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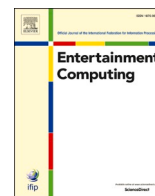
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Searching for traces of Kama Muta: Examining viewers' responses to online videos

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ABSTRACT

The past decades have seen a rise in scholarly interest in the concept of eudaimonic entertainment experiences, resulting in multiple conceptualizations of the term. Recently, one such experience is Kama Muta (“moved by love”), which is typically measured through self-reports. However, it remains unclear to what extent Kama Muta is reflected in individuals' spontaneous reactions to media content. This study examines viewers' spontaneous responses to online videos (e.g., likes, comments) and compares these to their self-reported experiences of Kama Muta. Results show that viewers' experiences of Kama Muta are mostly unrelated to the number of reactions that they post. Furthermore, topic modeling shows that Kama Muta is reflected in viewers' comments to a limited extent. We conclude that making computational methods sufficiently efficient to detect abstract constructs such as Kama Muta in short texts requires additional methodological advancements.

1. Introduction

More than three decades of research on entertainment experiences has led to various definitions of this concept. Specifically when it comes to eudaimonic entertainment experiences, there exist different definitions based on varying terminology (e.g., [1,2,3]). In general, the term eudaimonic entertainment refers to the experiences that individuals have in response to dramatic or thought-provoking media content [4,5,6,7,8]. The large body of literature conceptualizing eudaimonic entertainment has recently been complemented by literature on Kama Muta [9]. Kama Muta refers to an emotion that can emerge in response to emotional or touching media content [9]. This positive emotion has been proposed as a form of eudaimonic entertainment experiences [10].

Similar to other conceptualizations of eudaimonic entertainment experiences, experiences of Kama Muta are typically measured using self-reports (e.g., [11,12]). While such measures are valuable, relying solely on participants' (dis)agreement with pre-selected survey items leaves a critical gap: It remains unclear if the theoretical concept of Kama Muta as it is defined in the literature and described in survey items is also reflected in individuals' own and spontaneous reactions to media content or rather a result of acquiescent response bias [13]. Addressing this gap is essential, because identifying whether and how theoretical constructs are reflected in individuals' unprompted reactions to media

content can provide stronger, ecologically valid evidence for their real-world relevance. In the present case, theory on eudaimonic entertainment is based on the empirical observation that people feel entertained by and are drawn to serious and sometimes sad content. Tracing forms of eudaimonic entertainment experiences such as Kama Muta in people's own reactions to media content is a way to deductively validate such theoretical concepts, contributing to the literature.

Whereas it is important to study if Kama Muta is reflected in individuals' reactions to media content, so far, it has been difficult to do so. Gathering and analyzing spontaneous reactions was long impractical due to the limited accessibility of user-generated content. However, with the rise of social media, advances in data accessibility now make such investigations feasible. More specifically, media content is often consumed through social media, and these platforms offer users multiple opportunities to react to this content. For example, individuals watching a video on social media can react to it by writing a comment, or by evaluating it by assigning (dis)likes. These data, referred to as social information [14,15], offer scholars an opportunity to gather individuals' spontaneous reactions to media content. This approach can help overcome social desirability concerns and does not rely on individuals' often imperfect estimates of their own experiences [16]. In addition, computational methods such as machine learning offer scholars the tools to automatically analyze these data. This is necessary as datasets consisting

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of social information are often too large to be analyzed manually. Using these opportunities to investigate if Kama Muta is reflected in individuals' spontaneous reactions to media content offers a novel contribution to the literature investigating entertainment experiences by moving beyond self-reports. If the theory on Kama Muta is indeed reflected in social information and can be detected through computational methods, this would not only provide a valuable complement to existing survey-based measures but also serve as an external validation of the theory itself.

Taken together, learning more about to what extent Kama Muta is reflected in individuals' spontaneous reactions to (online) media content can help us to better understand Kama Muta and theory on eudaimonic entertainment experiences, as well as to explore new approaches to measure the occurrence of such experiences. Given the opportunities to do so offered by the online social information and computational methods that are available to date, the present study investigates to what extent the social information that is created in response to online videos relates to and reflects the theoretical concept of Kama Muta.

2. Literature review

2.1. The Expansion of theory on entertainment

Communication scholars have long worked on defining and understanding entertainment [17,18]. Initially, entertainment was thought to encompass enjoyment only, but now scholars regard enjoyment as one of multiple aspects that comprise entertainment [4,5,19,8]. This development was sparked by the 'sad film-paradox' reflecting the question of why people can feel entertained by tragic or poignant movies [17]. Research investigating this question resulted in a dual-process model of entertainment [20,21]. This model describes two types of entertainment experiences, based on the work by Aristotle who distinguishes between hedonism and eudaimonia [22], [7]. Applied to entertainment theory, hedonic entertainment refers to experiences of pleasure and enjoyment in response to funny media content and eudaimonic entertainment refers to individuals' experiences when watching serious and thought-provoking content [4,5,6,23,7,8]. Whereas the definition of hedonic entertainment is relatively straightforward, there exist many different definitions of eudaimonic entertainment.

One of the first conceptualizations of eudaimonic entertainment experiences is that these refer to appreciation that people feel in response to emotionally and cognitively challenging content [1,6,23,24,8]. This is based on the notion that to be truly happy, individuals must live their life in accordance to their own values and they must feel that they are living up to their full potential [22], [7,8]. Media content that makes individuals reflect on such matters can elicit appreciation, or in other words, give rise to eudaimonic entertainment experiences. In addition to appreciation, the concepts of elevation and self-transcendence have been used to describe eudaimonic entertainment experiences [25,26,3,27]. Literature on these concepts suggests that when watching others overcome hardship and depicting moral goodness or altruism, viewers feel inspired to be the best version of themselves, especially when such content resonates with their own lives [28,29]. Consuming such content can make people concentrate on matters that go beyond their own lives and feel connected to other people and the world around them [30,3,31,27,32]. This is a rewarding experience and a reason why people feel entertained by content that is not solely funny [33,2].

Whereas explanations of eudaimonic entertainment experiences such as inspiration, elevation, and self-transcendence are all slightly different, they can each be linked to the idea that eudaimonic entertainment experiences emerge due to cognitive appraisal of emotions and thoughts elicited by serious media content [34,10,30,29,18,8]. For example, when watching a beloved media character suffer hardship to achieve their goals, it is the cognitive appraisal of the emotions that this evokes that may make viewers reflect on their own capabilities and goals

in life, leading to inspiration. One more recent conceptualization of eudaimonic entertainment experiences that is based on a different notion than cognitive appraisal, however, is the concept of Kama Muta [9,10].

2.2. Kama Muta as an entertainment experience

Kama Muta is Sanskrit for 'moved by love' and it refers to a positive social-relational emotion in connection to another entity [9]. Kama Muta arises in response to a sudden intensification of communal sharing relationships [9,11,35,12]. The term communal sharing relationship is rooted in the anthropological Relational Models Theory [36–38]. This theory states that humans have different ways in which they relate to each other [38]. One of these ways is based on a model called communal sharing. When people relate to each other based on communal sharing, they focus on what they have in common [37]. Such a commonality could be, for example, shared genetic roots: Communal sharing is often a part of family bonds. But commonalities can also lie in other elements, such as shared experiences [37]. Characteristic of communal sharing relationships is that these are based on a sense of belonging, a shared responsibility, or moral commitment, and a motivation to be kind and altruistic to the other [37].

When a communal sharing relationship suddenly intensifies, Kama Muta can arise. A communal sharing relationship can intensify suddenly when, for example, a broken relationship is mended or when a child is born. Such intensifications can pertain to the relationships that individuals have with other individuals, but also to their relationships with media characters: Extant research indicates that individuals can experience strong personal bonds (i.e., Para-Social Relationships) with media characters [39,40], and that Kama Muta is positively associated with feelings of social connection [35]. Finally, Kama Muta can also arise when individuals witness the sudden intensification of a communal sharing relationship between others [41,42]. This can happen, amongst others, when individuals consume media content showing such an intensification, for example, when the protagonist of a movie proposes to their lover, or when an episode of a television series shows a parent and child being reunited after having been separated [41]. In light of this, Janicke-Bowles et al. [10] have described Kama Muta as a form of eudaimonic entertainment experience.

In sum, research on why individuals can feel entertained by media content that is not exclusively funny has resulted in the notion that there are two different types of entertainment experiences: We can feel enjoyment when we laugh about funny content (i.e., hedonic entertainment experiences) and we can have a deeper experience if we are exposed to content that is thought-provoking (i.e., eudaimonic entertainment experiences). When it comes to the latter, many different explanations have been provided by the literature, one of them being Kama Muta. Kama Muta can be seen as one of the most recent additions to literature on the sad-film paradox. But as scholars moved away from a focus on enjoyment only and started to study eudaimonic experiences, they also made another shift in their research.

2.3. Kama Muta Lies within Viewers, not within content

The discussion of entertainment as more than enjoyment alone is partly a consequence of scholars trying to understand how individuals can be entertained by content that is serious and touching as well as content that is solely funny. But in more recent work, scholars do not focus so much on the characteristics of the content that people consume, but on the characteristics of people's experiences in response to that content. In fact, following the notion that entertainment experiences arise due to cognitive appraisal, entertainment experiences cannot be fully predicted by the absence or presence of specific content characteristics. Consequently, scholars now regard entertainment not as a characteristic of media content, but as a characteristic of the individuals who consume this content: Instead of discussing eudaimonic

entertainment *content*, scholars now often focus on eudaimonic entertainment *experiences*.

The focus on experiences is reflected in researchers' approach to measuring entertainment experiences. For example, the occurrence of Kama Muta is typically measured by means of surveys assessing viewers' experiences while watching media content rather than methods analyzing the content of media messages (e.g., [11]). The measurement of Kama Muta has been developed, amongst others, by Zickfeld et al. [12] who developed a scale measuring Kama Muta. But whereas surveys asking individuals to indicate to what extent they experienced Kama Muta or other conceptualizations of eudaimonic entertainment matches the idea that entertainment is a characteristic of individuals and not of content, this method does not fully allow scholars to measure eudaimonic entertainment experiences in individuals. This is because asking individuals to reflect on survey items which are formulated based on researchers' theoretical knowledge of entertainment experiences does not indicate if such experiences are also reflected in individuals' own and spontaneous reactions to media content. To understand if viewers' own reactions indeed reflected theory on eudaimonic entertainment, Kama Muta and its dimensions offer a good place to start.

2.4. Finding Kama Muta in Viewers' reactions

Examining literature on eudaimonic entertainment experiences and on Kama Muta in particular shows that Kama Muta differs from earlier explanations of eudaimonic entertainment experiences in two ways. First, whereas earlier discussions of eudaimonic entertainment experiences have led to a variety of definitions, Kama Muta has been consistently described as an experience consisting of the five dimensions [9,43,42,12]. The first dimension is the appraisal of the perception of a sudden intensification of a communal sharing relationship. For example, individuals experiencing Kama Muta often explicitly indicate that they felt a strong interpersonal bond arise. Second, Kama Muta is characterized by a positive valence meaning that it is often described as a positive experience. Third, Kama Muta is often accompanied by bodily sensations, such as moist eyes, goosebumps, or a lump in the throat. The fourth component of Kama Muta is a motivation to do good and to be committed to a relationship by acting communally and with kindness. Individuals experiencing Kama Muta can feel, for example, an urge to help others. The final component of Kama Muta is the usage of different vernacular terms or labels describing the experience of Kama Muta. That is, whereas they refer to the same experience, people may label Kama Muta differently due to their language or cultural background [9,10,12].

The consistent definition of Kama Muta is helpful when assessing if individuals' spontaneous reactions to media content reflect (elements of) this concept. That is, Kama Muta is present in individuals' reactions if these describe or indicate the appraisal of a sudden intensification of communal sharing relationships, a positive experience, bodily sensations, motivations to do good, or vernacular terms describing being moved by love. This stands in contrast to earlier conceptualizations of eudaimonic entertainment experiences that discussed multiple different characteristics of these experiences, making it hard for scholars to understand what to look for when wanting to detect eudaimonic entertainment experiences in individuals' spontaneous reactions to media content. In addition to its consistent definition, Kama Muta differs from earlier conceptualizations of eudaimonic entertainment experiences because scholars agree on what exactly causes the rise of Kama Muta in the context of media consumption.

As discussed above, earlier research on eudaimonic entertainment experiences proposes that such experiences emerge because of cognitive appraisal of emotions felt in response to media content [34,10,18,8]. Such an explanation focuses on the psychological process underlying the rise of eudaimonic entertainment experiences. Whereas this is in line with the notion that entertainment experiences are a characteristic of media consumers and not of media content, it does not provide information on when such experiences are likely to arise. This makes it

difficult to make and test assumptions about when individuals could be expected to refer to eudaimonic entertainment when they react to media content. As the theory of Kama Muta explicitly indicates that this emotion occurs in response to a sudden intensification of a communal sharing relationship, it is plausible to assume that when individuals are exposed to media content depicting such an intensification, their reactions to that content should reflect (elements of) Kama Muta.

Taken together, Kama Muta offers a good starting point for assessing to what extent viewers' own and spontaneous reactions to media content reflect theoretical explanations of entertainment theory. It does so because its description has been consistent in the literature, offering clarity on what exactly constitutes reflections of Kama Muta. In addition, as theory explicitly describes when Kama Muta is expected to arise (i.e., when a communal sharing relationship suddenly intensifies), it is possible to make predictions on when individuals are likely to experience Kama Muta and when this should be reflected in their reactions. One way to assess if Kama Muta is indeed reflected in individuals' spontaneous reactions to media content, is by examining social information available on social media platforms.

When individuals consume online content such as short videos, they often do so through social media. On these platforms, viewers can react to that content. For example, they can write a comment in response to it or evaluate it by assigning it a (dis)like. Such user-generated information about content is referred to as social information (e.g., [14,15]) and it offers insights on viewers' spontaneous reactions to media content. Moreover, it can be used to examine if the characteristics of viewers' reactions to media content (in the form of social information) reflect theories of entertainment experiences and more specifically, theory on Kama Muta. It can do so in two ways. First, the characteristics of social information may be related to the Kama Muta that viewers experience. For example, scholars explain that experiencing Kama Muta can motivate people to act communally and to do something nice for others [9, 10,12]. Hence, it is possible that viewers who experience Kama Muta feel inclined to assign likes to a video as an act of praising its creator. In that case, Kama Muta may be reflected by a large quantity of likes assigned to a video. Empirically assessing this notion is one way to overcome the limitation that results from using predominantly self-reports to measure Kama Muta and address the research gap outlined above. Therefore, we ask the following:

RQ1: How are the characteristics of social information created in response to online videos related to the feelings of Kama Muta that viewers of these videos experience?

A second way to address the research gap previously discussed is by assessing to what extent the Kama Muta experiences of viewers are reflected in their comments written in response to online videos. Extant research suggests that viewers often describe their personal experiences when commenting on entertainment videos [44]. In the current context, this implies that if viewers experience Kama Muta, their comments may reflect this. Specifically, in their comments, online video viewers may appraise the sudden intensification of communal sharing relationships, describe a positive experience, report experiencing bodily sensations, display motivations to do good, or include vernacular terms describing the feelings of being moved by love. Based on this, we ask the following:

RQ2: To what extent are the topics discussed in comments written in response to videos whose viewers experience Kama Muta reflective of Kama Muta theory?

3. Dataset and method

To answer our research questions, we used a mixed-method approach in which we detected viewers' Kama Muta experiences in response to videos using the survey developed by Zickfeld et al. [12] and analyzed how these experiences relate to the characteristics of the social information created in response to these videos. This approach allowed us to study if the theoretical assumptions on which previously developed survey items are based are reflected in viewers' own reactions. The study

was pre-registered through the Open Science Framework (see: <https://osf.io/yrz6j/>) and approved by the Ethics Committee of the authors' university.

3.1. Dataset

We gathered our data in three steps. First, we selected a sample of online videos and gathered their social information, including the comments that they received. Second, we measured viewers' Kama Muta experiences in response to these videos through a survey. Finally, we identified the topics discussed in the comments of the videos using topic modeling.

3.1.1. Dataset 1: Online videos

To select a sample of videos to analyze, we focused on corporate videos presented on YouTube. The decision to focus on this particular type of video was based on the fact that (1) brands often use corporate videos aimed at evoking Kama Muta to engage consumers [45], and (2) videos that are available on YouTube are accompanied by social information that we could analyze. We collaborated with a company specialized in creating corporate films. An expert provided us with an extensive list of 54 English spoken corporate videos that were available on YouTube in September 2023 (see Online Appendix A on OSF for an overview of the videos in our sample²). From this list, four videos were excluded from our analyses because we could not retrieve (all) their social information. Finally, in the analyses for RQ1, Cook's distance for two videos indicated that they substantially altered our statistical models (Cook's distance scores ranging from 1.32 to 6.25). To maintain consistency throughout the analyses, these two videos were excluded from all analyses. This made our final sample consist of $N = 48$ corporate videos (see Online Appendix A for an overview of the videos included in our final sample¹).

Using a Python script employing the Google API developed by Van de Velde [46], we collected the social information for each video in our sample through web scraping. This consisted of the number of views that the video received ($M = 932,156.319$, $SD = 192,726.6221$, Skewness = 3.37, Kurtosis = 15.00), the number of likes assigned to the video ($M = 250,52.86$, $SD = 434,13.21$, Skewness = 2.80, Kurtosis = 11.75), and the duration of the video in seconds ($M = 141.65$, $SD = 86.21$, Skewness = 0.98, Kurtosis = 2.56). In addition, we gathered the comments that were written in response to the videos and for each video, we created one number indicating how many initial comments that video received ($M = 788.31$, $SD = 1211.00$, Skewness = 2.12, Kurtosis = 6.69) and one number indicating how many reply comments that video received ($M = 309.38$, $SD = 466.10$, Skewness = 2.40, Kurtosis = 8.94).³ For each comment that we retrieved, we also collected the username of its author. We used this to calculate the number of unique contributors to the comments section of each video ($M = 832.65$, $SD = 1236.14$, Skewness = 2.07, Kurtosis = 6.46).

3.1.2. Dataset 2: Kama Muta experiences of viewers

Using a survey, we measured the Kama Muta experiences that

viewers had in response to the video in our sample (see Online Appendix B on OSF for the complete survey¹). The data for this survey were collected in October 2023 using the panel company Prolific, which allowed us to target only adult residents of the United Kingdom to ensure participants were proficient in English, as all videos were in English. In total, 995 individuals completed our study. After excluding the data of respondents who did not consent with us using their data ($n = 3$), we had a final sample of $N = 992$ respondents. Respondents were individuals (50% female, 49% male, 1% other) aged between 18 and 44 years old ($M_{\text{age}} = 33.16$, $SD_{\text{age}} = 6.46$) who resided in the UK. 20% had a low level of education, 16% a medium level of education, and 63% a high level of education (1% of respondents did not indicate their education level).

Respondents were asked to watch two videos that were randomly selected from our sample and report their Kama Muta experiences in response to each of them, resulting in each video being watched by approximately 36 individuals. For each video that they watched, respondents filled out the English version of the KAMMUS-Two scale developed by Zickfeld et al. [12]. This scale measures the five components of Kama Muta (i.e., appraisal of a sudden intensification of communal sharing relationships (four items, Cronbach's alpha between 0.85 and 0.97), positive valence (one item), bodily sensations (12 items, Cronbach's alpha between 0.71 and 0.94), motivations to do good (four items, Cronbach's alpha between 0.88 and 0.99), and usage of vernacular terms (three items, Cronbach's alpha between 0.88 and 0.98) using 24 items in total (see the Online Appendix B on OSF for an overview of all items used and Online Appendix C for reliability of constructs for all videos¹). To create one score on each Kama Muta component, we averaged respondents' scores on the items for each individual Kama Muta component per video that they watched. For each video, we then took the average of respondents' scores on each Kama Muta component. This resulted in one score per video on viewers' appraisal ($M = 3.21$, $SD = 1.05$, Skewness = 0.10, Kurtosis = 2.03), positive valence ($M = 4.66$, $SD = 0.64$, Skewness = -0.18, Kurtosis = 3.49), bodily sensations ($M = 2.31$, $SD = 0.55$, Skewness = 0.52, Kurtosis = 2.60), motivations to do good ($M = 2.60$, $SD = 0.89$, Skewness = 0.37, Kurtosis = 2.28), and usage of vernacular labels ($M = 3.68$, $SD = 1.21$, Skewness = 0.06, Kurtosis = 2.00). Online Appendix A provides a full overview of the videos in our sample and the Kama Muta experiences of their viewers.¹

3.2. Analyses

3.2.1. Modeling the relationship between Kama Muta and the characteristics of social information (RQ1)

To address RQ1, we examined how viewers' experiences of the five components of Kama Muta related to three characteristics of videos' social information: the number of likes, the number of initial comments, and the number of replies. Each characteristic served as the dependent variable in a separate model, with the five Kama Muta components entered as independent variables. We controlled for the number of video views, video duration (in seconds), and the number of unique comment authors. As the scores of videos on the number of received likes, initial comments, and replies were characterized by high kurtosis (scores ranging from 6.69 to 11.75), we planned to run three Poisson Regressions (also see our pre-registration). However, results of overdispersion tests indicated that these models were overdispersed (for the number of likes, the number of comments, and for the number of replies, $p < .001$). Therefore, the first RQ was investigated using three Quasi-Poisson Regressions. These analyses were run in R using the GLM package.

3.2.2. Analyzing the topics presented in online video comments (RQ2)

To address RQ2 and detect the topics that viewers of the videos discussed in their comments posted under these videos on YouTube, we automatically analyzed the comments in our data using topic modeling. When doing so, we split our video sample into two groups (also see

² See: <https://osf.io/d9xgh/>.

³ The sum of initial comments and reply comments as derived from the data that we received from the API did not match the number of comments as indicated by the metric provided YouTube for eight videos. This can have various reasons, such as a delay in updates to the metric after comments are added or removed, or comments being posted but being held under review by the owner of a video. To verify that these discrepancies did not affect our results, we repeated our analyses for RQ1 (see Results section), but with the total number of comments as indicated by YouTube as the dependent variable. In line with the results reported in our paper, this analysis indicated that only viewers' experiences of the positive valence component were negatively related to the number of total comments that a video received (Estimate = -1.49, $SE = 0.34$, $t = -4.35$, $p < 0.001$).

Online Appendix A on OSF¹). Videos that scored higher than the average score on at least three of the five Kama Muta components were considered Kama Muta eliciting videos ($n = 22$). Other videos were grouped together as control videos ($n = 26$).

To analyze the comments written in response to the videos on our study, we used two unsupervised machine learning methods, namely structural topic modeling (STM, [47] and BERTopic [48]. STM identifies latent topics based on word co-occurrences within a corpus of documents (comments collected for the study). Unlike traditional topic modeling algorithms, STM allows for the inclusion of document-level covariates that may influence topic prevalence [47]. This is particularly relevant in the current study as the social information collected is nested under YouTube videos and it can be expected that the videos impact the topics discussed in comments created in response to them. Hence, the STM included video ID's as covariates as the video might influence each topic's prevalence in the comments.

In contrast to STM that treats each comment as a bag-of-words, BERTopic uses clustering techniques and class-based TF-IDF to account for the semantic relationship between words within a single comment [48]. BERTopic is based on the pre-trained BERT (Bidirectional Encoder Representations from Transformers, [49]), using its capacity to generate vector representations of words and sentences with semantic properties. BERTopic capabilities of accounting for the semantic property of documents inside topics results in more diverse and coherent topics when compared to traditional topic models, and it is generally seen as more robust in use [50]. Both topic models were applied to comments written under Kama Muta eliciting videos and neutral videos separately. Online Appendix D on OSF¹ provides a detailed overview of the data preparation steps and all parameter settings used in the analyses.

3.2.2.1. Topic model validation. To validate the topics that resulted from our analyses, we ran a second survey in which we checked the understandability of our topics for humans. Online Appendix E available on OSF¹ contains the full survey used for the validation of the topic models. This final sample of this study consisted of $N = 67$ students ($M_{\text{age}} = 23.04$, $SD_{\text{age}} = 1.36$, 16.4% male, 82.1% female, 1.5% preferred not to disclose their gender). We validated the results of the topic models through three tasks. In the first task, respondents were presented with four out of the five most important words for each topic (i.e., words with the highest probability for STM or most representative words for BERTopic). They were asked to select the fifth word, which was presented to them along with two distractor words. For each topic, validity was confirmed if most respondents correctly identified the missing fifth word. For the second task, participants saw six words for each topic: Five of these words were the most important word a specific topic, and one of them was a distractor word. Respondents were asked to select the word that they believed did not belong to the same topic as the other words. Validation of topics was confirmed if most respondents correctly selected the distractor word.

Prior to completing the last step, respondents read a lay-man's explanation of the concept of Kama Muta. Then, respondents were shown the five most important words of each topic identified by our models. They were asked to categorize these sets of five words into sets that they believed represented Kama Muta in some way and sets that represented something else. Validity of a topic was confirmed if most respondents correctly categorized its five words with the highest probability as either belonging to Kama Muta or to something else.

4. Results

4.1. The characteristics of social information

Our first research question asked how the characteristics of social information created in response to online videos relate to the feelings of

Kama Muta that viewers of these videos experience. The first Quasi-Poisson Regression with the number of likes that videos received as the dependent variable indicated a significant relationship between the extent to which viewers had positive experiences in response to a video and the number of likes that the video received (see Table 1 for a full report of the results). However, this relationship was negative: The more viewers indicated that watching a video was a positive experience, the fewer likes that video received. The remainder of the Kama Muta components was not significantly related to the number of likes that a video received (see Table 1). The results of the second Quasi-Poisson Regression indicated that the extent to which viewers had positive experiences in response to a video was also negatively related to the number of initial comments that the video received (see Table 1). In addition, as viewers experienced more bodily sensations while watching a video, the number of initial comments that the video received, increased (see Table 1). The number of initial comments that a video received was not related to any of the other components of Kama Muta (see Table 1). Finally, the results of the third Quasi-Poisson Regression showed that the number of replies that a video received was not related to any of the components of Kama Muta that video viewers experiences (see Table 1).¹

In sum, when it comes to the relationship between viewers' experiences of Kama Muta and the characteristics of social information (RQ1), our results showed that the more viewers indicate that watching a videos was a positive experience for them, the fewer likes and initial comments that video received. However, the more viewers indicate that they experienced bodily sensations while watching a video, the more initial comments that video received. Most of the components of Kama Muta as experienced by video viewers, however, were not related to the number of likes, initial comments, or replies that a video received.

4.2. The topics discussed in user comments

The second research question asked to what extent the topics of comments written in response to videos whose viewers experience Kama reflected Kama Muta theory. To learn more about this, we used both BERTopic modeling as well as STM (see methods section).

4.2.1. Structural topic modeling (STM) about comments of Kama Muta evoking videos

The five topics that STM identified based on the comments that viewers posted in response to Kama Muta eliciting videos were diverse (see Table 1 in Online Appendix F for an overview of the topics and the three comments that are most important to each topic). The first, second, and fourth topic seem to be about concepts related to Kama Muta, namely emotions such as love and gratitude (i.e., 'feel', 'love', and 'thank'), bodily sensations (i.e., 'cri') and positive valence (i.e., 'great'). They also seem to reflect a focus on spirituality as indicated by the word 'god' in the first topic. A look at the comments that contribute most to the topics show that the first topic seems largely based on comments written in response to one video about U.S. army veterans. Based on the comments, the video seemed to spark emotional reactions expressing gratitude to those who served or are serving in the U.S. military (e.g., "God bless all those who have served [...]").

Yet, for the second and fourth topic, the most important comments do not reflect the idea that they are about concepts related to Kama Muta: For Topic 2, two of the comments negatively reflect on the video that they accompany whereas another comment provides factual information about a video. For the fourth topic, two of the comments seem to be spam, and another comment seems to be mostly about how effective a corporate video about a liquor brand was without providing details as to whether or not this is because it makes viewers emotional.

Finally, the third and fifth topic identified among comments written in respond to Kama Muta evoking videos by the STM seem to reflect not so much emotions, but positive evaluations of the videos that comments accompany (i.e., 'like' in the third topic, and 'good' in the fifth topic). Yet, looking at the comments assigned to these topics yields mixed

identified for the control videos is an expression of appreciation for Billie Eilish, an artist featuring in one of the videos in the sample. This is reflected in the comments that the model considers important to this topic as they express positive feelings towards the artist ('I love you billie [...]').

Whereas the first topic does somewhat focus on viewers' experiences and perceptions of the artist featured in one of the videos, the remaining topics seem to focus solely on the actual content and creator of the videos rather than on viewers' experiences or emotions. For instance, comments important for Topic 2 seem to be created in response to a video by a beer brand. Viewers express their (negative) thoughts about the brand (e.g., 'Heineken own a great deal of beers I would drink, not brewed by them but nevertheless I will NOT be purchasing ANY of their portfolio, nor will i stock any ever again [...] for Topic 2). A similar observation can be made for Topics 3, 4, 5, and 6. For these topics, most of the contributing comments seem to have been written in response to one particular video, namely a video about a car brand (Topic 3), a video promoting Switzerland as a vacation destination (Topic 4), a video by a brand for clothing and travel products (Topic 5), and a video by a smartphone brand (Topic 6). The topics as well as the comments that they are based on reflect this (e.g., 'My VW POLO has only 4 years left, Pls launch the new polo in India soon!', for Topic 3, and 'Discovered Switzerland as a kid collecting stamps. I have been a regular visitor since 1954. [...] for Topic 4).

4.2.4. Bertopic modeling about comments of Control videos

Similar to the results of the STM for comments written in response to control videos, the first topic identified for comments in response to control videos by the BERTopic model indicates appreciation for the artist featured in a specific video. This is reflected in the comments that are representative for this topic as well (e.g., 'I'm in love with Billie'). Other topics identified by the model also show similarity to the topics identified by the STM model. The third topic is about a car brand as is reflected in its comments (e.g., 'We want this polo in India!'). The fourth topic centers around a smartphone brand featured in one of the videos in the sample (e.g., 'My dream phone s23 ultra'). The sixth topic is characterized by comments all reflecting the same response to a video summarizing all popular media content in which a specific brand was featured (e.g., 'No pulp Fiction?').

Finally, Topic 2 and Topic 5 have in common that the comments that the model deems representative for these topics are all posted in response to the same video. The video is created by a beer brand and explicitly promotes vaccination against Covid-19. This evokes negative reactions, either in the form of a boycott of the brand's products (e.g., 'I will never drink Heineken again. Never ever!', Topic 2) or by criticizing the brand's stance regarding vaccination (e.g., 'Heineken = Apartheid', Topic 5). Note that Topic 2 as identified by the BERTopic modeling is similar to the Topic 2 as identified by the STM for comments written in response to control videos. Taken together, both the results of the STM and of the BERTopic models regarding comments written in response to control videos show topics that are predominantly focused on the content of specific videos and do not seem to discuss elements of Kama Muta.

4.2.5. Validation of the topic models

Table 2 provides an overview of the results of the validation tests for the different topic models. For each of the three tests, validation of the identified topics was confirmed in the majority of the respondents completed the test correctly. In Table 2, tests for which this was the case are highlighted. Observing the results, it seems that for topics identified using the BERTopic model validity is confirmed in most cases. Yet, a closer look at the results does add the nuance to this, namely that the validity of topics seems to depend on the type of validity check that was done. According to the results of the last validity check whereby respondents were asked to sort topics according to whether they believed it was representative of Kama Muta, it seems that the majority of topics

Table 2
Results of the validation checks.

Topic	Words	Validation Test 1	Validation Test 2(pick the odd one out)	Validation Test 3(sorting task)
		(find the missing word)		
		% correct (n)	% correct (n)	% correct (n)
Kama Muta STM 1	thank, will, time, year, god	62.7 (42)	16.4 (11)	91 (61)
Kama Muta STM 2	cry, commerci, great, get, work	13.4 (9)	7.5 (5)	53.7 (36)
Kama Muta STM 3	like, watch, now, made, guy	16.4 (11)	6 (4)	22.4 (15)
Kama Muta STM 4	love, just, one, beautiful, feel	38.8 (26)	11.9 (8)	92.5 (62)
Kama Muta STM 5	video, make, can, good, song	37.3 (25)	28.4 (19)	37.3 (25)
Control STM 1	love, song, like, billion, just	46.3 (31)	4.5 (3)	13.4 (9)
Control STM 2	never, will, beer, buy, vaccin	23.9 (16)	32.8 (22)	92.5 (62)
Control STM 3	india, one, look, will, like	31.3 (21)	0 (0)	79.1 (53)
Control STM 4	make, good, commercial, see, people	37.3 (25)	26.9 (18)	50.7 (34)
Control STM 5	car, really, need, better, amazing	16.4 (11)	5.97 (4)	85.1 (57)
Control STM 6	bmw, phone, ultra, new, just	9 (6)	11.9 (8)	97 (65)
Kama Muta BERT 1	thank, beautiful, video, commercial, love	17.9 (12)	14.9 (10)	86.6 (58)
Kama Muta BERT 2	brother, died, miss, old, dad	82.1 (55)	59.7 (40)	83.6 (56)
Kama Muta BERT 3	people, freedom, dislike, thumbs, dislikes	79.1 (53)	19.4 (13)	58.2 (39)
Kama Muta BERT 4	qatar, airways, airline, fly, flight	95.5 (64)	70.1 (47)	4.5 (3)
Kama Muta BERT 5	version, full, please, find, link	50.7 (34)	13.4 (9)	9 (6)
Control BERT 1	love, song, billion, video, like	13.4 (9)	53.7 (36)	20.9 (14)
Control BERT 2	never, beer, drink, commercial, north	79.1 (53)	11.9 (8)	97 (65)
Control BERT 3	india, bmw, car, polo, launch	56.7 (38)	31.3 (21)	94 (63)
Control BERT 4	ultra, phone, s23, iphone, s22	88.1 (59)	65.7 (44)	95.5 (64)
Control BERT 5	switzerland, apartheid, propaganda, world, people	53.7 (36)	40.3 (27)	68.7 (46)
Control BERT 6	fiction, pulp, included, list, quoted	76.1 (51)	55.2 (37)	86.6 (58)

are valid. This applies to both topics identified using STM and BERTopic modeling.

However, observing the results of other validation checks yields different results. Looking at the first validity check whereby respondents were asked to find the missing word belonging to a topic, most topics

identified by BERTopic modeling seem valid, while for the STM, most topics are not. The results of the second validity test whereby respondents were asked to select the word that did not belong to a specific topic, only five topics (identified using BERTopic modeling) out of the total 22 topics are valid. Overall, the results of the validity checks indicate that BERTopic modeling outperforms STM. But when it comes to the question of whether the topics in general were valid, the answer depends on the type of validity check used and ranges from a scenario where validity is confirmed for most topics (i.e., validity test 3) to one where validity is confirmed for a small minority of the topics (i.e., the second validity test).

5. Discussion

The present study investigated to what extent Kama Muta can be detected in viewers' comments written in response to online videos. It did so inspired by the notion that extant research predominantly relies on self-reports to measure entertainment experiences, hindering our understanding of how entertainment experiences are reflected in individuals' spontaneous reactions to media content. To address this gap, this study investigated how the characteristics of social information created in response to videos relate to video viewers' experiences of Kama Muta (RQ1). Results showed that when viewers report feeling stronger bodily sensations, they post more comments in response to a video. This suggests that experiencing bodily sensations (e.g., goosebumps, moist eyes) is the main component of Kama Muta that stimulates viewers to actively engage with (other viewers of) a video and write a comment to share their thoughts. However, our results also showed that not all components of Kama Muta led video viewers to create more social information: Most Kama Muta components did not relate to the characteristics of social information created in response to videos at all. When video viewers indicated that watching a video was a particularly positive experience for them, videos even received fewer likes and comments.

One component of Kama Muta is the motivation to do something good for others [9,42,12]. On YouTube, viewers can assign likes to a video or write a comment to express their appreciation for a video which could be seen as an act of doing something good for the creator of a video. In this context, our finding that most components of Kama Muta and the specific component of feeling motivated to do something good for others were not related to the quantity of social information seems divergent from the literature. An explanation for this relates to our video sample. Videos used in our analyses were videos uploaded by (large) corporations (e.g., Volvo, Samsung, Johnny Walker). In contrast to videos created by individuals with whom viewers have a strong personal bond (i.e., friends, acquaintances) or a Para-Social Relationship (i.e., influencers) [51], viewers of the videos in our sample may not have felt a strong bond to the corporations that uploaded them. This may explain why viewers' experiences of Kama Muta and the motivation to do something good for others in particular, did not lead viewers to assign likes to or write (replies to) comments in response to these videos.

The notion above is also supported by looking at the topics that were identified in the comments that viewers wrote in response to the corporate videos of our sample. Several topics were particularly negative (e.g., calls for boycotting specific brands). Although the results of our survey show that viewers do experience Kama Muta when watching corporate videos, it seems that this experience does not translate into social interaction. In fact, viewers are more inclined to write comments if their attitudes towards the video and/or its brand are predominantly negative. This finding is in line with past research indicating that sharing experiences with others through for example word-of-mouth or comments can be driven by the intention to draw attention to dissatisfaction [52] or wanting to encourage a company to improve by venting negative feelings [53]. This could explain the fact that we found a negative relationship between viewers' positive experiences and the number of comments that they write and the number of likes they assign to a video.

Yet, our analyses do not rule out other possible explanations for our findings and additional research is needed to examine the role that the type of videos plays when it comes to the relationship between video viewers' experiences of Kama Muta and the characteristics of videos' social information. Still, our findings offer an important theoretical implication regarding this relationship. Namely, the type of media content consumed, and especially its source seems to play an important role. To advance our understanding of this, future studies could focus on the creators of videos and the bond that viewers have with them as the negativity bias might only be present when (Para-)Social relationship is lacking.

Next to studying the characteristics of social information, this study used topic modeling to analyze the topics that viewers discuss in their comments posted in response to videos (RQ2). This led to mixed results. On the one hand, Kama Muta in general seems to be reflected in comments written in response to Kama Muta evoking videos, as the topics identified by our models often revolved around emotions, such as love and gratitude. For comments written in response to control videos, reflections of emotional experiences were much less evident. This is in line with the idea that when viewers experience Kama Muta in response to online videos, they discuss these emotions in their comments. Yet, when zooming in on the specific components of Kama Muta, only the component of bodily sensations (i.e., moist eyes, crying) seem to be reflected in the topics, where other components were not.

Our validation tests confirm the conclusion that whereas Kama Muta in general was detected by the topic models, specific components of Kama Muta were not: Their results indicate that both the STM and the BERTopic model worked well when it comes to identifying Kama Muta in general but not when it comes to identifying specific components. For example, all topics identified by our models score relatively high in the task where respondents were asked to sort topics into topics related to Kama Muta and topics related to something else. Most respondents could do so correctly, indicating that the topics identified by our models in general clearly reflected Kama Muta or not. Yet, when looking at the other validation tests, our topics score much lower. In the first validation test, respondents were asked to find the missing word belonging to a topic and in the second task, they were asked to pick the word that did not belong to a topic. These two tasks require respondents to have a relatively clear understanding of the exact topics and their relation to the dimensions of Kama Muta, rather than a general understanding of whether a topic is about Kama Muta or not. The finding that they could complete these tasks less well than the sorting task confirms the idea that our models could not identify specific Kama Muta components in a way that is clear to humans. Future research could explore methodological refinements or alternative modeling approaches such as supervised or semi-supervised learning or keyword-assisted topic models that could be better equipped to detect and differentiate the specific components of Kama Muta in user-generated content. Such approaches could improve alignment between computational outputs and human understanding of the different Kama Muta dimensions, thereby enabling more robust analyses of how abstract emotional constructs are expressed in comments.

Overall, the topics identified by the BERTopic models outperform the topics identified by the STM when looking at the results of our validation study. This is remarkable, as the BERTopic model is considered less apt in dealing with our nested data (i.e., comments nested under videos) than STM. Yet, the main results that our validation study produced is that the performance of a model depends on the type of validation test chosen. In the present study, the last validation test (i.e., sorting task) assessed if our models produced topics that humans could label as reflective of Kama Muta or not. In that regard, both models performed well overall. However, the tasks that assessed if humans could clearly understand the exact content of specific topics identified by our models indicated that our models are not fully capable of doing so. Future scholars working with topic modeling are therefore advised to compare different validation tasks, and to provide a clear argumentation as to

why the tasks chosen by them are suitable to validate their models. They can do so by explicitly discussing what they want to validate (e.g., assessing if models can detect presence of constructs in texts, or assessing if models can detect concrete dimensions or topics that are clear to humans), and explaining why the validation task selected by them is suitable to do so.

These methodological insights also carry practical implications. While corporate videos can evoke Kama Muta, such emotional responses do not automatically translate into higher engagement, particularly when audiences lack a strong bond with the content creator. For practitioners aiming to foster positive engagement, cultivating social connection may be as important as evoking emotional responses. Moreover, computational tools for detecting emotional content in user-generated data hold promise for informing content strategy and allowing more fine-grained campaign evaluation based on real-life data. However, practitioners should be aware of the current limitations of these methods, especially when working with abstract, multifaceted emotional constructs.

6. Limitations and future work

Whereas topic modeling has been used by communication scholars in other domains such as journalism and media psychology (e.g., [54,55]), its application to study entertainment experiences is far less common. Our study demonstrates both the potential and the current constraints of applying unsupervised techniques to detect topics in short, user-generated texts. Additional methodological development is needed to make these approaches more suitable for detecting relatively abstract constructs such as the various components of Kama Muta. For example, a political communication scholar using topic modeling to identify whether news articles are about presidential elections may achieve more precise results because such topics are concrete and lexically consistent, unlike emotional constructs that may be expressed in highly varied and idiosyncratic language. The component of vernacular labels, i.e. using different words or phrases to describe Kama Muta depending on individual and cultural differences, is inherently hard to detect by a computer because its core characteristic is that it lacks consistency in terminology. In other words, entertainment experiences such as Kama Muta seem to be predominantly about *how* someone describes their experiences which stands in contrast to more concrete *topics* that can be detected by analyzing what individuals discuss.

Beyond methodological constraints of topic modeling, our study also has several limitations. Our sample consisted of United Kingdom residents, which limits the generalizability of our findings to other cultural and linguistic contexts where the expression of Kama Muta may differ (particularly considering its vernacular character). Furthermore, we specifically focused on corporate videos, meaning that our findings may not apply to content created by individuals or influencers, where stronger (Para-)Social relationship with the creator could influence engagement. Future research could address these limitations by examining a more diverse range of content types, incorporating multilingual datasets, and studying to what extent and how Kama Muta is expressed in comments across cultures.

7. Conclusion

This study investigated whether Kama Muta can be detected in viewers' spontaneous reactions to corporate online videos and how its specific components relate to social engagement. Topic modeling analyses revealed that computational methods can detect the general presence of Kama Muta in viewer comments but struggle to capture its specific components. These findings highlight two key implications for the literature on entertainment experiences in general and on Kama Muta in particular: On the one hand, more research is needed on how Kama Muta is expressed and described by individuals when they react to media content spontaneously and to what extent this is in line with the

theoretical notions on which the concept is based and current operationalizations used in self-reports. On the other hand, more methodological advancement is needed for applying computational methods to detect abstract constructs in social media data if scholars want to use this to fully understand social media users' experiences. By doing so, the current study offers a first step in mapping out advancements needed for entertainment scholars in particular to make full use of the potential that computational methods have to offer.

CRediT authorship contribution statement

A. Marthe Möller: Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Joanna Strycharz:** Writing – review & editing, Writing – original draft, Validation, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

References

- [1] M. Hofer, Appreciation and enjoyment of meaningful entertainment, *J. Media Psychol.* 25 (3) (2013) 109–117, <https://doi.org/10.1027/1864-1105/a000089>.
- [2] M.B. Oliver, T. Hartmann, J.K. Woolley, Elevation in response to entertainment portrayals of moral virtue, *Hum. Commun. Res.* 38 (3) (2012) 360–378, <https://doi.org/10.1111/j.1468-2958.2012.01427.x>.
- [3] M.B. Oliver, A.A. Raney, M.D. Slater, M. Appel, T. Hartmann, A. Bartsch, F. M. Schneider, S.H. Janicke-Bowles, N. Krämer, M.-L. Mares, P. Vorderer, D. Rieger, K.R. Dale, E. Das, Self-transcendent media experiences: taking meaningful media to a higher level, *J. Commun.* 68 (2) (2018) 380–389, <https://doi.org/10.1093/joc/jqx020>.
- [4] A. Bartsch, T. Hartmann, The role of cognitive and affective challenge in entertainment experience, *Commun. Res.* 44 (1) (2017) 29–53, <https://doi.org/10.1177/0093650214565921>.
- [5] A. Bartsch, A. Kalch, M. Beth Oliver, Moved to think: the role of emotional media experiences in stimulating reflective thoughts, *J. Media Psychol.* 26 (3) (2014) 125–140, <https://doi.org/10.1027/1864-1105/a000118>.
- [6] M.B. Oliver, A. Bartsch, Appreciation as audience response: Exploring entertainment gratifications beyond hedonism, *Hum. Commun. Res.* 36 (1) (2010) 53–81, <https://doi.org/10.1111/j.1468-2958.2009.01368.x>.
- [7] A. Waterman, Two conceptions of happiness: contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment, *J. Pers. Soc. Psychol.* 64 (1993), <https://doi.org/10.1037/0022-3514.64.4.678>.
- [8] W. Wirth, M. Hofer, H. Schramm, Beyond pleasure: Exploring the eudaimonic entertainment experience, *Hum. Commun. Res.* 38 (4) (2012) 406–428, <https://doi.org/10.1111/j.1468-2958.2012.01434.x>.
- [9] A.P. Fiske, T.W. Schubert, B. Seibt, The best-loved story of all time: Overcoming all obstacles to be reunited, evoking Kama Muta. *Evolutionary Studies in Imaginative, Culture* 1 (1) (2017) 67–70, <https://doi.org/10.26613/esci.1.1.12>.
- [10] S.H. Janicke-Bowles, T. Schubert, J.K. Blomster, Kama Muta as a eudaimonic entertainment experience, in: P. Vorderer, C. Klimmt (Eds.), *The Oxford Handbook of Entertainment Theory*, Oxford University Press, 2021, pp. 402–418, <https://doi.org/10.1093/oxfordhb/9780190072216.013.22>.
- [11] F.L. Müller, A.Z. Czarna, M. Dufner, Who is moved to tears easily? Individual differences in Kama Muta proneness and their relation to personality, *Personality Science* 6 (2025) 27000710251359515.
- [12] J.H. Zickfeld, T.W. Schubert, B. Seibt, J.K. Blomster, P. Arriaga, N. Basabe, A. Blaut, A. Caballero, P. Carrera, I. Dalgas, Y. Ding, K. Dumont, V. Gaulhofer, A. Gračanin, R. Gyenis, C.-P. Hu, I. Kardum, L.B. Lazarević, L. Mathew, A.P. Fiske, Kama muta: Conceptualizing and measuring the experience often labelled being moved across 19 nations and 15 languages, *Emotion* 19 (3) (2019) 402–424, <https://doi.org/10.1037/emo0000450>.
- [13] J.J. Ray, Reviving the Problem of Acquiescent Response Bias, *J. Soc. Psychol.* 121 (1) (1983) 81–96, <https://doi.org/10.1080/00224545.1983.9924470>.
- [14] M. Hsueh, K. Yogeewaran, S. Malinen, “Leave your comment below”: can biased online comments influence our own prejudicial attitudes and behaviors? *Hum. Commun. Res.* 41 (4) (2015) 557–576, <https://doi.org/10.1111/hcre.12059>.

- [15] A.M. Möller, S.E. Baumgartner, R. Kühne, J. Peter, Sharing the fun? How social information affects viewers' video enjoyment and video evaluations, *Human Communication Research* 47 (1) (2021) 25–48, <https://doi.org/10.1093/hcr/hqaa013>.
- [16] W. Van Atteveldt, T.Q. Peng, When communication meets computation: Opportunities, challenges, and pitfalls in computational communication science, *Commun. Methods Meas.* 12 (2–3) (2018) 81–92.
- [17] M.B. Oliver, Exploring the paradox of the enjoyment of sad films, *Hum. Commun. Res.* 19 (3) (1993) 315–342, <https://doi.org/10.1111/j.1468-2958.1993.tb00304.x>.
- [18] P. Vorderer, T. Hartmann, Entertainment and enjoyment as media effects, in: J. Bryant, M.B. Oliver (Eds.), *Media Effects: Advances in Theory and Research*, (3rd ed.), Routledge, 2009, pp. 532–550.
- [19] P. Vorderer, C. Klimmt, U. Ritterfeld, Enjoyment: At the heart of media entertainment, *Commun. Theory* 14 (4) (2004) 388–408, <https://doi.org/10.1111/j.1468-2885.2004.tb00321.x>.
- [20] R.J. Lewis, R. Tamborini, R. Weber, Testing a dual-process model of media enjoyment and appreciation, *J. Commun.* 64 (3) (2014) 397–416, <https://doi.org/10.1111/jcom.12101>.
- [21] R. Tamborini, Moral Intuition and Media Entertainment, *J. Media Psychol.* 23 (1) (2011) 39–45, <https://doi.org/10.1027/1864-1105/a000031>.
- [22] Aristotle. (trans. 2009). *The Nicomachean Ethics: New edition* (D. Ross & L. Brown, Eds.). Oxford University Press.
- [23] M.B. Oliver, A. Bartsch, Appreciation of entertainment: the importance of meaningfulness via virtue and wisdom, *J. Media Psychol.* 23 (1) (2011) 29–33, <https://doi.org/10.1027/1864-1105/a000029>.
- [24] Oliver, M. B., & Woolley, J. K. (2011). Tragic and poignant entertainment: The gratifications of meaningfulness as emotional response. In K. Döveling, C. Von Scheve, & E. Konijn A. (Eds.), *The Routledge handbook of emotions and mass media*. Routledge.
- [25] S.B. Algoe, J. Haidt, Witnessing excellence in action: the 'other-praising' emotions of elevation, gratitude, and admiration, *J. Posit. Psychol.* 4 (2) (2009) 105–127, <https://doi.org/10.1080/17439760802650519>.
- [26] J. Haidt, Elevation and the positive psychology of morality, in: C.L.M. Keyes, J. Haidt (Eds.), *Flourishing: Positive Psychology and the Life Well-Lived*, American Psychological Association, 2003, pp. 275–289, <https://doi.org/10.1037/10594-012>.
- [27] D.B. Yaden, J. Haidt, R.W. Hood, D.R. Vago, A.B. Newberg, The varieties of self-transcendent experience, *Rev. Gen. Psychol.* 21 (2) (2017) 143–160, <https://doi.org/10.1037/gpr0000102>.
- [28] C. Klimmt, D. Rieger, Biographic resonance theory of eudaimonic media entertainment, in: P. Vorderer, C. Klimmt (Eds.), *The Oxford Handbook of Entertainment Theory*, Oxford University Press, 2021, pp. 383–402.
- [29] J. Liao, A.A. Raney, K.R. Dale, M.B. Oliver, "It strikes a chord within me": a mixed-method exploration of existential resonance in eudaimonic entertainment experiences, *Hum. Commun. Res.* 51 (3) (2025) 179–189, <https://doi.org/10.1093/hcr/hqaf010>.
- [30] S.H. Janicke-Bowles, Introducing the Transcendent Media Experience Model (TMEM), *Commun. Res.* 52 (4) (2025) 427–453, <https://doi.org/10.1177/00936502241287830>.
- [31] D. Rieger, L. Frischlich, M.B. Oliver, Meaningful entertainment experiences and self-transcendence: Cultural variations shape elevation, values, and moral intentions, *Int. Commun. Gaz.* 80 (7) (2018) 658–676, <https://doi.org/10.1177/1748048518802218>.
- [32] D. Zhao, K.R. Dale, Pro-social messages and transcendence: a content analysis of Facebook reactions to Mark Zuckerberg's donation pledge, *Comput. Hum. Behav.* 91 (2019) 236–243, <https://doi.org/10.1016/j.chb.2018.09.042>.
- [33] N.C. Krämer, S.C. Eimler, G. Neubaum, S. Winter, L. Rösner, M.B. Oliver, Broadcasting one world: how watching online videos can elicit elevation and reduce stereotypes, *New Media Soc.* 19 (9) (2017) 1349–1368, <https://doi.org/10.1177/1461444816639963>.
- [34] A. Bartsch, M.B. Oliver, Making sense of entertainment, *J. Media Psychol.* 23 (1) (2011) 12–17, <https://doi.org/10.1027/1864-1105/a000026>.
- [35] D. Swarbrick, B. Seibt, N. Grinspun, J.K. Vuoskoski, Corona concerts: the effect of virtual concert characteristics on social connection and Kama Muta, *Front. Psychol.* 12 (2021) 648448.
- [36] Fiske, A. P. (1991). *Structures of social life: The four elementary forms of human relations*. Free Press.
- [37] A.P. Fiske, The four elementary forms of sociality: Framework for a unified theory of social relations, *Psychol. Rev.* 99 (1992) 689–723, <https://doi.org/10.1037//0033-295X.99.4.689>.
- [38] A.P. Fiske, Relational Models Theory 2.0, in: N. Haslam (Ed.), *Relational Models Theory: A Contemporary Overview*, Psychology Press, 2004, pp. 3–25.
- [39] D. Horton, R.M. Wohl, Mass communication and para-social interaction: Observations on intimacy and distance, *Psychiatry* 19 (3) (1956) 215–229, <https://doi.org/10.1080/00332747.1956.11023049>.
- [40] E. Schiappa, P.B. Gregg, D.E. Hewes, The Parasocial Contact Hypothesis, *Commun. Monogr.* 72 (1) (2005) 92–115, <https://doi.org/10.1080/0363775052000342544>.
- [41] J.K. Blomster Lyshol, L. Thomsen, B. Seibt, Moved by observing the love of others: Kama Muta evoked through media fosters humanization of out-groups, *Front. Psychol.* (2020) 11. <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01240>.
- [42] T.W. Schubert, J.H. Zickfeld, B. Seibt, A.P. Fiske, Moment-to-moment changes in feeling moved match changes in closeness, tears, goosebumps, and warmth: Time series analyses, *Cogn. Emot.* 32 (1) (2018) 174–184, <https://doi.org/10.1080/02699931.2016.1268998>.
- [43] A.P. Fiske, T.W. Schubert, B. Seibt, Seeking communal emotions in social practices that culturally evolved to evoke emotions: Worship, kitten videos, memorials, narratives of love, and more, *Annu. Rev. Psychol.* 76 (2025), <https://doi.org/10.1146/annurev-psych-020124-023338>.
- [44] A.M. Möller, S.A. Vermeer, S.E. Baumgartner, Cutting through the comment chaos: A supervised machine learning approach to identifying relevant YouTube comments, *Social Science Computer Review* 42 (1) (2024) 162–185, <https://doi.org/10.1177/089443932311738>.
- [45] J. Shin, A.S. Mattila, Aww effect: Engaging consumers in "non-cute" prosocial initiatives with cuteness, *J. Bus. Res.* 126 (2021) 209–220, <https://doi.org/10.1016/j.jbusres.2020.11.046>.
- [46] Van de Velde, B. (2017). *YouTube scraper* [Computer software]. https://github.com/bobvdvelde/YouTube_scraper/tree/master Van Zoonen, W., & Van de.
- [47] M.E. Roberts, B.M. Stewart, D. Tingley, stm: an R Package for Structural Topic Models, *J. Stat. Softw.* 91 (2019) 1–40, <https://doi.org/10.18637/jss.v091.i02>.
- [48] Grootendorst, M. (2022). *BERTopic: Neural topic modeling with a class-based TF-IDF procedure* (arXiv:2203.05794). arXiv. 10.48550/arXiv.2203.05794.
- [49] Devlin, J., Chang, M.-W., Lee, K., & Toutanova, K. (2019). *BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding* (arXiv:1810.04805). arXiv. 10.48550/arXiv.1810.04805.
- [50] B.C. De Lima, R.M.A. Baracho, T. Mandl, P.B. Porto, Reactions to science communication: Discovering social network topics using word embeddings and semantic knowledge, *Soc. Netw. Anal. Min.* 13 (1) (2023) 119, <https://doi.org/10.1007/s13278-023-01125-5>.
- [51] D. Vrontis, A. Makrides, M. Christofi, A. Thrassou, Social media influencer marketing: a systematic review, integrative framework and future research agenda, *Int. J. Consum. Stud.* 45 (4) (2021) 617–644.
- [52] J. Thøgersen, H.J. Juhl, C.S. Poulsen, Complaining: a function of attitude, personality, and situation, *Psychol. Mark.* 26 (8) (2009) 760–777.
- [53] M.L. Richins, Word of Mouth Communication: a negative Information, *Adv. Consum. Res.* 11 (1) (1984).
- [54] L. Guo, C.J. Vargo, Z. Pan, W. Ding, P. Ishwar, Big social data analytics in journalism and mass communication: Comparing dictionary-based text analysis and unsupervised topic modeling, *Journalism & Mass Communication Quarterly* 93 (2) (2016) 332–359, <https://doi.org/10.1177/1077699016639231>.
- [55] T. Verbeij, I. Beyens, D. Trilling, P.M. Valkenburg, *Happiness and Sadness in Adolescents' Instagram Direct Messaging: a Neural Topic Modelling Approach*, *OSF* (2022), 10.31234/osf.io/5pgdb.