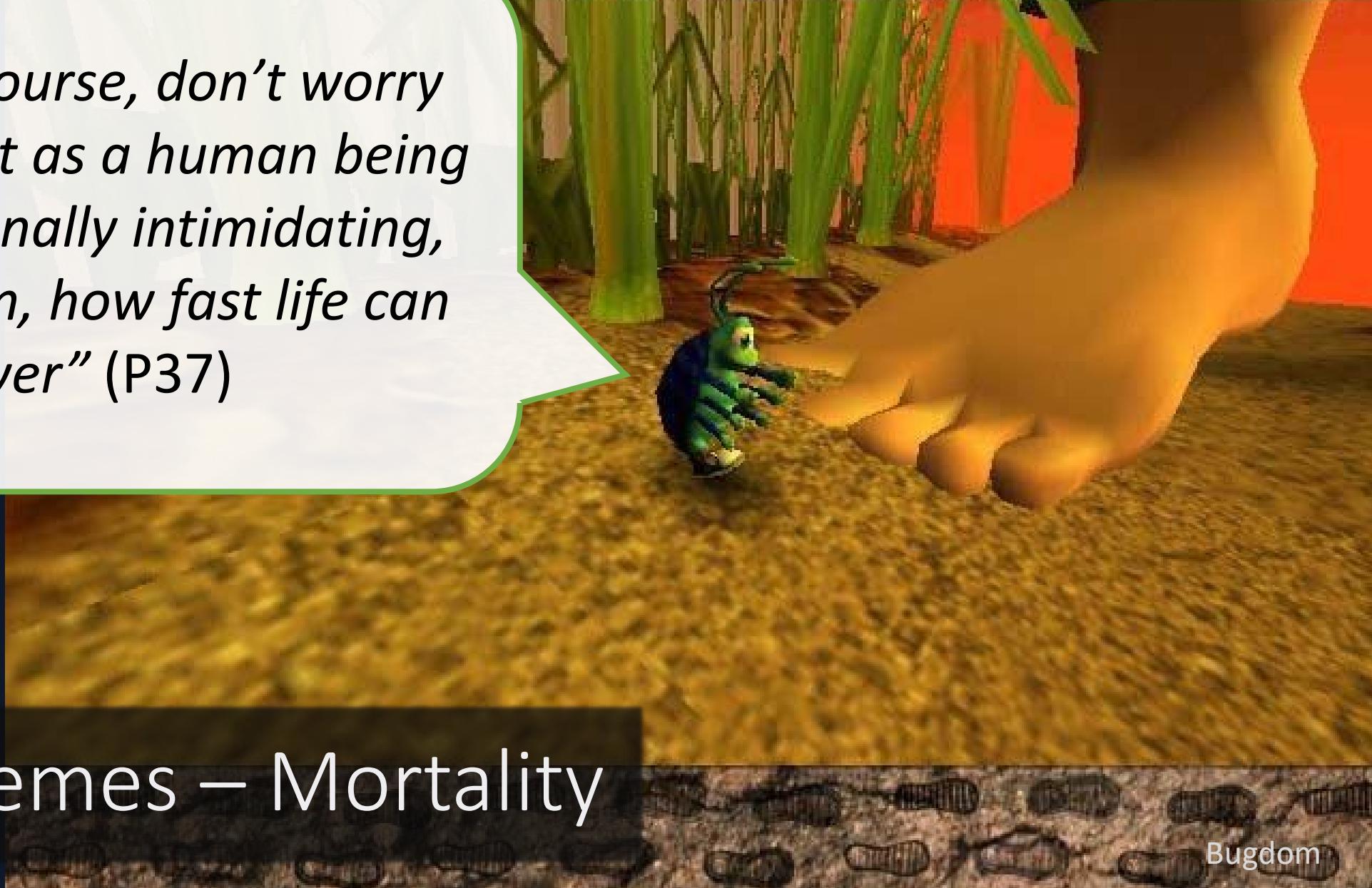


“You had to torture a guy yourself. For me that was very challenging, because I knew, that it was just wrong, and I would definitely not want to do that away from keyboard”
(P76)

Difficult Themes - Morality



“Beetles, of course, don’t worry about that, but as a human being it was emotionally intimidating, the perception, how fast life can be over” (P37)



Difficult Themes – Mortality



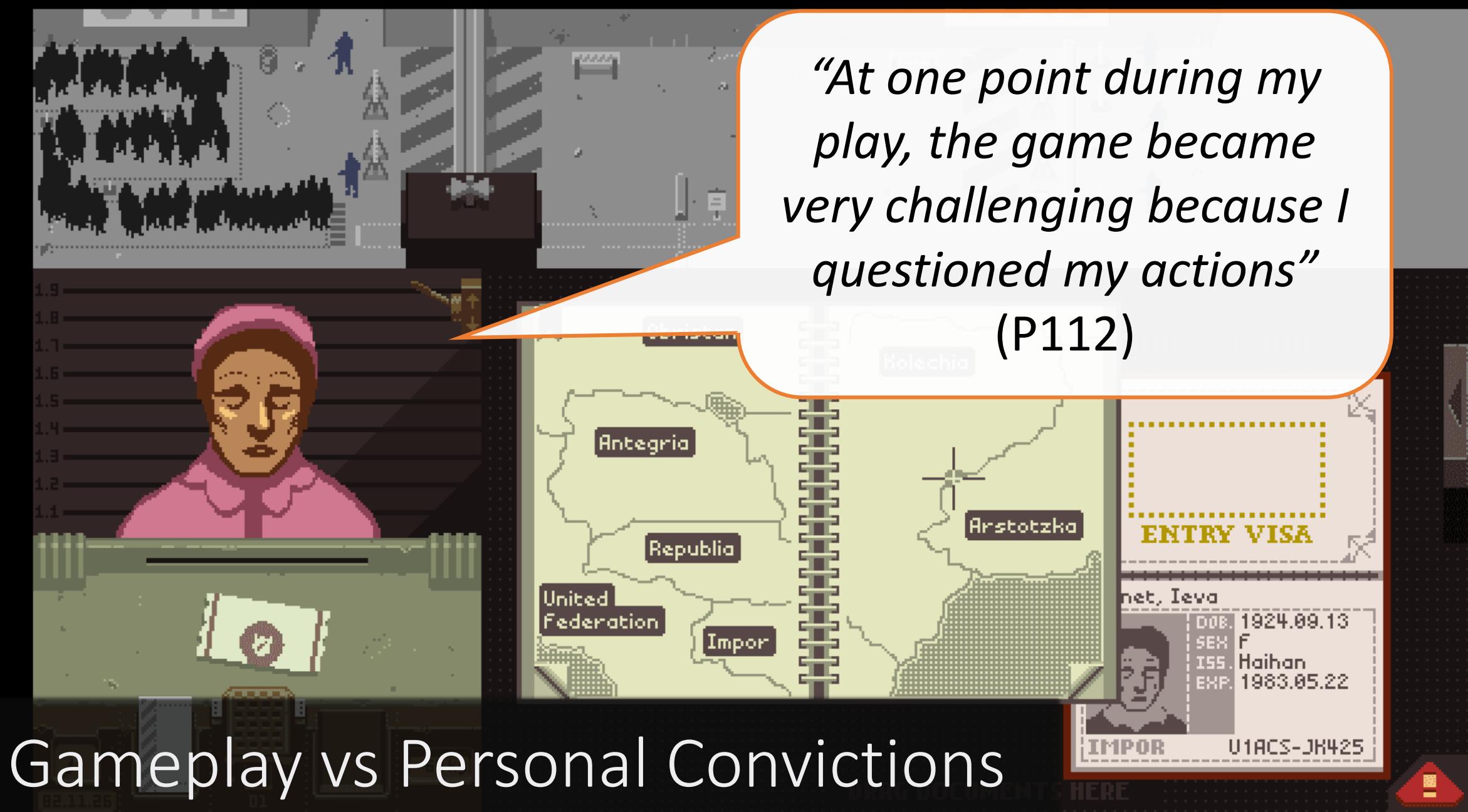
“Neither option is clear cut to be right” (P55)



Decision & Actions – No Clear Positive Outcome

“At one point during my play, the game became very challenging because I questioned my actions”

(P112)

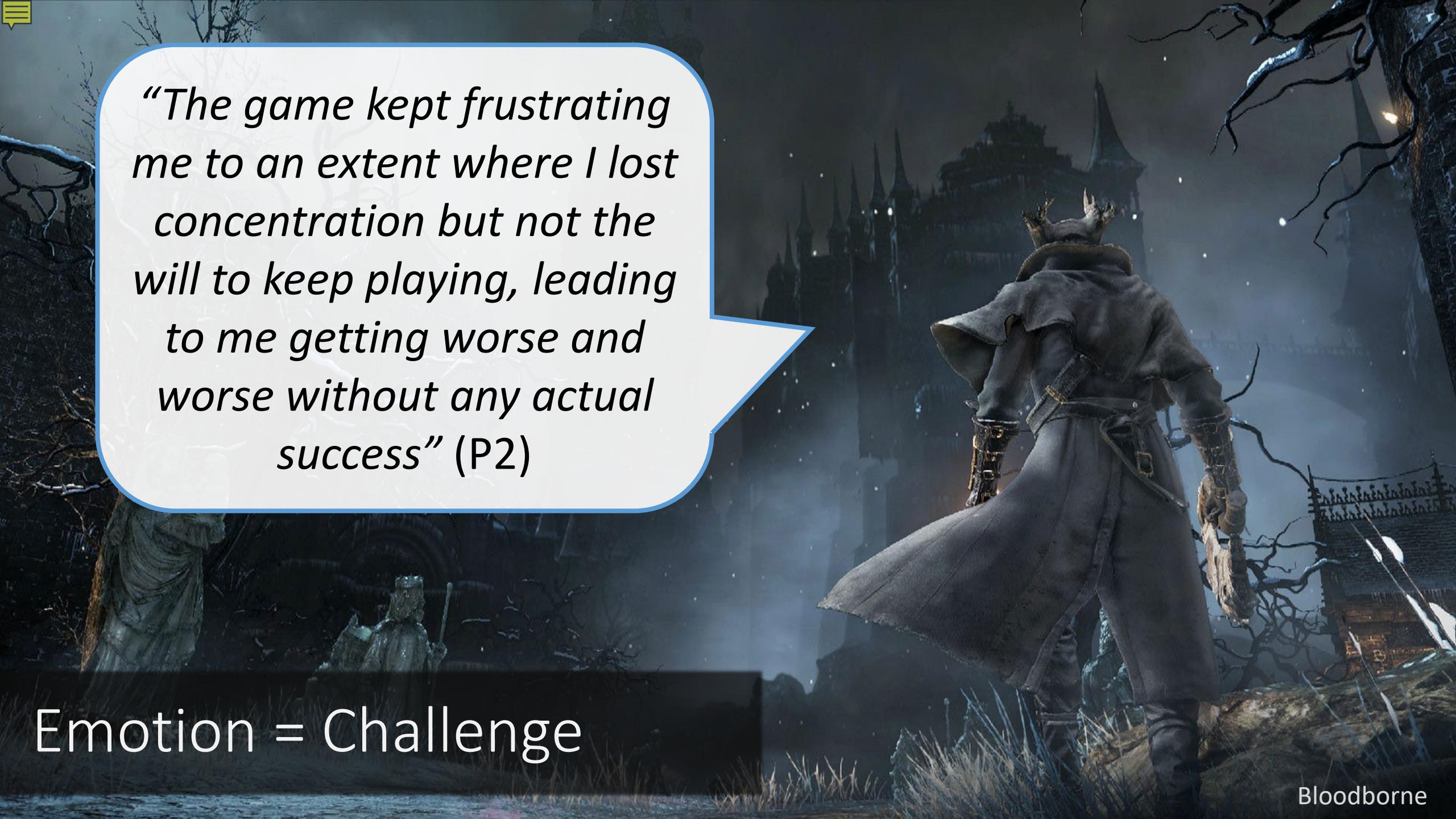


Gameplay vs Personal Convictions



“(It) is like having a known world become unknown and full of darkness. Like in the childhood, when you were alone at home. Everything in this level was a potential threat, therefore it was a very tense experience” (P59)

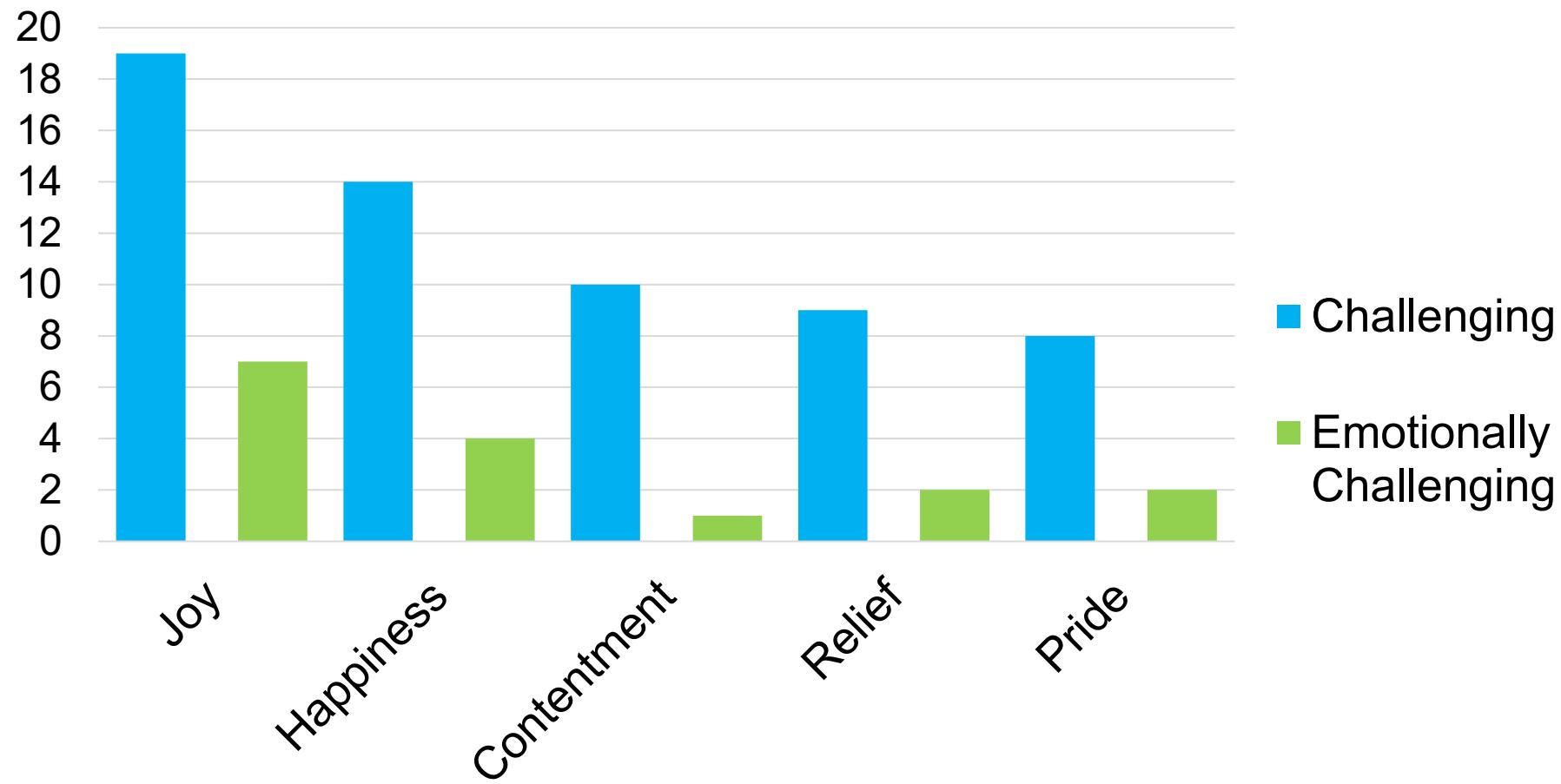
Dealing with Intense Negative Emotions



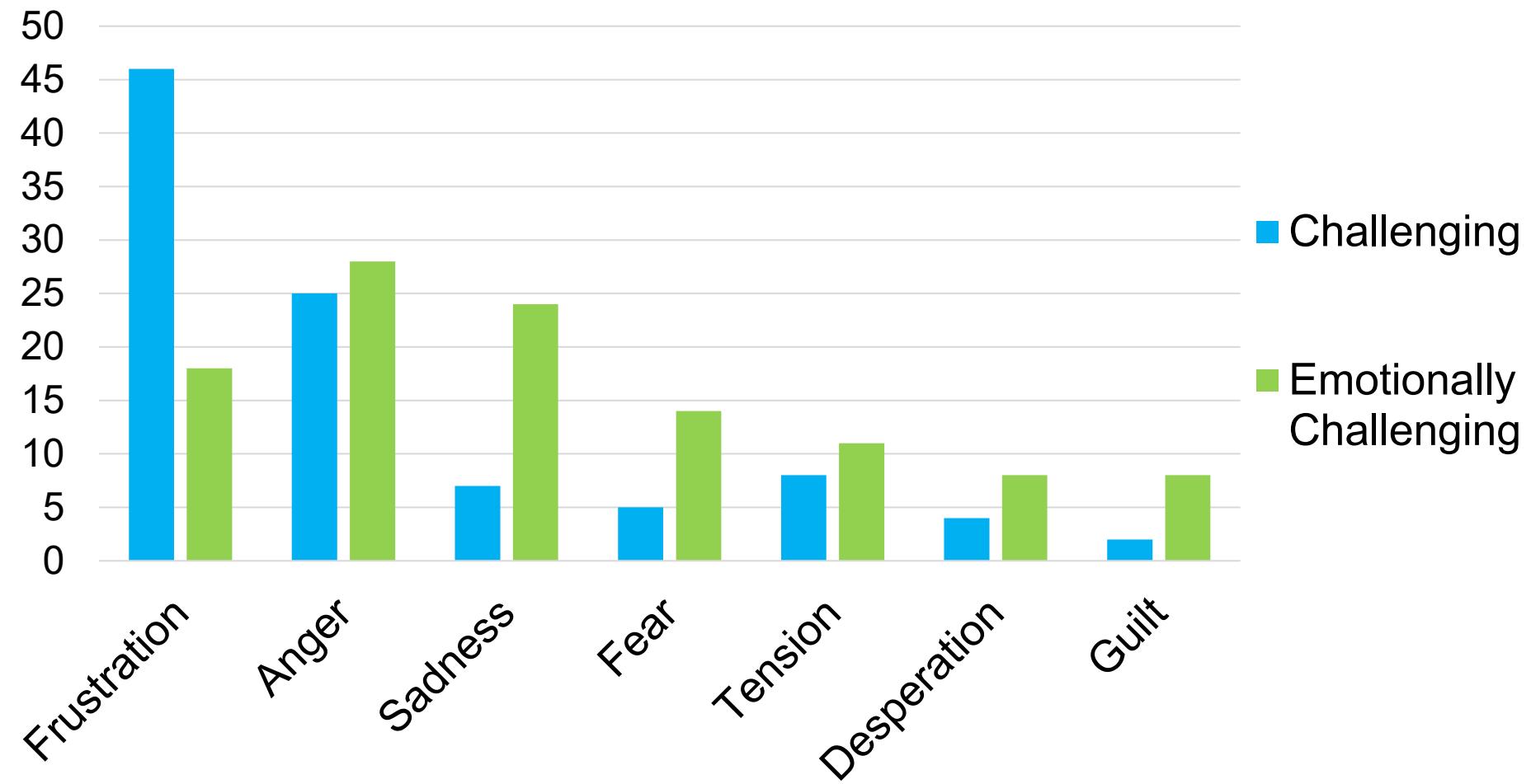
“The game kept frustrating me to an extent where I lost concentration but not the will to keep playing, leading to me getting worse and worse without any actual success” (P2)

Emotion = Challenge

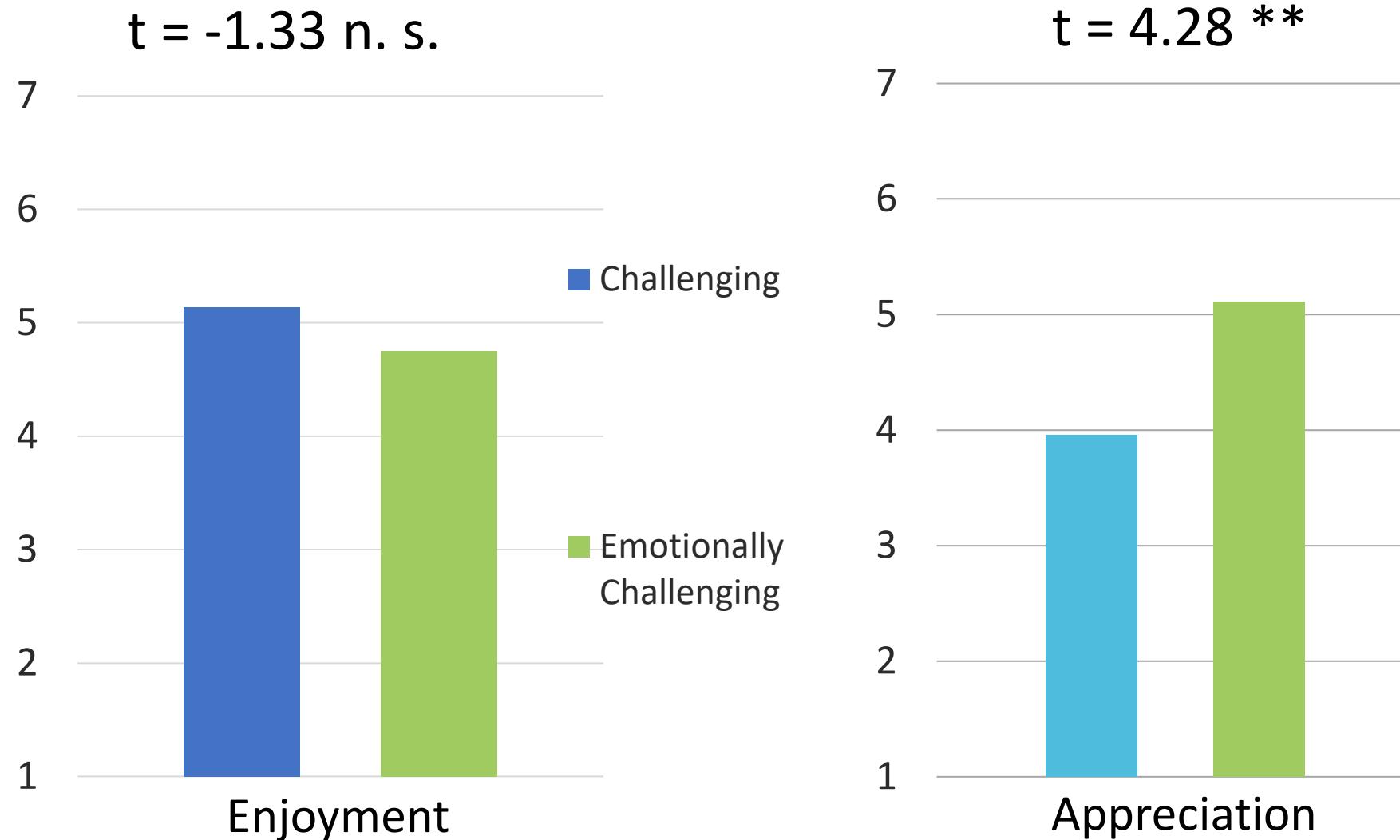
Challenging Experiences Evoke More Positive Emotions



Emotional Challenge Accompanied by Negative Emotions



Both Challenge Types Were Enjoyed, but Emotional Challenge Was Appreciated More



EXTRA CREDITS



PRESENTS



0:03 / 7:09

Enriching Lives - What Mass Effect 2 Teaches Us about Morality - Extra Credits

[https://www.youtube.com/watch?v= 2Tp8Jopdlc](https://www.youtube.com/watch?v=2Tp8Jopdlc)



Extra History ✓
2,95 milj. tilaajaa

Liity

Tilaa

7,3 t.



Jaa

Lataa

Kiitos

Klippi

...



Common types of challenge

- Cognitive (puzzles, planning, predicting)
- Performative (timing, accuracy)
- Emotional (narrative tension)
- Decision-making (tension & consequences, moral choices)

Measuring perceived challenge in digital games: Development & validation of the challenge originating from recent gameplay interaction scale (CORGIS)

Alena Denisova ^a , Paul Cairns ^b, Christian Guckelsberger ^c, David Zendle ^b

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<https://doi.org/10.1016/j.ijhcs.2019.102383>

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Highlights

- Scale measuring perceived challenge in video games.
- Four sub-scales (30 items) measuring four types of perceived challenge in video games: cognitive, performative, emotional, and decision-making challenge.
- Development and validation are carried out over three studies including 1390 players with diverse backgrounds playing video games from a range of genres.
- The questionnaire is a systematic, extensive, reliable, and valid tool to measure perceived challenge in video games.

https://www-users.york.ac.uk/~pc530/pubs/Denisova_IJHCS_20.pdf



Comparing Measures of Perceived Challenge and Demand in Video Games: Exploring the Conceptual Dimensions of CORGIS and VGDS

#	CORGIS (Denisova et al., 2020)	VGDS (Bowman et al., 2018)
1	Cognitive Challenge (e.g. problem solving)	Cognitive Demands (e.g. problem solving)
2	Emotional Challenges (e.g. narrative tensions)	Emotional Demands (e.g. unexpected feelings)
3	Decision-making Challenges (e.g. tension & consequences)	Controller Demands (e.g. device mapping)
4	—	Exertional Demands (e.g. reaction times)
5	Performative Challenge (e.g. reaction times)	Social Demands (e.g. relationships with others)

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ABSTRACT

Measuring perceived challenge and demand in video games is crucial as these player experiences are essential to creating enjoyable games. Two recent measures that identified seemingly distinct structures of challenge (Challenge Originating from Recent Gameplay Interaction Scale (CORGIS) - cognitive, emotional, performative, decision-making) and demand (Video Game Demand Scale (VGDS) - cognitive, emotional, controller, exertional, social) have been theorised to overlap, reflecting the five-factor demand structure. To investigate the overlap between these two scales we compared a five (complete overlap) and nine-factor (no overlap) model by surveying 1,101 players asking them to recall their last gaming experience before completing CORGIS and VGDS. After failing to confirm both models, we conducted an exploratory factor analysis. Our findings reveal seven dimensions, where the five-factor VGDS model holds alongside two additional CORGIS dimensions of performative and decision-making, ultimately providing a more holistic understanding of the concepts whilst highlighting unique aspects of each approach.

CCS CONCEPTS

- Human-centered computing → Empirical studies in HCI; User studies;
- Applied computing → Computer games.

KEYWORDS

Video games, challenge, demand, player experience, questionnaires

ACM Reference Format:

Alex Flint, Alena Denisova, and Nick Bowman. 2023. Comparing Measures of Perceived Challenge and Demand in Video Games: Exploring the Conceptual Dimensions of CORGIS and VGDS. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23), April 23–28, 2023, Hamburg, Germany*. ACM, New York, NY, USA, 19 pages. <https://doi.org/10.1145/3544548.3581409>

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<https://doi.org/10.1145/3544548.3581409>

1 INTRODUCTION

Challenge is a core factor in creating enjoyable gaming experiences [57]. Yet, challenges in video games place variable demands on players' limited attentional resources that can hasten or hinder enjoyment [11]. As such, the player experiences of challenge and demand are not well understood. Furthermore, the games industry currently evaluates these player experiences through unstructured (and often, atheoretical) interviews during manual playtests, which results in an incomplete view of the challenges and demands games present [21]. Without the ability to measure or even understand the full complexity of challenge and demand in digital games, it is difficult to generate a reliable and systematic metric for the discrete player experiences that lead to an enjoyable video game playthrough.

Two measures of perceived challenge and demand in video games have recently been developed using differing approaches rooted in human-computer interaction (HCI) (the former) and media and communication studies (the latter): Challenge Originating from Recent Gameplay Interaction Scale (CORGIS) [20] and Video Game Demand Scale (VGDS) [11]. These two measures were developed based on each research team's understanding of the concepts and represent their interpretation of what they deemed essential to measure.

At first glance, these two measures each identified seemingly different dimensions and structures of perceived challenge and demand. This may be because dimensions of challenge and demand are not easily identified or well understood due to the complexity of experiences involved in video games [5]. Differences in dimensions between the measures may also result from the human interpretation required when creating new questionnaires, such as labelling identified factors (in itself, influenced by the disciplinary background of a given authorship team). Despite appearing different at first glance, Bowman et al. [9] recently proposed that the measures may instead be comparable. Their model presents a five-factor structure (Table 1) that proposes the latent factors on both scales (the root concepts of challenge and demand) might completely overlap.

Although a model of overlap between the two scales has been suggested, the model has not yet been empirically tested. Therefore, to explore the potential overlap between these two scales, we compared the proposed five-factor model suggesting a complete overlap of the concepts with a nine-factor model suggesting no overlap. We asked 1,101 players to complete an online survey recalling their last gaming experience before completing CORGIS and VGDS. We conducted confirmatory factor analysis to investigate model fit for the two *a priori* five and nine-factor models. After failing to confirm both the five and nine-factor models, we conducted an

<https://dl.acm.org/doi/pdf/10.1145/3544548.3581409>

More on emotional and decision-making challenge



Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh



<https://eprints.whiterose.ac.uk/216481/14/1-s2.0-S0747563224002929-main.pdf>

“It’s a terrible choice to make but also a necessary one”: Exploring player experiences with moral decision making mechanics in video games

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ARTICLE INFO

Keywords:

Decision making
Morality
Video games
Design guidelines
Thematic analysis

ABSTRACT

Video games offer a unique platform for players to engage interactively with morally challenging topics and dilemmas. Despite the growing popularity of games that offer such content, there is a paucity of research on the player experiences and the specific game mechanics that facilitate moral decision making. To address this gap, this research identifies key game mechanics that support moral decision making through a comprehensive review of related literature and qualitative survey responses from players ($n = 30$). The effects of these mechanics on players' decision making processes and their overall impact on player experience were further explored through semi-structured, video-elicitation interviews ($n = 11$). This research develops a theoretical framework based on the findings from these two exploratory studies, culminating in a set of design guidelines to inform the future development of moral decision making games.

1. Introduction

Video games, as an interactive and expressive form of art, give players and game industry professionals a unique platform to navigate morally challenging decisions and dilemmas. Unlike other traditional media, video games offer a distinctive advantage by providing a safe environment for players to explore and experiment with various scenarios.

Despite the prevalence of games offering moral dilemmas, e.g. *Mass Effect* series (2007–2017) (Microsoft Game Studios, Electronic Arts, 2007), *Life is Strange* series (2015–2022) (Dontnod Entertainment, 2015) or *Detroit: Become Human* (DBH) (Quantic Dream, 2018), little is known about how effectively these games support moral decision making or what specific game aspects and mechanics facilitate or hinder players' ability to make such decisions, as previous work largely focuses on individual games (e.g. Holl and Melzer (2021a, 2021b)) or individual mechanics (e.g. Formosa et al. (2022a), Ryan et al. (2023)). Moreover, the existing literature on morality in games has predominantly focused on the game content (e.g. Consalvo et al. (2019)) and outcomes, neglecting the valuable insights into players' individual experiences (Holl et al., 2020).

This work aims to address the following research gaps in games research by scrutinising players' experiences with moral decision making games and their mechanics. It does so through a two-part study involving an online survey and semi-structured interviews with the use of video elicitation. From this research, we offer the following novel contributions:

1. We provide an overview of prominent game mechanics that facilitate moral decision making in video games and how they augment other factors that affect decision making. Our research examines players' receptivity to these mechanics, drawing on both their prior experiences and their in-the-moment responses. We analyse players' preferences, their willingness to engage with these mechanics, reported issues, and the effects of these mechanics on their decision making processes.
2. We discuss the mechanics used in games to facilitate moral decision making and report on the experiences these mechanics promote. To our knowledge, this is the first study to provide an overview of players' experiences with games featuring a prominent moral decision making component, examining how specific game mechanics support or hinder these experiences.
3. Based on these findings, we report on the implications for design and synthesise design guidelines to inform game designers and games user researchers about effective approaches for creating positive player experiences in the context of moral decision making in video games.

The implications of these contributions for games research are substantial, as a deeper understanding of gaming experiences, such as emotional challenge (Bopp et al., 2018; Denisova et al., 2020) and meaningful, eudaimonic experiences (Cole & Gillies, 2022; Oliver et al., 2016) within the context of morally difficult decisions is important for



Subscale	Item
Cognitive Challenge	1. Succeeding in the game required much planning 2. I had to memorise a lot of different things when playing the game 3. I had to think several steps ahead when playing the game 4. I had to prepare for the things that the game threw at me 5. Playing the game requires great effort 6. I felt challenged when playing the game 7. I had lots of different things to think about at once in the game 8. The game made me manage several tasks at the same time 9. I had to constantly keep track of what was going on in the game 10. I had to think actively when playing the game 11. Playing the game required me to do my best
Emotional Challenge	1. This game is more than just a game to me 2. The things that happened in the game made me sad 3. I invested much thought into the game 4. I felt a sense of responsibility for characters and events in the game 5. The game made me think about real life issues 6. Playing the game was stimulating 7. I felt a sense of suspense when playing the game 8. The game had moral dilemmas in it where the choice was not obvious 9. The game involved making moral choices that I didn't agree with
Perceptive Challenge	1. I had to react quickly when playing the game 2. I had to act quickly when playing the game 3. Thinking fast was an important part of the game 4. Quickly responding to things that I saw was an important part of the game 5. I had to make snap decisions when playing the game
Decision Making Challenge	1. There were some decisions in the game that I regretted 2. I wonder how different the outcome in the game would be had I chosen a different option 3. I had to make difficult choices in the game 4. I had to think about possible alternatives for my actions in the game 5. The game made me think hard about my decisions

Recap

- Emotions are a subset of feelings
- Emotions and feelings relate to affective concerns (survival, wellbeing)
- Understanding emotions helps in conflict resolution
- Unifying emotions, intrinsic motivation and computational rationality: rewards and punishments based on affective concerns
- A game or movie eliciting positive emotions is enjoyable
- A game or movie eliciting negative emotions might not be enjoyable but can be appreciated (hedonic vs eudaimonic)
- Remember emotional challenge in addition to perceptual-motor and cognitive challenge!



Exercise time: Emotion and mechanics



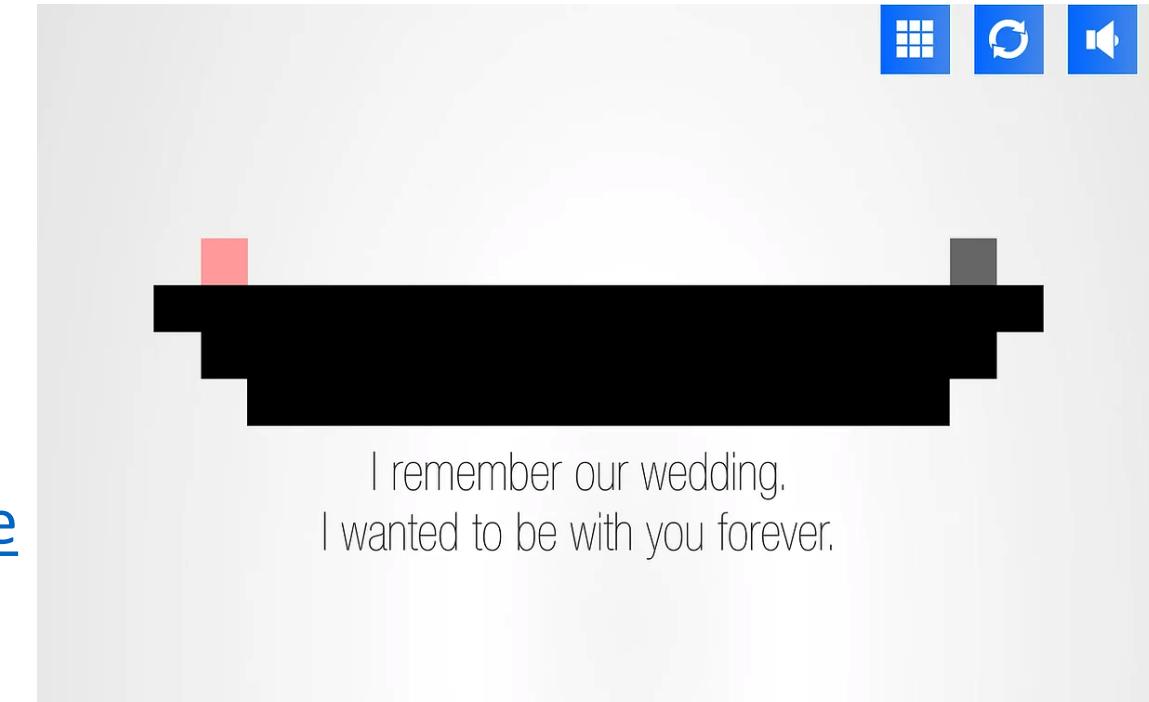
Mechanics can create meaning and emotion even with abstract graphics

<https://www.necessarygames.com/my-games/freedom-bridge/flash>

<https://www.necessarygames.com/my-games/loneliness/flash>

http://kyrie.pe/the_marriage/

<https://www.keybolgames.com/Games/Pretentious-Game> (does include text)

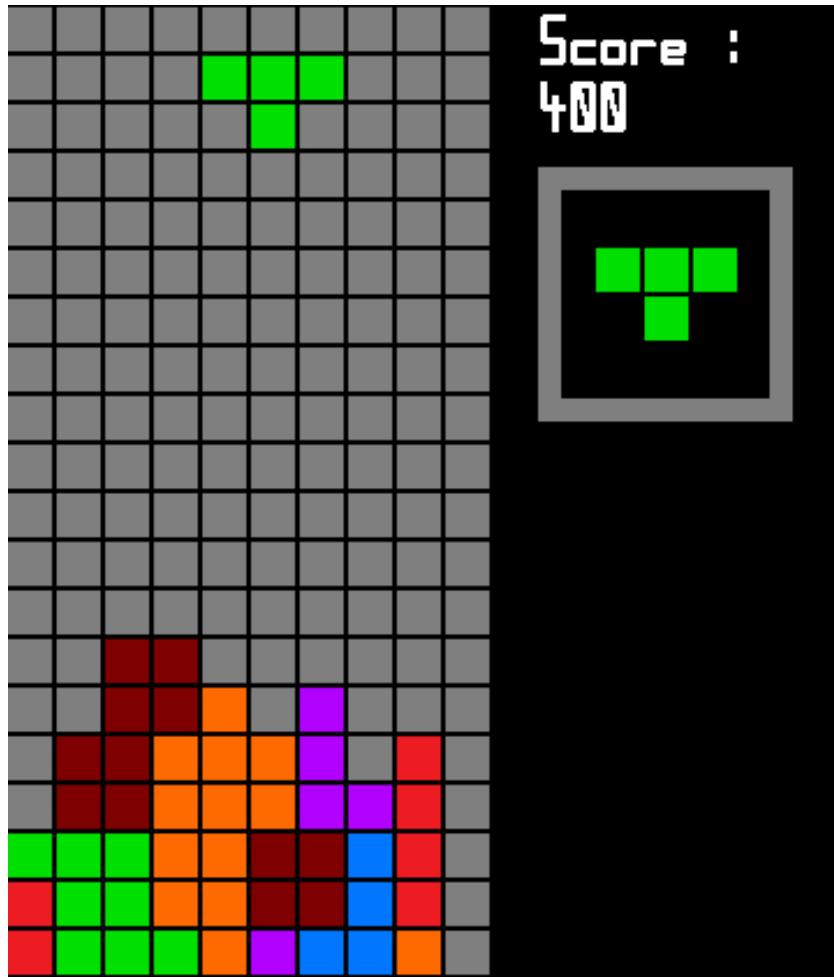


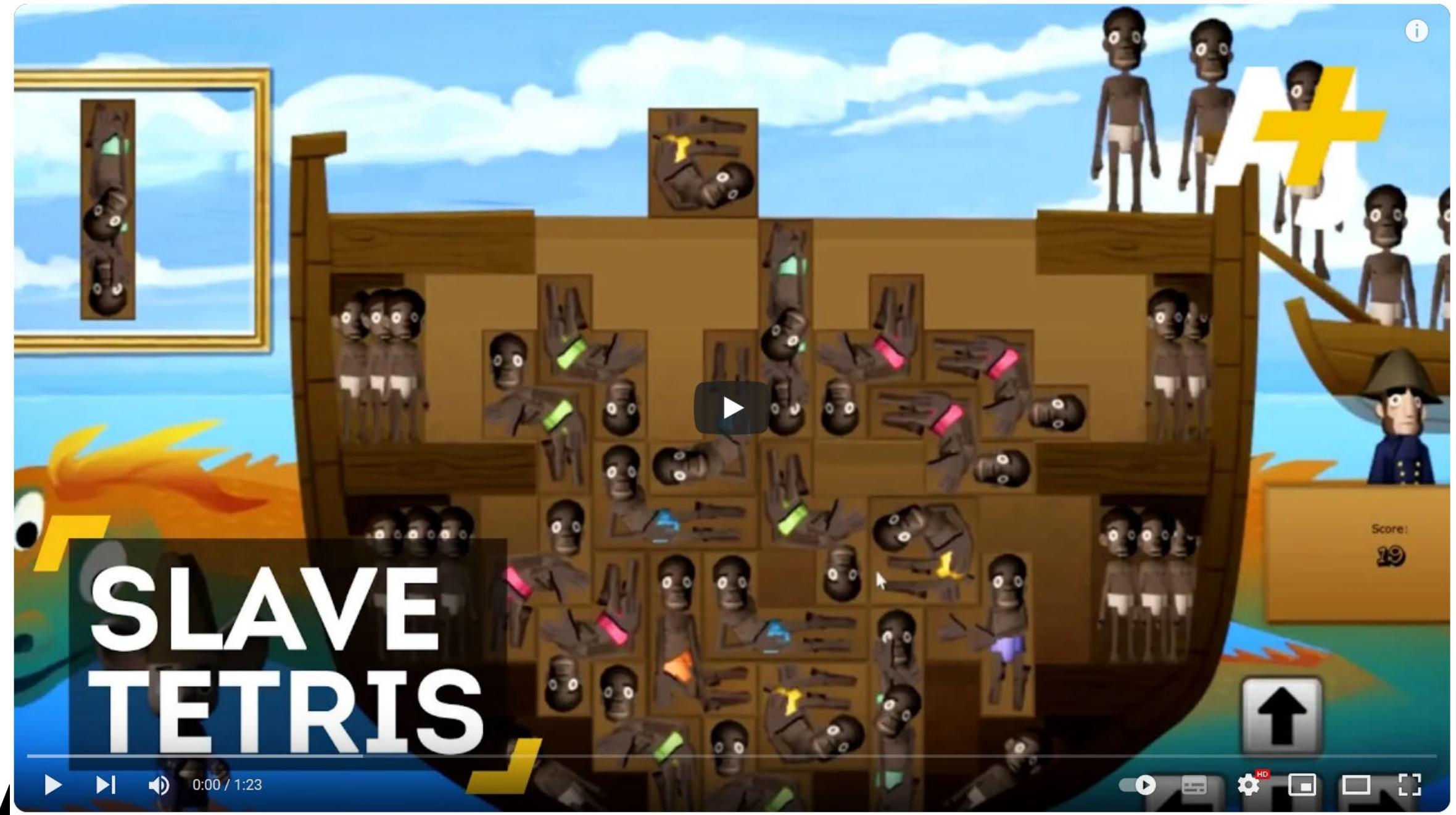


How Game Designers Create Meaningful Mechanics | Conveying Themes, Emotions and Ideas In Video Games



Emotional reframing of mechanics



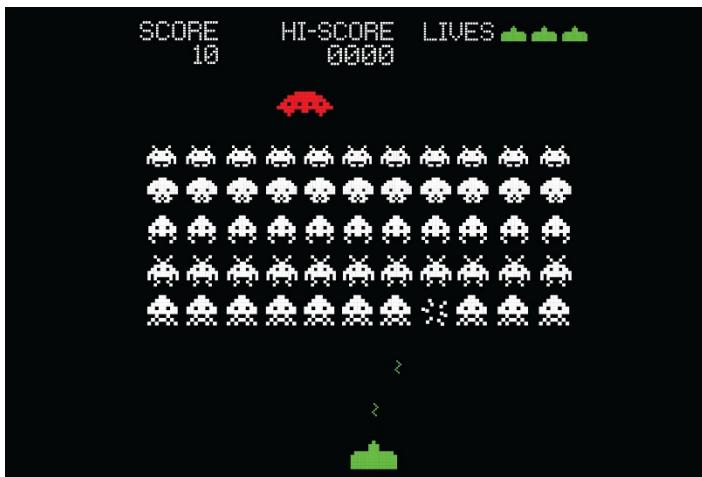


Is Slave Tetris Educational Or Really Racist?

<https://www.youtube.com/watch?v=q2EVg5QLCEU>

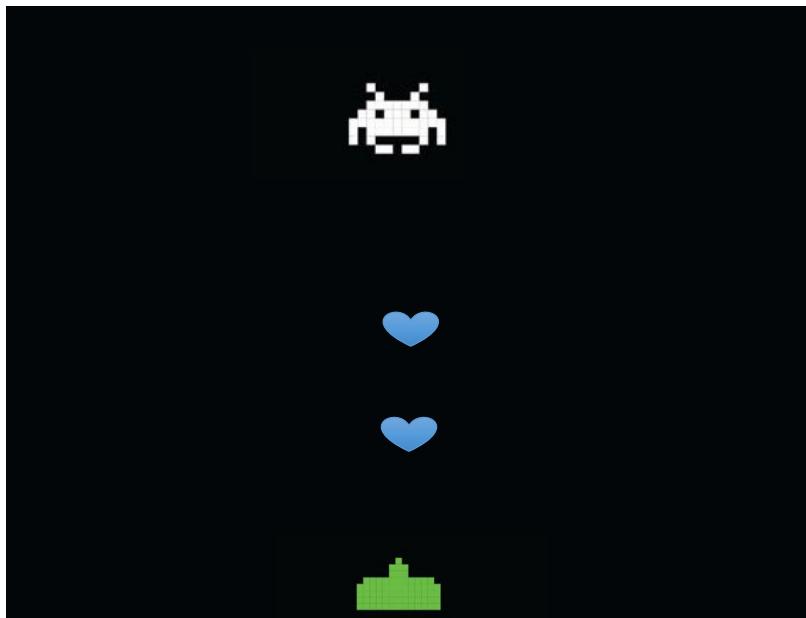
Exercise - Emotional Game Design

- Randomize an emotion: <https://perchance.org/emotion>
- How would you revise the design of a classic game such as Space Invaders or Pac-Man to afford that particular emotion?
 - Pick a game that 1) everyone knows and 2) can be explained using one screenshot
- Submit via MyCourses as 1 or more slides (.pdf)
- Alone or in pairs/groups



You can change both mechanics and dramatic elements of the game (e.g., graphics, sound, story)

Space Invader – Love



- *Mechanics:* Move, »shoot heart»
- *Dynamics:* «sending words of love»
- *Aesthetics:* Love

Space Invader – Remorse

- Same mechanics, but add backstory for alien invaders



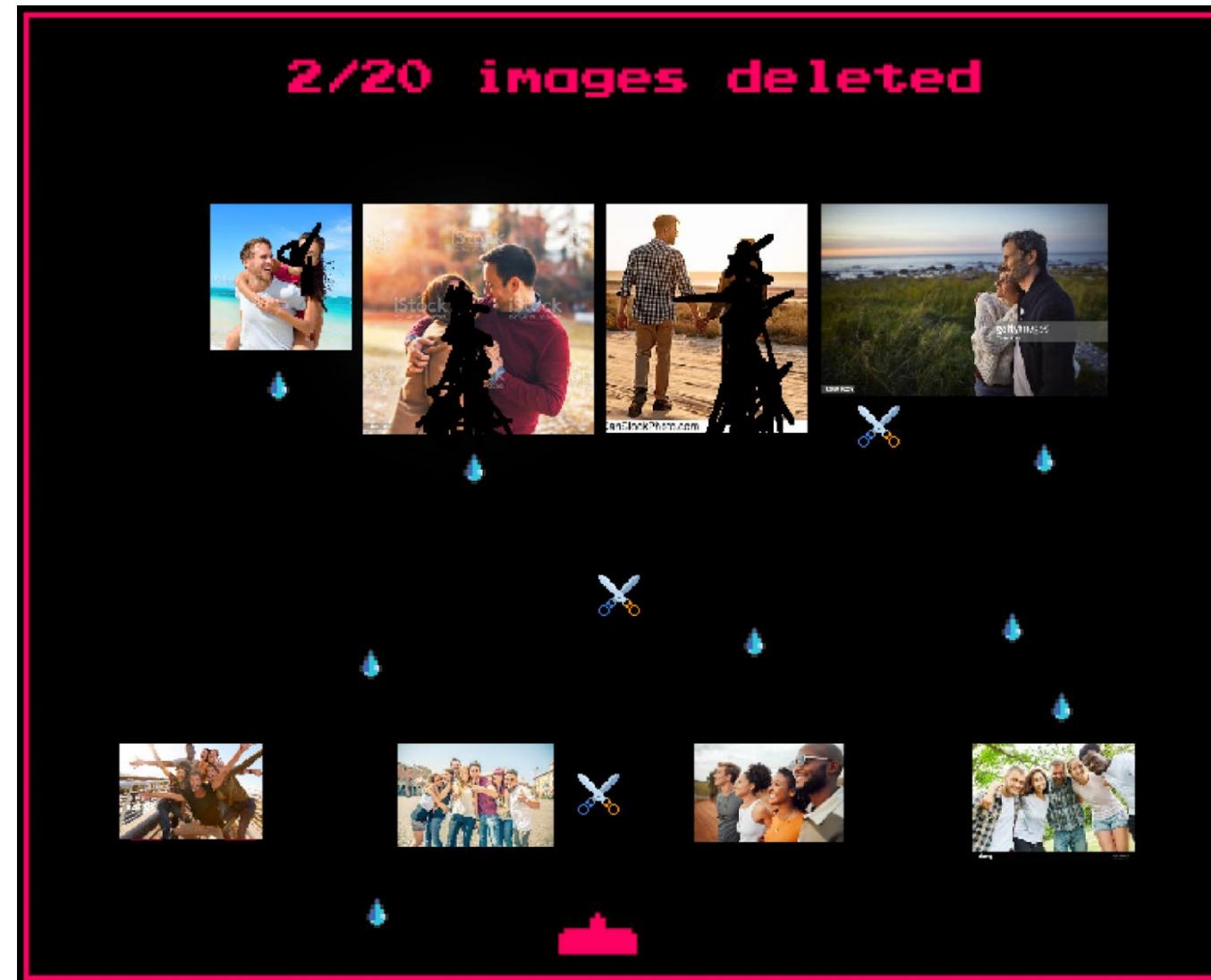
Space Invader – Guilt



- Same mechanics, but instead of walls -> humans

Heartsickness

- Concept: Shoot the photos of your broken relationship to forget or choose to embrace the pain
- The game pulls the photos from your personal image library. Whenever you shoot them, the actual photos are updated respectively.
- When shooting at the images, they will disintegrate bit by bit, starting with your ex.
- Shooting bound to a key as opposed to auto-shooting, so you can choose not to shoot. Scissors represent your bullets, tears represent the bullets of the photos.
- Shields are your common friends who are now collateral damage.



Ecstasy – can AI solve the exercise?

In 2022, students generated the screenshots using the DALL-E 2 text-to-image generator, with the prompt: “An ecstatic moment in the video game space invaders, pixel art, aliens attacking, 100% enjoyment”

