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Article

The Winner Doesn't Take It All: Analyzing Audience Responses to an Inspirational Sports Narrative

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Abstract
Applying a dual-process rationale, this study explored the cognitive and affective mechanisms involved in the processing of hedonic versus eudaimonic film clips and their putatively distinct inspirational effects. The two types of narratives were operationalized in terms of complete and incomplete goal satisfaction in the film endings. Participants either watched the final boxing match from *Rocky*, where the protagonist loses the fight, but achieves self-mastery and finds love (eudaimonic narrative) or from *Rocky II*, where he wins against his opponent (hedonic narrative). A combination of continuous measures of how pleasant participants felt (slider ratings) and psychophysiological measures (heart rate, galvanic skin response [GSR], pulse volume amplitude [PVA]) indicating cognitive load and arousal was used to track the audience responses while watching a compilation of the same intro and the different fight versions. Results revealed that arousal was more strongly associated with participants' affective scores during the hedonic (winning) version than during the eudaimonic (losing) one. Furthermore, participants experience more positive affect and arousal after watching the protagonist win the match compared to those that watched him lose. Lastly, participants in the eudaimonic condition were more likely to be inspired to exercise afterward. Implications of our results are discussed.

Keywords
arousal; entertainment; eudaimonic media; hedonic media; inspirational media; psychophysiology

Issue
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1. Introduction

It has long been known that the effects of media entertainment can go beyond mere enjoyment and delight, for instance with content designed to "enlighten through the exhibition of the fortunes or misfortunes of others" (Zillmann & Bryant, 1986, p. 303). Such inspiring offerings can exceed the mere delight we experience when we watch a character's accomplishments, be it in love, sports, or an intellectual challenge, which may cause deeper reflection and stimulate the audience to strive for self-mastery (Oliver et al., 2018). Accordingly, media scholars have suggested a conceptual divide between entertainment content created to be enjoyed (i.e., hedonic content) or to be appreciated (i.e., eudaimonic content; Oliver & Bartsch, 2010; Oliver & Raney, 2011). Hedonic offerings, such as comedies or action films, allow audiences to reduce stress and negative emotions through pleasure, thrill, or humor (Oliver & Raney, 2011). In contrast, eudaimonic offerings, such as tragedies or high dramas, entice audiences to deliberate on the meaning behind complex ideas such as death, moral ambiguity, or aesthetic value (see Oliver, Bailey, Ferchaud, & Yang, 2017, for review). While in general terms eudaimonic entertainment is defined by its capacity to elicit more complex cognitive responses or affective experiences

(Oliver & Bartsch, 2010), a subset of eudaimonic content, called *inspirational or self-transcendent* media content, is specifically meant to "provide awareness of and insight into the beauty and tragedy of the human condition; elevate receivers from their mundane concerns; and increase interconnectedness with others, with their surroundings, and with causes beyond themselves" (Oliver et al., 2018, p. 384). While there is a growing consensus about the narrative features that characterize inspirational content, the psychological mechanisms underlying its processing from the audience side are not yet well understood.

The current study addresses this knowledge gap. Building upon previous research (Clayton et al., 2019), we combine continuous response and psychophysiological measures with the outcome measures of enjoyment and appreciation to disentangle the cognitive and emotional processes pertinent to the reception of inspirational content as compared to simple hedonic entertainment. The physiological measures used in this study include standard parameters, such as GSR and heart rate as indicators of physiological arousal and cognitive load (Lang, 2000; Ravaja, 2004) as well as PVA, a parameter that has rarely been used in media research so far, but that has recently proved a reliable indicator of narrative suspense (Bente, Kryston, Aley, & Rheu, 2019). Applying a dual-processing framework, we operationalize the distinction between non-inspiring (hedonic, delighting) and inspiring (eudaimonic, thought-provoking) entertainment offerings through one critical content feature explicated in the literature (i.e., the occurrence of a completely satisfying vs. partially satisfying ending; Lewis, Tamborini, & Weber, 2014; Oliver & Hartmann, 2010). To keep most other features of the stimulus material widely consistent, we use clips from two movies in the same franchise (i.e., the *Rocky* series) but have been described as distinctly promoting either a more inspirational (*Rocky*, for clarity reason called *Rocky I* in the following) or a more non-inspirational (*Rocky II*) processing pathway (Dale et al., 2017). In fact, both movies differ exactly with regard to the type of endings presented with *Rocky I* having a partially satisfying ending and *Rocky II* having a completely satisfying ending. Furthermore, since *Rocky I* is a sports movie, containing exercise and aspects of self-mastery, it is also ideal to measure its inspirational effects beyond deliberation. In this line, we additionally measured appeal and physical exercise motivation as a potential outcome of watching crucial sections of both versions.

1.1. Applying Dual-Process Rationale to Entertainment

While dual-process models have mainly been used within media research to understand how messages can persuade audiences (Petty & Cacioppo, 1986), some scholars suggest applying its rationale to explain the appeal of hedonic versus eudaimonic entertainment (Bartsch, Kalch, & Oliver, 2014; Lewis et al., 2014; Roth et al., 2018). Rooted within the vast literature in social and cognitive psychology, dual-process models typically postulate two distinct processing routes that individuals use to comprehend and evaluate the world around them. The first route, called the *intuitive route*, uses preconscious heuristics to make quick and automatic judgments. The second route, called the *deliberative route*, employs post-conscious elaborations to make slow and controlled judgments (Gawronski & Creighton, 2013).

When applied to entertainment, a dual-processing rationale aligns with previous scholars' description of how audiences process, enjoy, and appreciate hedonic and eudaimonic content (Bartsch et al., 2014; Lewis et al., 2014). In line with theories tying mood states with elaboration (e.g., Schwarz, 2012), media scholars have argued that while watching hedonic content, audience members may employ the intuitive route to respond quickly and reflexively with little thought. This, in turn, may lead to greater enjoyment. On the other hand, when watching eudaimonic content, audiences may employ the deliberative route to respond more slowly and thoughtfully. This, in turn, may lead to greater appreciation (cf. Tamborini, Grady, Baldwin, McClaran, & Lewis, 2021).

Media scholars have long argued that cues in entertainment content can motivate audiences to attend to particular elements within a narrative (Lang, 2000) and will invest cognitive effort to comprehend and evaluate the offerings (e.g., Knop-Huelss, Rieger, & Schneider, 2020; Lang, Kurita, Gao, & Rubenking, 2013). However, little is known about the narrative features that lead audiences to engage in one processing route or the other (Tamborini et al., 2021). Some research points to the critical role of the narrative endings to distinguish between hedonic and eudaimonic entertainment (Lewis et al., 2014; Oliver & Hartmann, 2010). For instance, Lewis, Grizzard, Choi, and Wang (2017) observed that movies with mixed or tragic endings such as *Schindler's List*, *Forrest Gump*, and *Titanic* are generally more appreciated whereas movies with happier endings such as *The Avengers*, *Shrek 2*, and *Transformers 3* are generally more enjoyed. From this literature, the authors stress the importance of a protagonist's complete versus incomplete goal attainment as a formal story feature that might explain enjoyment and appreciation. Hence, here we focus on this well operationalizable formal feature: a story's fully/partially satisfying resolution.

In line with dual-process logic, a partially satisfying resolution is assumed to prompt deliberative processing elicited by an unresolved conflict in the mind of audiences (Pennycook, Fugelsang, & Koehler, 2015). This would not be the case for a fully satisfying resolution, where no cognitive conflict is expected. Therefore, we expect that a partially satisfying resolution elicits greater appreciation while a completely satisfying resolution elicits greater enjoyment. Lewis et al. (2014) demonstrated support for this rationale in two studies. In their first study, the researchers presented a series of short stories with either a happy, sad, or mixed ending and found

that participants took longer to rate their liking of the stories with mixed and sad endings compared to the stories with happy endings. In a follow-up study, the researchers found that participants appreciated stories with mixed endings, while they enjoyed stories with happy endings the most. However, a major limitation of these studies lies in the use of short written stimuli that make it difficult to generalize to other media, such as film. Furthermore, most studies exploring the effects of inspirational entertainment have used short online video as stimuli (e.g., Clayton et al., 2019) that differed in many respects from a film. Against this background, the current study aims to replicate Lewis et al.'s (2014) findings using a pair of very similar film stimuli (in genre, main story, protagonists) to analyze the putatively distinct effects of hedonic versus eudaimonic offerings. In accordance with Lewis et al. (2014) we formulated the major research hypotheses:

> H1: Participants will experience higher enjoyment for the hedonic movie (with a fully satisfying ending) compared to the eudaimonic movie (with a partially satisfying ending);
>
> H2: Participants will experience a lower appreciation for the hedonic movie (with a fully satisfying ending) compared to the eudaimonic movie (with a partially satisfying ending).

1.2. Physiological Response to Hedonic versus Eudaimonic Entertainment

While it may be easy to identify different film genres as more hedonic or eudaimonic in terms of audiences' enjoyment and appreciation, it may be short-sighted to set this distinction solely on post-viewing evaluations. Post-hoc audience judgments do not reflect more subtle variations during the processing of the narrative, and they can be influenced by general genre knowledge (e.g., action movies are typically hedonic). Importantly, we can expect that for any movie, different scenes may activate distinct processing routes. For instance, within a eudaimonic narrative such as *Rocky I*, there will be scenes wherein the intuitive route is used. For example, the dynamics during the boxing matches would prompt the audiences to focus on low-level, intuitive events (e.g., the hits taken or given, who is winning/losing, etc.). In contrast, the ending of the fight scene may leave room for contemplation if the outcome does not match the audiences' expectations or desires (e.g., Rocky loses the fight). To understand these dynamic changes in cognitive and affective audience responses it has been suggested to use continuous psychophysiological measures of arousal and cognitive load (Lang et al., 2013; Lang, Potter, & Bolls, 2009; Ravaja, 2004). Bartsch et al. (2014) argued that eudaimonic entertainment elicits physiological markers related to an increase of mixed affect, an increased level of cognitive effort, and a moderate (but not high) increase in physiological arousal. They also reasoned that while the deliberative processing route can be triggered by the aversive motivational system when physiological arousal is moderate (Lang, 2000), very high arousal levels during an aversive event can trigger fight/flight preparations instead. Consequently, they predict that audiences will experience a medium level of physiological arousal when watching eudaimonic entertainment. However, empirical evidence for this claim is widely missing.

In fact, there have only been a few studies that have specifically investigated the physiological responses to eudaimonic entertainment. Clayton et al. (2019) observed that transcendent (i.e., elevating and uplifting) videos elicited higher physiological arousal (through increased skin conductance), higher cognitive effort (through decreased heart rate), higher negative affect (through corrugator activation), and lower positive affect (through orbicularis oculi activation) compared to a series of humorous videos. Additionally, during the climax of the transcendent videos, they found an increase in negative affect and an increase in cognitive effort, but also a decrease in arousal. Similarly, Wassiliwizky, Jacobsen, Heinrich, Schneiderbauer, and Menninghaus (2017) found that negative affect increased (through corrugator activation) during emotional peaks in moving movies. However, contrary to Clayton et al. (2019), they also found an increase in positive affect (through zygomaticus activation) and arousal (through increased skin conductance, heart rate, and respiration) during these scenes. Overall, psychophysiological evidence for distinct processing modes elicited by hedonic versus eudaimonic content is scarce, and the few results are equivocal.

Against this background, hypotheses have to be formulated with caution. Based on the logic that a partially satisfying resolution will produce more unresolved conflict compared to a fully satisfying resolution (Pennycook et al., 2015), we should see audiences using a higher amount of cognitive effort while watching a partially satisfying ending compared to a fully satisfying ending (indicated with heart rate). Furthermore, we should expect that an audience would experience more positive affect (indicated with a real-time response) while watching a fully satisfying ending due to the lack of any cognitive conflict and less positive affect when watching a partially satisfying ending due to the presence of cognitive conflict (Bartsch et al., 2014). We expect these differences to be apparent in psychophysiological measures (details in the method section). To cross-validate these measures on the process level against subjective audience evaluations we also include continuous audience ratings (see Bente, Aelker, & Fürtjes, 2009). From this, we formulate the following working hypotheses:

> H3: Participants will experience higher positive affect after watching the climactic peak of the hedonic movie (with a fully satisfying ending) compared to the eudaimonic movie (with a partially satisfying ending);

H4: Participants will experience lower cognitive effort after watching the climactic peak of the hedonic movie (with a fully satisfying ending) compared to the eudaimonic movie (with a partially satisfying ending);

H5: Participants will experience higher physiological arousal after watching the climactic peak of the hedonic movie (with a fully satisfying ending) than after the climactic peak of a eudaimonic movie (with a partially satisfying ending).

We further asked how far the different reception modes are facilitated by the experience of suspense, which constitutes a crucial variable in the enjoyment of media narratives. As postulated in earlier work, subjective experience of suspense is correlated with physiological arousal (Bente et al., 2019; Vorderer, 1996). While suspense has typically been associated with hedonic entertainment (Oliver & Raney, 2011; Tsay-Vogel & Krakowiak, 2016), there is evidence that it might be independent of audiences' enjoyment and appreciation of a narrative (Oliver & Bartsch, 2010). To further explore this possibility, we formulated the following research question:

RQ1: Will participants experience higher suspense after watching the hedonic (with a fully satisfying ending) movie or the eudaimonic movie (with a partially satisfying ending)?

1.3. Inspirational Media Effects Beyond Contemplation

As Oliver et al. (2018) have pointed out, media content can not only induce deep-thinking and intense feelings but also *inspire* audiences to model the goals and behaviors performed by the protagonist. So-called self-transcendent entertainment may be one way to motivate and inspire audiences by presenting "something that is better or more important than one's usual concern" (Thrash & Elliot, 2004, p. 957). Recently, media scholars have suggested that transcendent content found in some eudaimonic entertainment offerings can motivate proactive—particularly self-enhancing—behaviors (Rieger, Frischlich, & Oliver, 2018). However, empirical evidence for this claim has been mixed. Some studies demonstrate a relationship (e.g., Rieger et al., 2018), while others do not (e.g., Das, Nobbe, & Oliver, 2017). The reason for this discrepancy might lie in the complex nature of the inspiration phenomenon. In fact, multiple processes may be involved when it comes to a movie's ability to inspire audiences. For instance, inspiration may involve both vicarious learning and deliberation simultaneously.

According to social cognitive theory (Bandura, 1986), audiences are more motivated to vicariously learn and model behaviors portrayed in entertainment that are ultimately rewarded, such as those in simple hedonic narratives. However, it could also be the case that behaviors that are only partially rewarded are even more inspiring since the potential cognitive conflict could prompt deliberative processing. In line with the elaboration likelihood model (Petty & Cacioppo, 1986), one can expect that audience's positive attitudes towards a behavior would be stronger if initially processed through the deliberative route. Therefore, it might be the case that eudaimonic movies with partially satisfying endings can be highly inspirational, since they contain both a rewarded behavior that fosters vicariously learning as well as cognitive conflict that prompts deliberation. In our case, we could expect that *Rocky I*, where the protagonist's efforts (i.e., intensive training) are only partially rewarded (obtaining love and self-mastery but losing the fight), would be more inspirational than *Rocky II.* This should lead to a higher motivation to adopt the modeled behaviors portrayed in the movie. We begin exploring this idea with the following research question:

RQ2: Will participants more likely report a motive to exercise after watching the hedonic movie (with a fully satisfying ending) or the eudaimonic movie (with a partially satisfying ending)?

2. Methods

2.1. Participants

To compare the two types of narratives (a hedonic movie with a fully satisfying ending and a eudaimonic movie with a partially satisfying ending) a between-subject experiment was conducted. Student participants ($N = 89$) were recruited for the study. Three participants were dropped due to technical error or unresponsiveness, leaving a total sample of 86 participants ($M_{age} = 20.41$, $SD_{age} = 2.33$, 52.33% female, 68.60% white). Physiological and real-time measurements were successfully recorded for 80 participants, and 82 participants fully completed the questionnaire portion of the study.

2.2. Stimuli

Edited excerpts from the movies *Rocky I* and *Rocky II* were used as stimuli for the two conditions combining identical sections showing the preparation for the fight and distinct sections showing the decisive fight itself. This material was chosen for several reasons. First, previous research has reported that audiences consider the original *Rocky I* to be an inspiring movie (Dale et al., 2017). Second, both movies conclude with a boxing match between the main character and the same opponent (Apollo Creed) in the same arena but with different outcomes. In *Rocky I*, the protagonist loses the match, while in *Rocky II*, the protagonist wins the match. Lastly, *Rocky I* provides scenes in which the protagonist does an exercise routine that requires a great effort that audiences could potentially be inspired by. Therefore, the *Rocky II* winning fight was presented to participants in

the hedonic condition, and the *Rocky I* losing fight was presented to participants in the eudaimonic condition.

Both stimulus movies began with a three-minute nature clip with relaxation music to set participants at a baseline state of low arousal (see Figure 1). Afterward, the movie clips in both conditions showed several scenes from the original *Rocky I* including an exercise montage scene (4 minutes, 20 seconds) followed by a scene where Rocky interacts with the love interest (3 minutes). Afterward, the two movie clips diverged; one showing the final fight scene from the first movie where Rocky comes close to winning the fight but loses (17 minutes 51 seconds) and the sequel where Rocky wins the fight against Apollo (19 minutes 40 seconds). The total lengths of movie clips were 30 minutes for the hedonic condition and 28 minutes, 11 seconds for the eudaimonic condition.

2.3. Measures

Before watching the movie, participants first reported their gender and whether they had seen any of the movies from the *Rocky* series before (yes/no) and if so which ones.

Continuous measures of the audience responses during viewing included physiological data, collected via finger sensors, and real-time response data (RTR) collected via an on-screen slider rating. Physiological data consisted of photoplethysmographic (PPG) recordings of the peripheral blood flow and GSR. From the PPG recordings, we extracted the inter-beat interval (IBI; equivalent to heart rate) to serve as a measure of cognitive load, as reflected in heart rate deceleration (Lang et al., 2009) as well as the PVA (i.e., the amplitude of the pulse curve) as an additional arousal measure, complementing GSR that has classically been used for to indicate arousal in media research. Bente et al. (2009, 2019) recently demonstrated that variations in PVA (vasodilation and vasoconstriction) are particularly sensitive to suspense, indicating arousal patterns akin to tension and relief. We, therefore, included this measure here. We used a commercial device with easy-to-apply finger clips for physio measurements (IOM1, Lightstone, see Figure 2a). Continuous subjective audience ratings of the film were input using the arrow keys on the keyboard (from −4 = very unpleasant, to +4 = very pleasant) and displayed on the right side of the screen (see Figure 2b).

After finishing the movie clip, participants first answered a manipulation check item, "Who won the fight?" with the choice of Rocky or his opponent, Apollo, as options. Following this, enjoyment and appreciation were measured with six items on a 7-point Likert scale ($M_{\text{enjoyment}} = 5.80$, $SD_{\text{enjoyment}} = 1.21$, Cronbach's $\alpha_{\text{enjoyment}} = .94$; $M_{\text{appreciation}} = 5.09$, $SD_{\text{appreciation}} = 1.30$, Cronbach's $\alpha_{\text{appreciation}} = .86$; Oliver & Bartsch, 2010). Afterward, perceived suspense was measured with one item, "How much suspense did you feel during the movie?" on a 1 ("Not suspenseful") to 7 ("Very suspenseful") scale ($M = 5.09$, $SD = 1.28$).

Finally, participants' willingness to exercise was measured by asking two yes/no items, "I intend to engage in at least 30 minutes of moderate aerobic activity tomorrow" and "at least 15 minutes of vigorous aerobic activity tomorrow" (Conroy, Elavsky, Doerksen, & Maher, 2013, p. 4). These items are based on the U.S. Department of Health and Human Service's recommendation to either engage in 150 minutes of moderate or 75 minutes of vigorous exercise over five days (Physical Activity Guidelines Advisory Committee, 2008). A confirmatory factor analysis examined whether the two exercise motivation items loaded together. To avoid underidentification, the model included the two items of exercise motivation, the three items for enjoyment, and the three items for appreciation as separate factors, χ^2 (17) = 33.90, *CFI* = .97, *TLI* = .94, *RMSEA* = .11. Inspection of the individual factor loadings revealed that the second exercise motivation item was insignificant

Figure 1. Timeline of stimuli between conditions.

Figure 2. Methods to capture participants' continuous responses: **(a)** Commercial sensor; **(b)** onscreen RTR scale.

($\lambda = .55$, $p = .36$). Since both exercise items were dichotomous and measured the recommend daily amount of exercise by experts, we decided to collapse the two items into an index in which either items reported as "yes'' = 1 and both items reported as "no" = 0. Applying this collapsed index to a revised model produced similar fit, χ^2 (12) = 27.28, *CFI* = .97, *TLI* = .94, *RMSEA* = .13. Overall, 72.09% of participants displayed a motivation to exercise.

2.4. Procedures

On arrival, participants were placed at a desk in front of a 21-inch computer screen and were first asked to answer a few questionnaire items. Then they read a synopsis about the movie they were about to watch (the synopsis was the same across conditions). Afterward, physio sensors were applied to the non-dominant hand asking the participants to keep this hand still and relaxed while watching the stimulus video. The researchers then explained to participants how to handle the RTR slider using the keyboard. Participants were asked to continuously indicate how they felt throughout the movie on the 9-point scale ("very pleasant" to "very unpleasant"). They were then instructed to use the first three minutes, in which a nature video was shown, to relax. Participants were told that they could quit the experiment at any time if they felt uncomfortable, without any negative consequences. Then the video was started, and the experimenter left the room. Sensors began recording simultaneously with the start of the video stimuli and data was recorded at the video's frame rate. After watching the movie, the participants completed a questionnaire that included measures for suspense, enjoyment, appreciation, and exercise motivations. An Internal Review Board approved all procedures.

3. Results

A detailed output of all results can be found in the OSF repository for this study: https://osf.io/pn3tj/?view_only=2bd8163491fd4d7c8306af1c59ae916c

3.1. Pre-Processing of Physiological Data

IBI, as well as PVA, were extracted from the PPG data. The PPG raw pulse curves were submitted to HeartPy's automated peak detection and the resulting peak data were manually inspected to correct peak detection errors using an author-created Visual Basic 6.0 program. Based on the cleaned peak data we then calculated IBI as an indicator for cognitive load (i.e., heart rate deceleration = increased IBI) and PVA as an arousal indicator. All three physio parameters—IBI, PVA, and GSR—were further preprocessed using individual baseline correction (differences from the average during the relaxation phase). Using the 'scipy.filter' library, we applied lowpass filters to all three physio measures—IBI, PVA, and GSR. For the overall time graphs (30 minutes) and the time-based correlations, we applied a filter constant of .05 to suppress higher frequency variations putatively unrelated to scenic changes in the narrative. For the event-related ANOVAs (15 seconds before and after the end of the fight), we applied a filter constant of .5 to be more sensitive to short-term changes during this critical part of the film. Using the 'LinearRegression' module from 'sklearn.linear_model' PVA and GSR data were detrended (i.e., apparent linear trends over time were eliminated). Finally, physio data streams were z-transformed for each individual time series to level out scale differences before averaging.

3.2. Manipulation Check and Preliminary Results

As a manipulation check, a 2 (conditions) X 2 (who won: Rocky or Apollo) chi-square test was conducted to see if participants correctly identified who won the fight in each condition. Participants were more likely to answer that Rocky won in the winning condition (100%) and to answer that his opponent, Apollo, won in the losing condition (84.44%), χ^2 (1) = 58.23, $p < .001$, $\phi = .843$.

We then checked to see whether the participants overall enjoyed, appreciated, and felt suspense by conducting a series of one-sample t-tests. These tests

revealed that, overall, participants reported experiencing enjoyment ($t(81) = 13.50$, $p < .001$), appreciation ($t(81) = 7.64$, $p < .001$), and suspense ($t(80) = 7.66$, $p < .001$) significantly above the mid-point of their respective scales.

We then inspected the correlations of the real-time and physiological measurements within and between conditions (see Figure 3). As a test of reliability, we compute the between-group correlations for PVA, GSR, IBI, and RTR during the time participants watched the

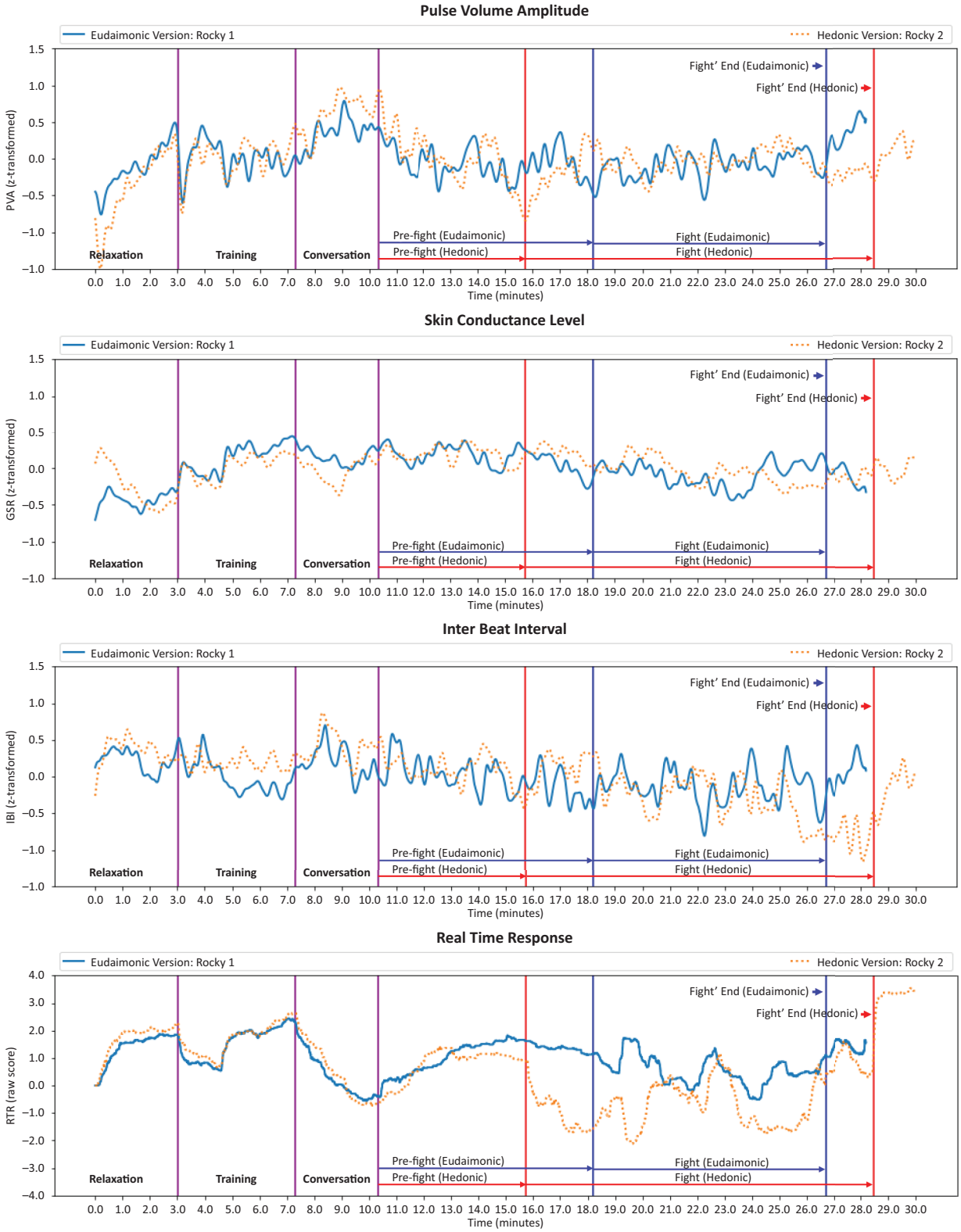

Figure 3. Psychophysiological responses (IBI, PVA, GSR) and audience ratings of pleasure (RTR) during hedonic and eudaimonic stimulus presentation. Note: Lower PVA values indicate arousal (vasoconstriction).

same clips (see Table 1). During the relaxation nature clip, PVA, IBI, and RTR were moderately or highly correlated between the two conditions ($rs \geq .33$). This was not the case for GSR ($r = .05$), casting some doubt on the robustness of this measure. During the period where participants watched the same *Rocky* clips (i.e., the exercise montage and conversation scenes), all measures were either moderately correlated or highly correlated ($rs \geq .51$). As expected, all correlations (except for the GSR during the relaxing video) were significantly higher during the relaxation nature clip and the exercise montage (consistent across conditions) than during the fight clips (manipulated between conditions).

Because PVA showed the most robust pattern across the two conditions, we further asked how this arousal indicator correlates with the subjective RTR ratings (see Table 2). For the identical sequence in both conditions (i.e., exercise montage) we found equally high negative correlations. The lower the PVA (vasoconstriction indicating arousal), the higher were the RTR valence ratings. Interestingly, while PVA was negatively correlated with RTR during the fight in both conditions, once the fight ended, while PVA was still negatively correlated with RTR in the eudaimonic condition, both these measures were positively correlated in the hedonic condition.

3.3. Results of Primary Analyses

To test H1 and H2, two t-tests were conducted to observe whether enjoyment and appreciation differed between conditions. No significant differences were observed for enjoyment or appreciation, $ts < 1$. Thus, our results were not consistent with H1 or H2.

To investigate H3, H4, and H5, we created collapsed measures of RTR, IBI, GSR, and PVA to examine 15 seconds before the final fight (which we called 'pre-climatic scores') and 15 seconds after the end of the fight (which we called 'climatic scores'). At this point, the protagonist is shown to have won the fight in *Rocky II* while in *Rocky I* there is not an immediate clear winner, but it is apparent the protagonist has lost the match. Each hypothesis was tested with a series of 2 (pre/post) X 2 (conditions) mixed factor ANOVAs. Changes for these measures within the 30 second time window can be seen in Figure 4.

A significant main effect on time was observed for our RTR measure, $F(1, 78) = 61.94$ $p < .001$, $\eta_p^2 = .443$, in which participants rated feeling more pleasant after the end of either fight ($MD = 1.26$, $SE = .16$). Furthermore, we observed a significant interaction effect between time and condition, $F(1, 78) = 42.99$, $p < .001$, $\eta_p^2 = .355$, which showed that participants in the hedonic condition had a greater increase in pleasure ($MD = 2.30$) compared to those in the eudaimonic condition ($MD = .21$). Thus, our findings in regard to affect were consistent with H3.

A significant time effect was also observed for IBI, $F(1, 78) = 9.38$, $p = .003$, $\eta_p^2 = .107$. Inspection of the means indicated that participants' IBI increased right after the end of the fight in both conditions ($MD = .19$, $SE = .06$). However, the interaction effect between time and condition on IBI was insignificant, $F(1, 78) = 2.65$, $p = .11$, $\eta_p^2 = .033$, indicating that the rate of increase did not significantly differ between groups. Therefore, our findings concerning cognitive effort were not consistent with H4.

A significant time effect was also observed for our PVA measure, $F(1, 78) = 20.32$ $p < .001$, $\eta_p^2 = .207$.

Table 1. Pearson correlations between the two conditions for the different process measures across the three stimulus sequences.

Sequence	Frames (seconds)	PVA	GSR	IBI	RTR
Relaxation Video (Nature Clip)	1–4,514 (181)	.93	.05	.33	.98
Consistent Clips (Exercise Montage)	4,515–15,507 (440)	.76	.73	.51	.98
Manipulated Clips (Fight *Rocky I* vs. *Rocky II*)	15,508–42,227 (1069)	.04	.44	.10	.32
Fisher z-scores: Nature vs. Fight		100.54	−26.23	15.06	122.13
Fisher z-scores: Exercise vs. Fight		84.37	40.28	44.80	173.47

Note: All correlations were significant at $p < .05$.

Table 2. Correlations for RTR with PVA for the identical exercise sequence and the distinct fight sequences between conditions.

			Stimulus version	
Movie Sequence	Frames	Seconds	Eudaimonic	Hedonic
Relaxation Video (Nature Clip)	1–4,514	181	.85	.87
Consistent Clips (Exercise Montage)	4,515–15,507	440	−.74	−.64
Manipulated Clips (Pre-Fight)	15,508–27,299/ 15,508–23,580	472/323	−.32	−.56
Manipulated Clips (Fight)	27,300–40,033/23,581–42,696	509/765	−.40	−.52
Manipulated Clips (Post-Fight)	40,034–42,285/42,697–44,976	90/91	−.29	.64

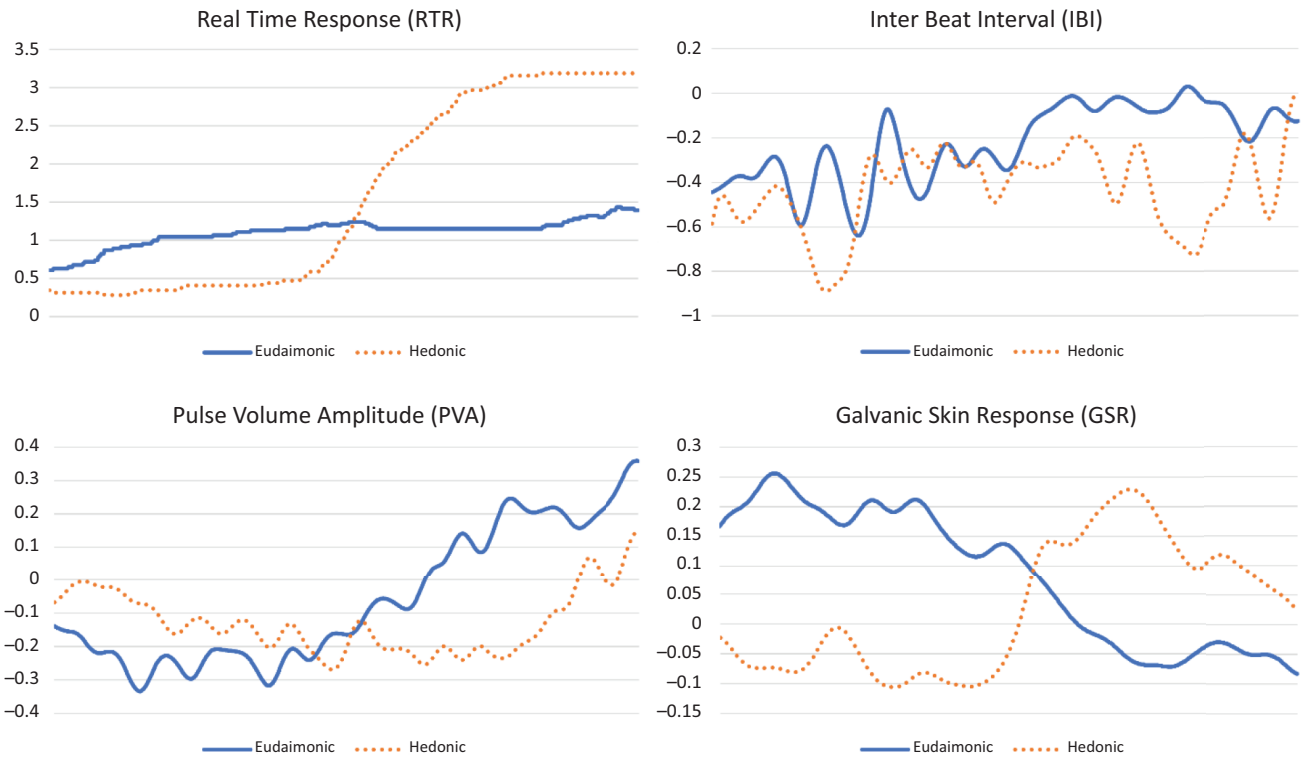

Figure 4. Time series means for the four process measures during the 15 seconds before and after the end of the fight between conditions.

Inspection of the means indicated that participants' PVA increased right after the end of the fight in both conditions (*MD* =.18, *SE* = .04). Furthermore, we observed a significant interaction effect between time and condition, $F(1, 78) = 16.20$, $p < .001$, $\eta_p^2 = .172$. Inspection of the means revealed that PVA increased for participants in the eudaimonic condition (*MD* = .33; indicating a decrease in arousal) while PVA remained stable for participants in the hedonic condition (*MD* = .02).

We then inspected the participants' GSR scores which indicated a consistent pattern with our PVA results. While the time effects were insignificant, $F < 1$, a significant interaction effect between time and condition was again observed, $F(1, 78) = 16.19$, $p < .001$, $\eta_p^2 = .172$. For participants in the eudaimonic condition, GSR decreased after the fight ended (*MD* = −.20) while it increased in the hedonic condition (*MD* = .20). These results were consistent with H5.

RQ1 was explored using a t-test to see if perceived suspense differed between conditions. Results showed that participants felt more suspense when watching the hedonic movie ($M = 5.53$, $SD = 1.30$) compared to the eudaimonic movie ($M = 4.73$, $SD = 1.16$), $t(79) = -2.91$, $p = .005$, Cohen's $d = .649$).

Lastly, RQ2 was investigated with 2 (hedonic vs. eudaimonic) X 2 (exercise motivation: yes, no) chi-square test. The chi-square test revealed that the participants who watched the eudaimonic movie were more motivated to exercise afterward (86.67%) compared to the participants who watched the hedonic movie (63.89%), χ^2 (1) = 5.78, $p = .016$, $\phi = .267$.

4. Discussion

The study aimed to gain insights into how inspirational entertainment is processed and appraised by audiences using a dual-process approach. Based on previous literature (Lewis et al., 2017; Oliver & Hartmann, 2010), we expected that hedonic and eudaimonic narratives as operationalized through complete versus incomplete goal obtainment of the main protagonist would elicit different processing routes (Lewis et al., 2014). We compared audience's responses to two rich film stimuli: *Rocky I*, which has previously been reported to be inspirational and has an ending where the protagonist does not complete all his goals (i.e., loses the fight, but gains love and admiration); and *Rocky II*, a more hedonically-toned sequel where the same protagonist does complete all of his goals (i.e., wins the fights). Our results are mixed and point to both differences as well as commonalities in the processing of the two film endings.

In line with Bartsch et al. (2014), we observed differences in audiences' affective states during the emotional climax based on whether the protagonist won or lost the fight. Specifically, participants in the fully satisfying condition quickly and drastically felt more positive after observing the protagonist win. While positive affect also increased after witnessing the partially satisfying

ending, this shift was not as dramatic. This pattern is in line with dual-processing logic and the notion that eudaimonic entertainment is more likely to elicit mixed affect (Bartsch et al., 2014). Specifically, it may be the case that a partially satisfying resolution will create unresolved cognitive conflict in the minds of audiences which may, in turn, cause them to hesitate on their evaluations of pleasure (Lewis et al., 2014).

Further support for this dual-processing framework comes from our findings related to physiological arousal. Notably, we found that PVA was more strongly tied to participants' affective scores during the overall fight in the hedonically-tone condition compared to those in the eudaimonically-tone condition. Furthermore, physiological arousal (as indicated by both PVA and GSR) significantly increased right after watching the end of the fully satisfying ending when compared to the particularly satisfying ending. This trend was also found in self-reported suspense ratings where participants rated the hedonic version as more suspenseful overall. Together, these findings demonstrate that pleasure may be inherently tied to suspense and thrills when audiences watch hedonic entertainment, but this may not be the case when consuming eudaimonic entertainment (Oliver & Raney, 2011). These findings may also suggest that the appeal of hedonic entertainment may be derived from watching intuitively designed content that elicits arousal over time. However, in line with work by Clayton et al. (2019), intuitively designed content seems to play a lesser role in the appeal of inspirational eudaimonic entertainment. We should also note that while the curve patterns between PVA and GSR were consistent with our rationale, their subtle differences still leave room for further exploration in future research.

Lastly, we observed, in line with the claim that *Rocky I* is inspirational for some viewers (Dale et al., 2017), those who watched its partially satisfying resolution were more likely to be inspired to exercise. Not only does this replicate previous research demonstrating that eudaimonic entertainment can inspire audiences to engage in self-enhancing behaviors (e.g., Rieger et al., 2018), but it also demonstrates that a partially satisfying ending may heighten these motivations. This finding further supports the use of a dual-processing perspective within entertainment research. Specifically, our finding fits well with the logic underlying the elaboration likelihood model, which suggests that while media can motivate audiences through both the intuitive and deliberative processing routes, engaging in the deliberative route can produce stronger attitudes towards a behavior (Petty & Cacioppo, 1986). In our case, the partially satisfying ending may have prompted our participants to deliberate on the importance of bettering oneself which, in turn, increased their motivation to exercise.

In light of our findings, not all of our predictions were observed. Noticeably, there was no difference in our measures of cognitive effort (measured through heart rate) between those who watched the protagonist win or lose the fight. Recently, some scholars have questioned whether the decrease in heart rate as an isolated measure is enough of a valid operationalization for cognitive effort (e.g., Keene, Clayton, Berke, Loof, & Bolls, 2017) and suggested that a triangulation of various indicators is needed to properly detect cognitive effort. Future research may want to consider using additional measures for cognitive effort such as a secondary task reaction time prompt as alternative indicators.

Furthermore, we did not see differences in enjoyment or appreciation between conditions as predicted. This may be due to our *Rocky* stimuli. Since both endings were portrayed positively (i.e., shots of a cheering crowd and appreciation from loved ones), it is not unreasonable to argue that audiences may feel a similar amount of pleasure in both conditions due to these similarities. Indeed, in a related manipulation, Zillmann (1980) found similar levels of enjoyment between audiences who watched a "very satisfying" versus a "minimally satisfying resolution" (p. 151). Since the means for both the enjoyment and appreciation scales in our study were significantly above the midpoints, it seems that our participants were able to find something in both conditions to enjoy and appreciate. While the lack of difference in these measures may raise questions as to whether our stimuli adequately represent hedonic and eudaimonic entertainment, the experimental control between the two conditions allowed us to observe whether narrative endings could be a key determinant in how audiences process and evaluate entertainment content.

Despite this, our findings show that the different types of narrative endings commonly found in (non-inspiring) hedonic and (inspiring) eudaimonic entertainment offerings could explain why we may process them differently in some cases (Clayton et al., 2019). As said before, many hedonic movies have fully satisfying endings while many eudaimonic movies have only partially satisfying endings (Lewis et al., 2017; Oliver & Hartmann, 2010). Our specific operationalization of complete versus incomplete goal attainment (i.e., winning or losing the decisive boxing fight), however, leaves room for alternative explanations of the effect found. For instance, videogame research has demonstrated a player's winning/losing can affect media enjoyment (Rieger, Wulf, Kneer, Frischlich, & Bente, 2014). Future research may want to more specifically address how the findings of videogame research could also apply to how audiences respond to a protagonist winning/losing in a narrative and thus might explain the effects found in this study.

5. Limitations and Conclusion

A major limitation of the current study can be seen in the relatively small sample sizes. In contrast to most studies of this kind using a within-subject design, we here used a between-subject design because parts of the stimuli were identical. However, a sensitivity power analysis (for

80 participants; with $\alpha = .05$ and $1-\beta = .80$) revealed that we would be able to detect effects greater than $f = .13$. This gives us greater confidence in our ability to observe changes in the continuous response measures between the two conditions.

Furthermore, even though our manipulation of fully and partially satisfying endings produced differential effects in the process variables (RTR and psychophysiology) indicating different processing routes, we did not find differences in the post-exposure measures of enjoyment and appreciation. While previous research has reported *Rocky I* to be inspirational in contrast to *Rocky II* (Dale et al., 2017), the expected difference in the audience's overall ratings might be overridden by the prominent similarities in genre, actors, and scenery. While this stimulus similarity is desirable for experimental control of the independent variable, it might be a problem if the differential aspect is comparatively subtle. Moreover, we only used one pair of stimuli from a genre that might inhibit the appreciation of a putatively eudaimonic component for some participants. As pointed out by Oliver et al. (2018), appreciative responses to eudaimonic media offerings are highly idiosyncratic and personal. In consequence, it is hard to say whether our findings would replicate with other inspirational stimuli. Future research should therefore use multiple (and diverse) stimuli to see if our findings generalize across various content types.

Finally, the use of the RTR measure required participants to consciously monitor their current feelings might have altered the physio measures. One might object that we found systematic differences in the physiological measures in both conditions, but we also found systematic differences in the RTR that might have caused these. The fact that the different physio measures were differentially correlated in different phases of the stimulus, however, speaks against such a direct influence. Nevertheless, this question should be addressed in further research comparing psychophysiological measures across groups who use or do not use RTR simultaneously. The high intergroup correlations for the physio measures obtained for the identical scenes in this study indicate robust physiological responses that can be used to infer potential influences of RTR ratings.

Our study builds upon previous literature investigating how audiences process and evaluate inspirational entertainment. Specifically, we incorporated a dual-processing rationale by manipulating the narrative ending of an inspirational movie in a psychophysiological experiment and found that audiences processed these endings differently. This suggests that different narrative endings may play a key role in distinguishing the effects of some inspirational entertainment on audience appraisal and other outcomes. Future research should explore how other narrative features such as the presence of moral ambiguity or story complexity could alter audiences' processing and evaluation of inspirational movies.

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Conflict of Interests

The authors declare no conflict of interests.

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