Title
Cinematic Techniques for Controlling Attentional Focus Enhance Emotional Engagement in Interactive Narratives

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Authors
Ohmoto, Yoshimasa
Nakazawa, Haruka

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Abstract

To enhance emotional engagement in interactive narratives, we propose an Arousal Induction Model that integrates cinematic techniques with the psychological theory of misattribution of arousal. The model combines attentional focus control (using over-the-shoulder shots and match-cuts) with arousal induction via auditory and visual effects.We evaluated this model through an RPG-based experiment (N = 49). Results showed that the arousal-induced staging significantly improved participants' alignment with the protagonist's interpersonal preferences and increased subjective story evaluations. Physiological analysis (CSI) confirmed successful sympathetic activation during staged events.These findings suggest that simultaneously intervening in cognitive attention and physiological arousal can effectively deepen emotional engagement and improve experience quality. This research provides a framework for designing more moving and immersive interactive narrative experiences.

Keywords: interactive narrative; attention guidance; emotion; arousal; physiological measures

Introduction

Digital media such as virtual reality (VR) and interactive games can immerse users deeply in narrative worlds and offer novel forms of experience. In particular, because such media can provide simulated experiences from another person's perspective, they have been expected to function as an "empathy machine" that promotes understanding of and empathy toward others (Milk, 2015; Seinfeld et al., 2018). It has long been argued that deep narrative immersion (transportation) contributes to attitude change and improvement of interpersonal skills (Galinsky & Moskowitz, 2000; Green & Brock, 2000). For this reason, the HCI community has regarded the design of emotionally compelling interactive narratives with stronger immersion (transportation) as a key research topic.

However, merely providing a highly navigable 3D environment does not necessarily produce deep emotional engagement. In VR environments, where users can freely allocate their gaze, they may miss critical narrative cues (e.g., important plot points or characters' emotional expressions), thereby weakening the intended emotional experience. This "attentional distraction problem" constitutes a major barrier in the design of effective narrative experiences.

A variety of approaches have been explored to address this issue. One approach is biofeedback and physiological computing, in which users' physiological signals are measured in real time and task parameters adapts accordingly (Pope et al., 1995). While promising, such methods often require advanced sensors and complex affect models. Another approach is to rely on the immersive qualities of VR itself; yet, as noted above, immersion does not necessarily translate into the *intended* form of emotional engagement.

In the present work, we look to a new solution grounded in accumulated knowledge from cinema. Film directors construct coherent narrative experiences by leveraging "film language," including camera work, editing, and sound, to skillfully guide attention and evoke emotion (Hasson et al., 2008). It has been demonstrated that eye-tracking patterns differ between natural footage and edited footage (Dorr et al., 2010); consequently, editing techniques that preserve cognitive continuity across cuts and camera work that aligns the viewer with a character's perspective are crucial for maintaining attention on the narrative core. We hypothesize that these cinematic principles—namely, control of attentional focus and arousal induction—can be adapted to the design of interactive narrative experiences.

The theoretical foundation for this approach is the *two-factor theory of emotion* in social psychology (Schachter & Singer, 1962). According to this theory, emotional experience arises from two factors: (i) physiological arousal of uncertain origin and (ii) cognitive interpretation that explains the cause of that arousal. As illustrated by the well-known "suspension bridge" study (Dutton & Aron, 1974), individuals may misinterpret anxiety-induced arousal as romantic attraction—a phenomenon referred to as *misattribution of arousal*.

We apply this mechanism to strengthen narrative experiences. Specifically, we induce autonomic arousal via staging elements such as sound and visual effects while simultaneously using camera work to guide users' attention toward specific characters and situations. This coupling is essential: if users' attention is not directed to the narratively relevant target at the moment arousal is induced, the arousal is less likely to be attributed to the intended narrative cause, weakening misattribution-based emotional effects. In this study, misattribution of arousal refers to the interpretation of staging-induced physiological activation as narrative-consistent emotion rather than as a mere staging effect. We therefore hypothesize that when attention is directed to a narratively salient target during arousal, users will interpret that activation in line with the narrative context, thereby strengthening emotional engagement.

Accordingly, we ask whether the Arousal Induction Model shifts protagonist-aligned character preferences (RQ1), im-

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proves subjective evaluations and affective states (RQ2), and produces sympathetic activation indexed by CSI (RQ3). In this paper, we evaluate this model in a narrative role-playing game that combines over-the-shoulder viewpoints and match-cut-like smooth transitions with intensified audiovisual effects, and we examine emotional engagement as character alignment and narrative experience through story evaluation, immersion, and affective state.

Related Work

This study lies at the intersection of three research areas: emotional engagement in interactive narratives, physiological responses during narrative experiences, and staging techniques that shape user experience.

Emotional engagement in interactive narratives. In interactive narratives, eliciting and sustaining user emotion is a central challenge. In affective computing, numerous narrative systems have been developed that recognize user emotion and adapt accordingly (Pizzi et al., 2007). Such work seeks to model users' affective states and personalize experiences by altering narrative branches or character responses (Thue et al., 2007). In VR research, the ability to provide perspective-taking experiences has been shown to potentially promote empathy and perspective-taking, supporting the view that VR can function as an "empathy machine" (Seinfeld et al., 2018; Van Loon et al., 2018). While these studies demonstrate the importance and potential of emotional engagement, there has been limited discussion of concrete staging methods that proactively *evoke* and *direct* emotion in line with authors' intentions.

Physiological responses during narrative experience. Narrative experience is not purely cognitive; it often involves bodily and physiological responses. In neurocinematics, it has been shown that film editing and camera work can synchronize neural activity across different viewers (Hasson et al., 2008), suggesting that cinematic form can strongly control attention and cognitive processing. In physiological computing and biofeedback games, physiological signals such as heart rate and skin conductance have been used as real-time inputs to alter gameplay experiences (Gilleade et al., 2005). While many such systems focus on relaxation or attentional training, we do not primarily use physiology as an input; instead, we attempt to *shape* physiological output through staging and leverage its psychological consequences.

Techniques for staging user experience. Staging techniques that guide user experience have been actively studied, especially in VR. Because VR allows free gaze allocation, attention guidance is indispensable for directing users to narratively important elements (Rothe et al., 2019). Such techniques range from salient visual cues and spatial audio to sensing-oriented approaches that depend on gaze measurement in VR (Grogorick et al., 2017; Pastel et al., 2021). The "match cut" (editing that preserves continuity through shared visual elements) and the "over-the-shoulder" shot are refined cinematic conventions developed in classical filmmaking for guiding gaze without disrupting cognitive flow (Van Sijll, 2005). The technical novelty of our work lies in adapting these cinematic conventions to an interactive 3D environment and empirically linking their effects to arousal induction.

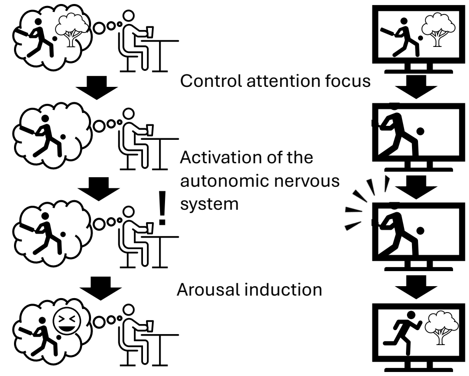

Figure 1: Conceptual illustration of the proposed method.

Positioning of the present study. We propose and evaluate a design principle that integrates attention guidance, arousal-inducing staging, and psychological interpretation under the two-factor theory of emotion. We operationalize this integration as an *Arousal Induction Model* and test it in an interactive narrative role-playing game.

Method: Arousal Induction Model

To enhance users' emotional engagement, we propose an Arousal Induction Model that combines cinematic staging techniques with psychological theory. The model consists of two major components: control of attentional focus and arousal induction (see Figure 1).

Control of attentional focus

To effectively elicit emotional engagement, it is first necessary to guide users toward where they should attend in the narrative. If users are not looking at emotionally important scenes or facial expressions, subsequent arousal induction will have limited impact. For this purpose, we introduced two techniques—derived from cinematic camera work—into an interactive 3D environment.

- **Over-the-shoulder shot:** The user viewpoint (camera) is positioned over the protagonist's shoulder. This setup encourages users to share the protagonist's viewpoint and naturally attend to the protagonist's focus (e.g., an interlocutor character or an important object). We argue that this produces a sense of alignment in attention between the user and protagonist and provides a basis for emotional engagement.
- **Match cut (smooth transition):** When switching from one viewpoint to another, we implement continuous and smooth camera motion to avoid cognitive discontinuity. For example, a viewpoint behind the protagonist transitions seamlessly to an over-the-shoulder viewpoint. This helps maintain immersion while guiding attention to the intended viewpoint without interrupting the user's attentional flow.

Arousal induction

Once attentional focus is directed toward an appropriate target, we aim to elicit misattribution of arousal in line with the two-factor theory by inducing physiological activation. As triggers for physiological arousal, we used the following staging elements intensively or intermittently in narratively critical moments (e.g., when the protagonist's emotions shift strongly or when a shocking event occurs).

- **Auditory effects:** Sudden loud sound effects, tension-building BGM, and emotionally expressive character voice lines (joy, sadness, etc.) were used with greater emphasis than usual.
- **Visual effects:** Visually impactful expressions such as screen shake (e.g., depicting an earthquake), rapid zoom-ins, flash-like flickers, and the display of emotional icons.
- **Character reactions:** Emotional expressions such as surprise, joy, and fear were rendered using larger gestures and facial expressions than in the baseline condition.

Condition design based on the proposed model

To evaluate the effectiveness of the model, we designed an Arousal condition incorporating the above elements and a Control condition that intentionally excluded them.

- **Arousal condition:**
  - Camera: primarily an over-the-shoulder view with smooth transitions.
  - Staging: frequent use of intensified audiovisual effects and character reactions in key narrative moments.
- **Control condition:**
  - Camera: a conventional viewpoint commonly used in 3D games (a slightly elevated, oblique view). The camera does not follow the protagonist's attention; viewpoint changes are instantaneous.
  - Staging: intensified expressions are excluded; staging is kept standard and restrained.

By comparing user responses across these two conditions, we evaluate the influence of the proposed model on emotional engagement and narrative experience.

Experiment

We conducted an experiment to examine whether the proposed Arousal Induction Model improves emotional engagement and experience quality in interactive narratives.

The objective was to clarify how the proposed approach (Arousal condition), compared with the Control condition, affects the following outcomes in a narrative role-playing game.

1. **Emotional engagement:** Whether users more strongly empathize with the protagonist's emotions and relationships and exhibit aligned behavioral preferences (RQ1).
2. **Narrative evaluation:** Whether subjective evaluations of the story, characters, and world (e.g., immersion and liking) improve (RQ2).

Figure 2: Task screenshot (example gameplay scene).

3. **Affective state:** Whether more positive and higher-arousal affective states are induced (RQ2).
4. **Physiological response:** Whether autonomic activity is activated as intended (RQ3).

Participants

Participants were 49 university and graduate students recruited from Shizuoka University (35 male, 14 female; age range 18–25 years, mean age 21.3 years, $SD = 1.80$). Participants were recruited via campus announcements and received a small monetary reward for their participation. Sample size was determined based on a power analysis targeting a medium effect size ($d = 0.5$) with $\alpha = .05$ and power = .80 for within-subject comparisons, yielding a minimum N of approximately 34; the final $N = 49$ exceeds this threshold. Participants reported varying levels of familiarity with video games; however, the game controls were intentionally kept simple (directional movement only via a Joy-Con controller), and an extended practice at the start of each task was provided to minimize performance differences due to prior gaming experience. No specific criterion for prior RPG experience was applied, as the task did not require genre-specific knowledge. We acknowledge that the sample is limited to young adults (18–25 years) at a single institution, which may limit generalizability to broader age groups and cultural contexts.

Task

We implemented two narrative role-playing game tasks (Task A and Task B) using Unity (Figure 2). While the two tasks differed in character design and details of the world, their overall narrative structure was shared. In each story, the participant-controlled protagonist receives instructions from a commander-like NPC (NPC1) and makes three choices about whether to help a friendly NPC (NPC2) or an unfriendly NPC (NPC3). The protagonist was scripted to behave consistently friendly toward NPC2 and consistently unfriendly toward NPC3, enabling observation of which character the user becomes emotionally engaged with. Each task lasted approximately 20–23 minutes, though duration varied depending on participants' self-paced movement in exploration scenes.

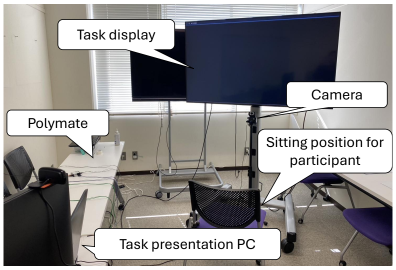

Figure 3: Experimental environment (overview).

Experimental environment

The experimental setup is illustrated in Figure 3. The game was run on the experimenter's computer and presented to participants on a large monitor (60-inch) placed approximately 1 m in front of them. Participants wore sensors connected to a physiological measurement device (Polymate) to record cardiac activity throughout each task. The protagonist character was controlled using a Nintendo Joy-Con controller; inputs were limited to simple locomotion (move forward/backward and turn left/right). To reduce possible confounds due to unfamiliarity with locomotion, the early part of each task included an extended corridor segment to allow participants to practice movement before the first event.

Design

The experiment employed a mixed design. Condition (Arousal vs. Control) was a within-subject factor, such that all participants experienced both conditions. Because novelty and fatigue can differ between the first and second playthrough, we treated experience order (Arousal-first vs. Control-first) as a between-subject factor and counterbalanced it across participants. In addition, two task scenarios (Task A and Task B) were used, and the assignment of which task was paired with which condition was counterbalanced.

Procedure

After arriving at the laboratory and providing informed consent, participants completed a pre-questionnaire measuring trait empathy. Next, physiological sensors were attached, and participants received instructions on game controls. Participants then played two tasks according to the assigned order (one in the Arousal condition and one in the Control condition). After each task, participants completed post-task questionnaires assessing immersion, affect, and character liking. After completing both tasks, participants answered a final questionnaire directly comparing the two experiences.

Measures

- **Behavioral measure (character selection):** After all tasks, participants selected one "most liked character overall."
- **Subjective measures:**

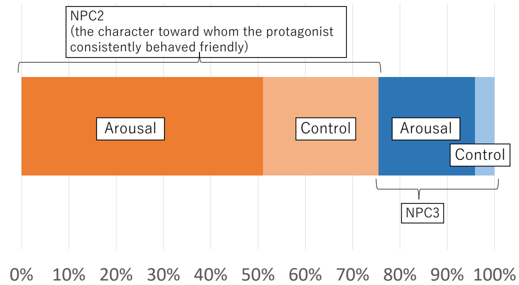

Figure 4: Aggregated character preference outcomes by condition.

  - **Character liking:** After each task, liking for NPC2 and NPC3 was assessed using (a) a 7-point relative scale with NPC1 as the neutral reference point and (b) 6-point direct comparative items between NPCs.
  - **Immersion:** After each task, participants responded on a 7-point scale to a immersion (transpotation) measure adapted from Osanai et al. (Osanai & Kusumi, 2016).
  - **Affective state:** After each task, participants rated 28 affect words on a VAS (visual analogue scale) based on Russell's circumplex model (Russell, 1980).
  - **Overall comparison:** After all tasks, participants compared which of the two tasks they preferred regarding "character design", "worldview" and "story" using a 6-point comparative scale.
- **Physiological measure:**
  - Heartbeats were measured and the Cardiac Sympathetic Index (CSI), an index of sympathetic activity derived from Lorenz plot analysis, was computed. Two designed arousal events were embedded in the Arousal condition task: the first event occurred in a major narrative turning point and the second event occurred in a climactic scene. CSI values were compared between the 30 s interval before and after each designed arousal event.

Results

Behavioral outcome (character selection). Of all participants, 35 (71%) selected a character from the narrative experienced under the Arousal condition as their overall favorite, compared with 14 (29%) who selected a character from the Control condition; this asymmetry was significant in an exact binomial test against the null of equal selection probability across conditions ($p < .01$). Moreover, among the 35 participants who selected a character from the Arousal condition, NPC2 (the character toward whom the protagonist consistently behaved friendly) was the most frequently selected character, and the proportion selecting NPC2 within this group was significantly higher than the proportion selecting NPC3 ($p < .05$) (see Figure 4). These results suggest that the Arousal condition promoted emotional alignment with the protagonist and led to character preferences consistent with the protagonist's stance, consistent with RQ1.

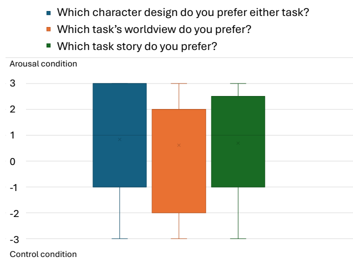

Figure 5: Direct comparison scores.

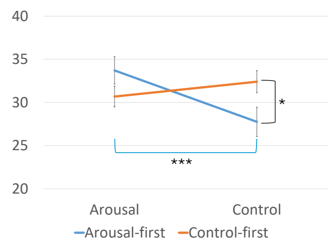

Figure 6: Total immersion score (Condition × Order).

Subjective outcomes (character liking). A two-way ANOVA on character liking ratings (Condition × Order) revealed a significant main effect of Condition ($F(1, 47) = 10.06$, $p < .01$): in the Arousal condition, the protagonist-favored character (NPC2) was rated higher and the protagonist-disfavored character (NPC3) was rated lower than in the Control condition. These findings support RQ1 by showing that the Arousal condition systematically shifted liking ratings in the direction of the protagonist's affective stance.

Subjective outcomes (direct comparisons, immersion, affect). In direct comparisons between conditions, we formulated a null hypothesis that the median of the results was zero, performed sign correction to ensure responses under experimental conditions yielded positive values, and conducted a one-sample Wilcoxon signed-rank test for each. As a result, participants rated "character design" ($p < .05$) and "story" ($p < .05$) higher in the Arousal condition (see Figure 5).

For the total immersion score, a two-way ANOVA was used to analyze the two factors, "condition (arousal or control)" and "order (arousal-first or control-first)." As a result, there is a significant difference in interaction ($F(1, 47) = 16.25$, $p < .01$). Testing the simple main effect revealed significantly higher score in the Arousal condition of the arousal-first group ($F(1, 47) = 19.57, p < .001$) and significantly lower score in the control-first group of the Control condition ($F(1, 94) = 5.19, p < .05$) . (see Figure 6).

For the total affective state score in each quadrant of Russell's circumplex model, a two-way ANOVA was used to analyze the two factors, "condition (arousal or control)" and "order (arousal-first or control-first)." In the quadrant I (high arousal–positive valence; e.g., fun, happy), interaction was observed ($F(1, 47) = 5.14$, $p < .05$). Testing the simple main effect revealed significantly higher score in the Arousal condition of the arousal-first group ($F(1, 47) = 4.50$, $p < .01$). No significant differences were observed in other quadrants II to IV. (II:$F(1, 47) = 0.24$, $p = .63$, III:$F(1, 47) = 0.50$, $p = .49$, IV:$F(1, 47) = 1.75$, $p = .19$). However, in the quadrant III, there was a significant difference in the main effect for Conditions ($F(1, 47) = 6.11$, $p < .05$). (see Figure 7). Taken together, these results partially support RQ2: the Arousal condition produced significantly more positive affective states specifically in the arousal-first group (Quadrant I), and reduced negative affect (Quadrant III main effect), although effects were not uniform across all participants and affect quadrants.

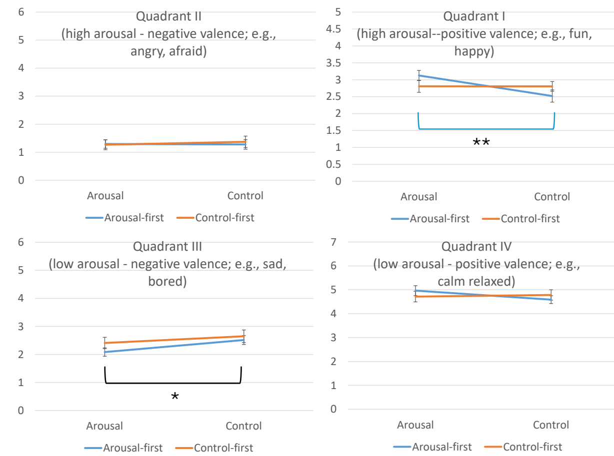

Figure 7: Affective state results summarized by circumplex quadrants.

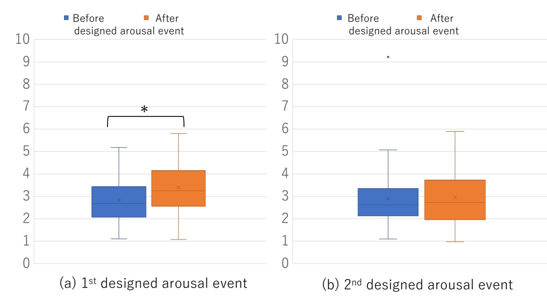

Figure 8: Change in CSI before vs. after an designed arousal event.

Physiological outcome (CSI). Comparing CSI values using paired t-test in the 30 s interval immediately before and after designed arousal events within the Arousal condition, CSI increased significantly after the first event ($t(45) = -2.60$, $p < .05$). However, no significant change in CSI was observed around the second arousal event (see Figure 8). These results partially support RQ3: sympathetic activation was successfully induced at the first arousal event, although the effect did not replicate at the second event.

Discussion

Overall, the results provide partial support for the proposed Arousal Induction Model, suggesting that it can improve emotional engagement and experience quality in interactive narrative experiences under certain conditions.

A central finding is that users in the Arousal condition more strongly exhibited character preferences aligned with the protagonist's affective stance, and also rated the protagonist-favored character (NPC2) higher and the protagonist-disfavored character (NPC3) lower on direct liking scales. This pattern suggests that the proposed approach enabled participants not only to understand the narrative logically but also to emotionally align with the protagonist's position. Higher ratings for story and character design, together with more positive affective states in the arousal-first group, suggest an improvement in overall quality of experience.

These subjective and behavioral changes are supported by physiological evidence. The CSI results confirm that staging induced sympathetic activation at the first arousal event, which strengthens the plausibility of our account under the two-factor theory (Schachter & Singer, 1962). In other words, staging-induced physiological arousal appears to have combined with cognitive interpretation in the narrative context to yield a stronger emotionl experience.

The finding that both character design and story were rated more highly in the Arousal condition is also informative. Over-the-shoulder framing consistently aligned the user's viewpoint with the protagonist's line of sight, while amplified gestures and facial expressions made key characters more perceptually and emotionally salient. This likely helped participants encode not only who mattered in the scene, but also how the protagonist felt about them. The resulting effect was not a general increase in liking; rather, the staging selectively amplified the protagonist's affective stance toward each character. In this sense, the model appears to function as a form of *character framing*.

The same logic helps explain the story evaluation results. By ensuring that participants attended to narratively relevant targets at moments of strongest audiovisual staging, the model may have improved both narrative comprehension and the sense of being present in the unfolding scene. This interpretation is consistent with transportation theory (Green & Brock, 2000): when users are cognitively directed toward key plot points while simultaneously physiologically activated, the story's emotional arc may become more coherent and impactful. Taken together, the results suggest that the model operates not only at the level of momentary arousal, but also at the level of narrative coherence and character salience. Future work should disentangle the relative contributions of attentional focus control and arousal induction to these dimensions.

Our findings align with prior work on perspective-taking, neurocinematics, and habituation. The behavioral alignment effect is consistent with research showing that VR perspective-taking can shift attitudes and increase empathy (Seinfeld et al., 2018; Van Loon et al., 2018). The physiological result extends neurocinematics by suggesting that cinematic techniques can shape viewers' responses even in interactive settings (Hasson et al., 2008). The order effect on immersion and affect, as well as the absence of a CSI effect at the second arousal event, are also consistent with previous research suggesting that narrative transportation and arousal levels may be influenced by repeated exposure in narrative and physiological experience (Gilleade et al., 2005; Green & Brock, 2000).

The study also contributes to several research conversations. For work on VR as an empathy machine, it offers concrete staging methods for shaping emotional engagement rather than simply assuming that immersion will suffice. For physiological computing, it suggests a complementary view in which physiology is treated as an outcome to be shaped by design, not only as an input for adaptation. For cinematic VR and attention guidance, it provides empirical support for the idea that match-cut-like transitions and over-the-shoulder framing may influence higher-order outcomes such as emotional engagement and story evaluation.

Several limitations and future directions remain. Immersion showed an order effect, indicating that novelty and freshness may strongly moderate the experience. The physiological effect was not replicated at the second arousal event, suggesting possible habituation or local narrative timing effects. Individual differences in trait empathy may also have influenced the results, and the sample was limited to young adults from a single university, reducing generalizability. Future work should therefore test more diverse populations, isolate attention guidance and arousal induction in separate conditions, and explore adaptive staging based on real-time gaze and physiological data.

Conclusion

This study addressed the challenge of deepening emotional engagement in interactive narrative experiences by proposing an Arousal Induction Model that integrates cinematic staging techniques with psychological emotion theory. We investigated whether the model promotes protagonist-aligned character preferences (RQ1), improves subjective narrative evaluations and affective states (RQ2), and induces measurable physiological arousal (RQ3).

In an experiment using a narrative role-playing game (N = 49), we found converging behavioral, subjective, and physiological evidence that partially supports all three questions. The Arousal condition promoted protagonist-aligned character preferences, improved story and character evaluations, increased positive affect in the arousal-first group, and elicited sympathetic activation at the first designed event.

At the same time, immersion and affect showed order dependencies, the physiological effect was not replicated at the second arousal event, and the sample was limited to young adult university students. Despite these limitations, the findings provide design guidance and a practical framework for staging emotion in interactive narratives in HCI.

References

Dorr, M., Martinetz, T., Gegenfurtner, K. R., & Barth, E. (2010). Variability of eye movements when viewing dynamic natural scenes. *Journal of Vision*, *10*(10), 28.

Dutton, D. G., & Aron, A. P. (1974). Some evidence for heightened sexual attraction under conditions of high anxiety. *Journal of Personality and Social Psychology*, *30*(4), 510–517.

Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology*, *78*(4), 708–724.

Gilleade, K. M., Dix, A., & Allanson, J. (2005). Affective videogames and modes of affective gaming: Assist me, challenge me, emote me. *Proceedings of DiGRA*.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*(5), 701–721.

Grogorick, S., Stengel, M., Eisemann, E., & Magnor, M. (2017). Subtle gaze guidance for immersive environments. *Proceedings of the ACM Symposium on Applied Perception*.

Hasson, U., Landesman, O., Knappmeyer, B., Vallines, I., Rubin, N., & Heeger, D. J. (2008). Neurocinematics: The neuroscience of film. *Projections*, *2*(1), 1–26.

Milk, C. (2015). How virtual reality can create the ultimate empathy machine.

Osanai, H., & Kusumi, T. (2016). Reliability and validity of the narrative transportation scale in japanese. *The Japanese Journal of Personality*, *25*(1), 50–61.

Pastel, S., Chen, C.-H., Martin, L., Naujoks, M., Petri, K., & Witte, K. (2021). Comparison of gaze accuracy and precision in real-world and virtual reality. *Virtual Reality*, *25*(1), 175–189. https://doi.org/10.1007/s10055-020-00449-7

Pizzi, D., Charles, F., Lugrin, J.-L., & Cavazza, M. (2007). Interactive storytelling with literary feelings. *International Conference on Affective Computing and Intelligent Interaction*, 630–641.

Pope, A. T., Bogart, E. H., & Bartolome, D. S. (1995). Biocybernetic system evaluates indices of operator engagement in automated task. *Biological Psychology*, *40*(1-2), 187–195.

Rothe, S., Buschek, D., & Hußmann, H. (2019). Guidance in cinematic virtual reality-taxonomy, research status and challenges. *Multimodal Technologies and Interaction*, *3*(1), 19.

Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, *39*(6), 1161–1178.

Schachter, S., & Singer, J. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, *69*(5), 379–399.

Seinfeld, S., Arroyo-Palacios, J., Iruretagoyena, G., Hortensius, R., Zapata, L. E., Borland, D., de Gelder, B., Slater, M., & Sanchez-Vives, M. V. (2018). Offenders become the victim in virtual reality: Impact of changing perspective in domestic violence. *Scientific Reports*, *8*(1), 2692.

Thue, D., Bulitko, V., Spetch, M., & Wasylishen, E. (2007). Interactive storytelling: A player modelling approach. *Proceedings of the 3rd Artificial Intelligence and Interactive Digital Entertainment Conference*.

Van Loon, A., Bailenson, J., Zaki, J., Bostick, J., & Willer, R. (2018). Virtual reality perspective-taking increases cognitive empathy for specific others. *PloS one*, *13*(8), e0202442.

Van Sijll, J. (2005). *Cinematic storytelling: The 100 most powerful film conventions every filmmaker must know*. Michael Wiese Productions.