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### Sharing the fun?

*How social information affects viewers' video enjoyment and video evaluations*

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## ORIGINAL RESEARCH

# Sharing the Fun? How Social Information Affects Viewers' Video Enjoyment and Video Evaluations

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*Online video platforms often present videos together with social information in the form of user comments and likes. This study tested two hypotheses about how this merger of mass and interpersonal communication on online video platforms shapes viewers' evaluations and enjoyment of online videos. Whereas the judgement effect hypothesis states that social information alters viewers' video evaluations, the processing effect hypothesis poses that it influences viewers' enjoyment while they are watching videos. Using real-time response measures, this experiment pitted both hypotheses against each other. The results indicate that if viewers are exposed to social information before watching a video, a processing effect emerges on their enjoyment as they are watching. If viewers are exposed to social information after watching a video, a judgement effect on their retrospective video enjoyment occurs but not on their video evaluations. These new insights advance our understanding of how social information affects video viewers.*

**Keywords:** Social Information, Online Videos, Video Enjoyment, Video Evaluations, Real Time Response Measures

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Social media platforms are indispensable in today's media landscape and many people use them to watch online videos. In 2019, the video platform YouTube was used by 73% of the U.S. adult population, making it more popular than Facebook or Twitter which are used by 69% and 22% of U.S. adults respectively (Perrin & Anderson, 2019). Indeed, a survey by Google (2016) indicated that six out of ten people prefer online video platforms over live television. With so many people turning to online platforms for their daily dose of entertainment, scholars have started to investigate how entertainment experiences arise when individuals watch online videos. They found that the social information that accompanies online videos plays an important role in this process (i.e., Möller, Baumgartner, Kühne, & Peter, 2019;

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Möller & Kühne, 2019; Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter, Krämer, Benninghoff, & Gallus, 2018).

Social information refers to evaluative information about media content provided by users, often presented in the form of user comments or (dis)likes. Scholars found that social information influences the enjoyment that viewers experience when they watch online videos. The term enjoyment refers to viewers' experiences of fun and pleasure in response to online videos and scholars have labeled such experiences as hedonic entertainment experiences (Wirth, Hofer, & Schramm, 2012). In line with this literature, we regard enjoyment as a psychological response state that (although it includes physiological and cognitive dimensions) is predominantly the result of viewers' affective responses to media content (Vorderer, Klimmt, & Ritterfeld, 2004). Scholars found that when individuals watch a video accompanied by social information and afterwards they are asked to indicate how much they enjoyed it, viewers who saw positive social information indicate that they experienced more fun when watching the video than viewers who saw negative social information (Möller et al., 2019; Möller & Kühne, 2019; Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter et al., 2018). Hence, when individuals use online video platforms, the videos and the social information presented on those platforms jointly shape viewers' video enjoyment.

By presenting videos and social information, online video platforms contain aspects of both mass communication and interpersonal communication. Mass communication refers to one-way message transmissions from a central, organizational source to a large audience (Flanagin, 2017; Walther et al., 2010). This is typically being done by broadcasting identical content to a large and relatively undifferentiated population (Cathcart & Gumpert, 1983; Walther et al., 2010). Online video platforms contain mass communication because they show the same videos *and* social information to anyone who uses the platform. However, the social information that is presented on online video platforms is also the result of interpersonal communication. Interpersonal communication is, amongst other things, characterized by a bidirectional exchange of messages between communicators who exchange the roles of sender and receiver (Cathcart & Gumpert, 1983; Flanagin, 2017). The exchange of the roles of sender and receiver is typical for social information. When writing user comments about a video, the viewers of the video take on the role of senders: They convey messages to other viewers of the video. Conversely, when reading the comments that those others wrote about the video, they take on the role of receivers: They obtain the messages that other viewers conveyed about the video.

The finding that social information can alter viewers' video enjoyment implies that the merger of mass and interpersonal communication (Walther (2017)) in social information on online video platforms affects users' enjoyment when they watch online videos. After all, social information, which is produced through interpersonal communication processes, may itself influence video viewers as it is mass communicated to viewers. In this context, however, it is still unclear how precisely this effect emerges. The literature offers two possible theoretical explanations. First,

the judgement effect hypothesis suggests that social information alters viewers' evaluations of a video because viewers tend to adjust their own video evaluations so that they are similar to the evaluations as reflected by other viewers (i.e., [Waddell & Bailey, 2019](#); [Waddell & Sundar, 2017](#); [Winter et al., 2018](#)). Second, the processing effect hypothesis suggests that social information creates expectations about media content. Such expectations steer viewers' focus toward those elements of the content that are in line with their expectations and away from those elements that contradict their expectations. This way, social information affects how people process and experience media content (i.e., [Shedlosky-Shoemaker, Costabile, DeLuca, & Arkin, 2011](#); [Tiede & Appel, 2020](#)).

Both the judgement effect hypothesis and the processing effect hypothesis suggest that video viewers are influenced by the social information that they are exposed to, albeit in different ways. While the judgement effect hypothesis suggests that social information affects viewers' evaluations of a video, the processing effect hypothesis implies that social information changes viewers' video enjoyment. Viewers' evaluations refer to viewers' overall assessment of a video after having watched it and it is often measured by asking individuals how much they liked media content ([Nabi & Krmar, 2004](#)). Enjoyment, on the other hand, refers to viewers' experiences that emerge and vary while they are watching a video. Although these concepts are related, they are not the same. For example, a viewer may not have enjoyed a video because it was not particularly funny, but may still evaluate it positively because she liked the scenery or the music used in it.

Although both explanations for the effect of social information on video enjoyment seem plausible, it is yet unclear which mechanism is at work. To learn more about this, the present study tests both the judgement effect hypothesis and the processing effect hypothesis. Investigating how social information presented alongside online videos alters viewers' evaluations and experiences of these videos will advance our understanding of the implications that the merger of mass and interpersonal communication into single platforms has for the emergence of viewers' video enjoyment.

### **The judgement effect hypothesis**

Several scholars have stated that researchers need to develop a new approach in order to advance our theoretical understanding of how mass and interpersonal communication simultaneously shape users' perceptions and experiences of media content (e.g., [Chaffee & Metzger, 2001](#); [Walther et al., 2010](#); [Walther & Valkenburg, 2017](#)). [Walther \(2017\)](#) proposes that researchers should not view interpersonal and mass communication as distinct processes, but rather study constructs that are relevant in both mass communication and interpersonal communication contexts (i.e., metaconstructs). By investigating the role of such metaconstructs in situations where interpersonal and mass communication merge—as it is the case with social information on online video platforms—researchers can not only investigate if the

merger of mass and interpersonal communication affects media users, but also study *how* such effects arise (Walther, 2017).

Following the suggestion by Walther (2017), the present study examines the role of a specific metaconstruct that can help to understand how the effect of social information on video enjoyment emerges. Next to other metaconstructs, Walther (2017) has identified message characteristics as a metaconstruct that applies to both mass and interpersonal communication. He defines this construct as aspects of messages related to, for example, their content, or the manner in which they are presented (Walther, 2017). In the context of social information accompanying online videos, a message characteristic that has frequently been studied by researchers is the valence of social information (e.g., Möller et al., 2019; Möller & Kühne, 2019; Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter et al., 2018).

To study the influence of the valence of social information, scholars conducted multiple experiments in which they manipulated the valence of social information so that it either indicated that others were positive about a video (e.g., through positive user comments or the presence of likes) or that they were negative about a video (e.g., through negative user comments or the presence of dislikes). They found that viewers who were exposed to positive social information indicated that they had enjoyed the video more than individuals who were exposed to negative social information (Möller et al., 2019; Möller & Kühne, 2019; Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter et al., 2018). Scholars argue that social information may influence video viewers because of a judgement effect where viewers adjust their video evaluations to the social information of a video (Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter et al., 2018).

There are two reasons why a judgement effect may emerge when video viewers are exposed to social information. Winter et al. (2018) propose that when video viewers are exposed to social information, they use that information to learn how the other viewers evaluated a video. This can elicit a process of social influence where viewers conform to the opinion of others when providing their own evaluations. Research on conformity effects suggests that individuals may either do so because of a perceived pressure to adjust to others in order to avoid negative consequences, or because they perceive the opinions of others as valuable and meaningful information which they can use when forming their own opinion (Deutsch & Gerard, 1955). Both notions imply that when viewers think back about a video to evaluate it, they adjust their video evaluations so that it is in line with the opinions of others. In support of this, Winter et al. (2018) found that viewers' own comments about a video varied in line with the social information to which they were exposed: Video viewers who were exposed to negative social information wrote more negative comments themselves than viewers who were exposed to positive social information.

Similar to the suggestion by Winter and his colleagues (2018), Waddell and Bailey (2019) and Waddell and Sundar (2017) propose an explanation based on the literature about the bandwagon effect which states that individuals adjust their

behavior to the behavior of the majority (Dahlgaard, Hansen, Hansen, & Larsen, 2017; Kiss & Simonovits, 2014; Marsh, 1985; Simon, 1954). Applying this to the context of online social information, Waddell and Bailey (2019) and Waddell and Sundar (2017) exposed participants to a video and its social information and asked them to evaluate the video afterwards by rating their enjoyment of it on a self-report scale. Participants were also asked to indicate the extent to which they believed that it is likely that other people would endorse the video (i.e., their bandwagon perception). Both studies showed an effect of the valence of social information on viewers' video evaluations which was mediated by viewers' bandwagon perception (Waddell & Bailey, 2019; Waddell & Sundar, 2017). In sum, then, research supports the judgement effect hypothesis stating that the valence of social information of online videos can influence viewers' evaluations of those videos.

### The processing effect hypothesis

In addition to affecting viewers' video evaluations, researchers state that social information may also affect viewers' experiences *while watching* a video. Insights into such processing effects are provided by Shedlosky-Shoemaker and her colleagues (2011). In their experiment, participants were first exposed to written reviews about a story and then were instructed to read the story themselves. In line with the researchers' hypothesis, the reviews affected participants' expectations of the story. Participants who read positive evaluations expected the story to be better than participants who read negative evaluations. Moreover, participants who read negative reviews that centered explicitly on the plot of the story emphasized the plot in their own reviews too (Shedlosky-Shoemaker et al., 2011, experiment 1). In their interpretation of their results, the authors propose that evaluative information provided by others can elicit expectations that steer individuals' attention to specific parts of media content, thus, altering their experiences.

The notion that expectations can bias individuals' experiences has been tested in multiple studies (Klaaren, Hodges, & Wilson, 1994; Tiede & Appel, 2020; Wilson, Lisle, & Kraft, 1989). For example, Klaaren and her colleagues (1994) manipulated participants' expectations about a movie by telling part of the participants that others enjoyed it a lot. In addition, they manipulated participants' actual experiences by having some of them watch it from a comfortable chair, while others watched the same movie with a poor picture quality and while they were seated in an uncomfortable chair, holding their head in a strange angle from the screen by placing their chin on a chinrest. Afterwards, the researchers asked participants to indicate how much they had enjoyed watching the movie. They found that participants' retrospective reports of their enjoyment of the video was affected not only by the actual pleasantness of the experience, but also by their expectations (Klaaren et al., 1994). This implies a processing effect in which evaluative information about an experience provided by others alters individuals' experiences.

The idea that the valence of social information can alter viewers' experiences by creating expectations implies that the timing of exposure to social information plays an important role. If social information alters viewers' experiences through expectations about videos, the effect can only emerge if viewers see the social information *before* they see the video because, otherwise, expectations cannot be created. Accordingly, [Waddell and Sundar \(2017\)](#) varied the timing of the appearance of comments about a video. While some participants saw comments near the beginning of a video, other participants saw comments near the end of a video. Afterwards, participants were asked to indicate how much they had enjoyed watching the video. However, in contrast to their hypothesis, the authors found that viewers' retrospective assessment of their video enjoyment was affected by the user comments regardless of the timing of exposure to the comments ([Waddell & Sundar, 2017](#)).

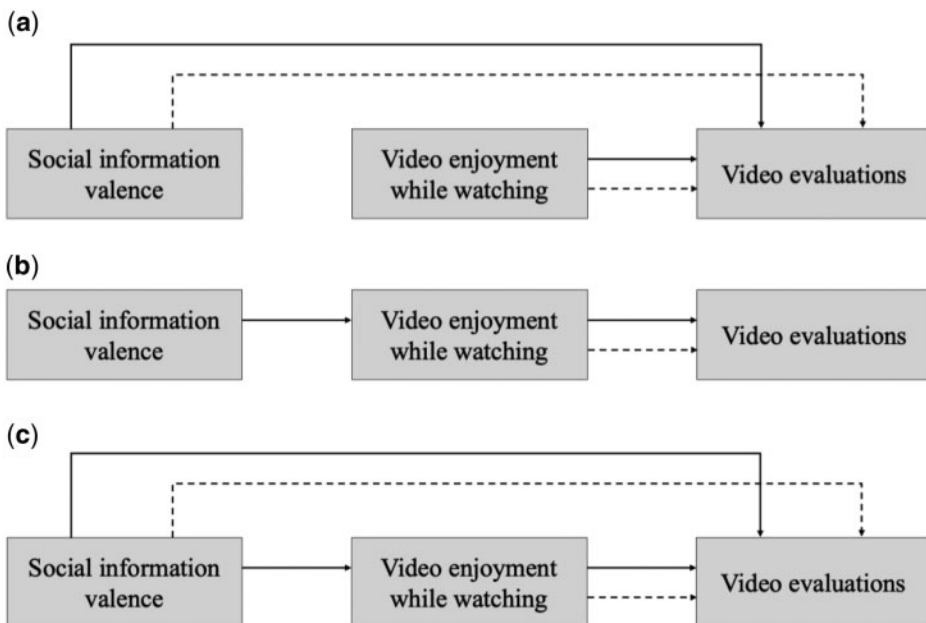
The unexpected finding of the study by [Waddell and Sundar \(2017\)](#) may be the result of how viewers' video enjoyment was measured in that study. Applied to this specific study, the processing effect hypothesis implies that the social information shown near the beginning of the video elicits bigger changes in viewers' experiences while watching the video than the social information that is presented near the end of the video. However, although the researchers varied the timing of the appearance of comments and asked participants to rate their enjoyment after having watched the video, they did not measure participants' enjoyment *during* video exposure. Consequently, the results of the study by [Waddell and Sundar \(2017\)](#) do not indicate if comments shown near the beginning of the video affected viewers' experiences *while* watching the video more than comments shown near the end of the video. Thus, while the study found no support for the processing effect hypothesis, it did not provide sufficient empirical evidence to dismiss the hypothesis either. A thorough assessment of the processing effect hypothesis, thus, requires that viewers' video enjoyment is measured while they are watching a video.

### Disentangling the mechanisms

In sum, the literature discussed above proposes two explanations for the effect of the valence of social information on viewers' video enjoyment, both of which seem plausible. Thus, it is possible that the valence of social information affects viewers' video evaluations as stated by the judgement effect hypothesis, their enjoyment while watching a video as suggested by the processing effect hypothesis, or both. To learn more about each of these scenarios, the present study tested the judgement effect hypothesis and the processing effect hypothesis by measuring both viewers' video evaluations as well as their enjoyment while watching a video. Moreover, the present study manipulated the timing of when social information was presented to the viewers such that viewers were exposed to it either before or after they watched the video. In this way, we aimed to broaden our understanding of how the valence of social information as a message characteristic affects online video viewers.

In the case that only the judgment hypothesis is true, there should be a direct influence of the valence of social information on viewers' video evaluations: Viewers who are exposed to positive social information should provide more positive video evaluations than viewers who are exposed to negative social information. This effect should occur regardless of whether the social information is presented before or after video exposure. However, even if such a direct effect of the valence of social information on viewers' video evaluation emerges, it seems unlikely that viewers' video evaluations depend solely on the social information to which they are exposed. It seems plausible that viewers' evaluations of a video are, at least partly, also based on how they experienced the video. Thus, although the judgement effect hypothesis implies a direct effect of the valence of social information on viewers' video evaluations, a direct effect of viewers' enjoyment while watching the video on their video evaluations is also expected to emerge. Importantly, in a scenario that is based solely on the judgement effect hypothesis, no effect of the valence of social information on viewers' enjoyment while watching the video should emerge (see Figure 1a).

If the effect of the valence of social information occurs solely based on the processing effect hypothesis, the valence of social information should alter viewers'



**Figure 1** (a) Expected effects according to a scenario based solely on the judgement effect hypothesis. (b) Expected effects according to a scenario based solely on the processing effect hypothesis. (c) Expected effects according to a scenario based on both the judgement effect hypothesis and the processing effect hypothesis. *Note:* Solid lines indicate effects that are expected to emerge for viewers who are exposed to social information before watching the video, dotted lines indicate effects that are expected to emerge for viewers who are exposed to social information after having watched a video.



enjoyment while watching the video. Subsequently, viewers' enjoyment while watching the video should influence their video evaluations. For example, if viewers are exposed to social information in which previous viewers discuss a video in a negative way, this should draw viewers' attention to the negative aspects of the video when they watch it themselves, leading them to experience less enjoyment while watching the video. This, in turn, should lead viewers to provide more negative video evaluations. In such a scenario, no effect of social information should occur if social information is presented after video exposure. Importantly, no direct effect of the valence of social information on viewers' video evaluations should emerge (see Figure 1b).

As both the judgement effect hypothesis and the processing effect hypothesis are supported by the literature, it is possible that both a judgement effect and a processing effect occur simultaneously. In this case, a direct effect of the valence of social information on viewers' video evaluations should emerge, regardless of the timing of exposure to social information and in line with the judgement effect hypothesis. In addition, based on the processing effect hypothesis, the valence of social information should affect viewers' enjoyment while watching a video, but only if viewers are exposed to social information before they watch the video. Finally, viewers' enjoyment while watching the video should affect their video evaluations (see Figure 1c).

## Method

We tested the hypotheses of this study through a laboratory experiment with a 2 (social information valence: positive vs. negative)  $\times$  2 (timing of exposure to social information: before video vs. after video) between-subjects design. Participants watched a video during which we measured their video enjoyment. Afterwards, participants completed a questionnaire. The collected data were imported and analyzed using R (version 3.6.1). The study was pre-registered through the Open Science Framework<sup>1</sup> and the authors received Institutional Review Board approval by the ethical committee of their faculty at the University of Amsterdam before the study was conducted.

## Participants

We recruited 220 students from the University of Amsterdam via the university's lab subject pool. In line with the pre-registered criteria for data exclusion, the data of six participants were excluded from the analyses because these participants indicated that they had not paid any attention to the social information that they were exposed to.<sup>2</sup> Thus, the final sample size of this study was 214 participants ( $M_{\text{age}} = 20.97$ ,  $SD_{\text{age}} = 4.23$ , 23.8% male). A power analysis using G\*Power ( $\alpha$  error probability = 0.05,  $1-\beta$  error probability = 0.8, numerator  $df = 1$ , and number of groups = 4) indicated that this is sufficient to detect a small to moderate effect of  $\eta_p^2 =$

0.05 (Cohen, 1988; Faul, Erdfelder, Lang, & Buchner, 2007). Participants were randomly assigned to one of four conditions such that they either saw positive social information before watching the video ( $n = 54$ ), negative social information before watching the video ( $n = 52$ ), positive social information after watching the video ( $n = 58$ ), or negative social information after watching the video ( $n = 50$ ).

### Procedure

Upon their arrival at the lab, participants were asked to read an informed consent form about the study. After giving informed consent, participants were led to a cubicle with a desktop computer to which a joystick was connected. The researcher explained that the study would consist of two parts, namely watching a movie and filling out a short questionnaire. The researcher further explained that the study was about how much enjoyment people experience when they watch online videos, and that participants could indicate this by using the joystick to move a slider while watching the movie. Then, participants were presented with a short (43 seconds) practice video showing different images as well as the slider. Participants could use this video to practice working with the joystick. The researcher stressed that it was important that participants would constantly use the joystick to indicate their enjoyment while watching the video. After trying out the joystick, the researcher instructed participants to have a look at everything that appeared on the screen during the study and told them that they could call the researcher when they had finished the first part of the study. Once participants had completed the first part, they filled in an online questionnaire. Upon completion of the survey, participants received the reward of their choice, which was either €5,- or extra course credits. After the data collection was completed, all participants received a debriefing e-mail explaining the goal of the study and the fact that the social information to which they were exposed was fabricated by the researchers.

### Stimulus materials

During the experiment, all participants watched the same 6 min. and 3 s. animated movie *Monkaa* (Weybec, 2014). An animated short movie was chosen as the stimulus material for this study because animated short movies constitute a popular genre of YouTube videos. In addition to the movie, participants saw a screen presenting six user comments as well as video statistics indicating how many people allegedly had watched the video before and how many previous video viewers assigned a like to the video. Four different versions of this screen existed, which differed with regard to the valence of the social information and the moment at which it was presented.

For participants in the positive social information conditions, the screen presented five user comments that referred to the video positively (e.g., “I had such a good time watching this”) and one neutral comment (i.e., “Max you also writing a comment now?”). The comments scrolled through the screen such that four

comments were visible at the same time. The video statistics on the screen indicated that 41 people had watched the video before and that 39 of them assigned a like to the video. Once all six comments had scrolled through, the screen closed. Participants in the negative social information conditions saw the same screen, only it presented five user comments that discussed the video negatively (e.g., “I had such a bad time watching this”) and one neutral comment, and the video statistics indicated that of the 41 people who watched the video, two people had assigned a like to the video.

Participants who were exposed to the social information before the video saw the screen prior to the start of the video. To reduce the risk that participants would understand the goal of the study and realize why the social information was presented to them, a text on the screen presenting the social information said that the video that participants were about to watch was loading. While the video was allegedly loading, the user comments scrolled by. For participants who were exposed to the social information after the video, the screen appeared after they had watched the video. To reduce the risk that participants got suspicious about the appearance of the social information, the text on the screen indicated that the data that participants had provided while watching the video were being saved. While the computer was allegedly saving the data, the user comments scrolled by.

## Measures

### *Video enjoyment while watching the video*

To measure participants' enjoyment while watching the video, we recorded their real-time responses to the video. Participants were asked to move a slider that was presented on the screen next to the video. The slider consisted of a vertical axis with a block that appeared at the midpoint of the axis. By using a joystick, participants could either push the block upwards symbolizing more enjoyment or they could pull the block down on the axis which symbolized less enjoyment. If participants did not actively position the block by using the joystick, the block remained at the midpoint of the axis, indicating that participants' experiences were neutral. The axis ranged from  $-1000$  (*no enjoyment at all*) to  $1000$  (*maximum enjoyment*). Approximately every 50 milliseconds, the position of the block was recorded, resulting in over 7,000 real-time responses per participant. For each participant, we created an overall score by averaging their real time responses to the video ( $M = 146.90$ ,  $SD = 205.41$ , Skewness =  $-0.36$ , Kurtosis =  $3.84$ ).

### *Video evaluations*

Participants' video evaluations were measured by asking them to indicate how much they liked the video. Participants could do so by selecting one point from a 7-point scale ranging from 1 (*dislike a great deal*) to 7 (*like a great deal*), ( $M = 4.61$ ,  $SD = 1.39$ , Skewness =  $-0.68$ , Kurtosis =  $2.59$ ). When video viewers are asked to evaluate videos outside of experimental settings, they are often asked to do so in one single way as opposed to answering multiple questions (e.g., movie review sites

Rotten Tomatoes and IMBD ask users to rate videos on 10-point and 5-point scales respectively). Hence, a single-item scale measuring video evaluations resembles how video evaluations are typically measured outside of experimental settings. Based on this and in line with extant research using single-items scale to measure evaluations (e.g., Peterson, 2004), the present study measured viewers' video evaluations using a single-item scale.

#### *Retrospective video enjoyment*

We included a scale used in previous research on the effects of social information that measured viewers' retrospective video enjoyment (e.g., Möller et al., 2019; Möller & Kühne, 2019). This scale was developed by Wirth and colleagues (2012). It asked participants to think back about the video they had seen and rate their video enjoyment by indicating their (dis)agreement with three items, namely "I felt well entertained watching the video", "It was fun watching the video", and "It was pleasurable watching the video". For each statement, participants could select one point from a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). To assess whether the three items formed a single factor, we conducted a principal axis factor analysis with oblique rotation (direct oblimin). The results indicated that all items loaded on one factor (eigenvalue = 2.3) explaining 79% of the variance. The results of a reliability analysis showed that together, the items formed a reliable scale (Cronbach's Alpha = .92). By averaging participants' scores on the three items, we created an overall score ( $M = 4.50$ ,  $SD = 1.39$ , Skewness =  $-0.61$ , Kurtosis = 2.69).

#### *Manipulation checks*

To assess if participants perceived the manipulation of the valence of the social information as intended, we asked them to select the best option regarding two statements, namely "In the user comments, the video was discussed:", and "Based on the likes that the video received, it seems that most previous viewers evaluated it:". Participants could answer these questions by either selecting one point from a 7-point scale ranging from 1 (*very negatively*) to 7 (*very positively*), or by selecting "I cannot remember". To assess whether participants perceived the manipulation of the timing of exposure to the social information as intended, we asked them to complete the following sentence: "During the study, I . . .". Participants could complete this sentence by choosing one out of three options, namely (1) ". . . first saw a screen presenting likes and user comments about a video and then I watched that video", (2) ". . . first watched a video, and afterwards, I saw a screen presenting likes and user comments about it", or (3) "I cannot remember".

#### *Joystick usage*

To get a sense of how participants experienced using the joystick while watching the video, we asked them to answer the following question: "While you watched the video, how much did you move the joystick to indicate how much enjoyment you

experienced?”. Participants could answer this question by moving a slider on a continuous scale ranging from 1 (*I did not move the joystick at all during the video*) to 7 (*I moved the joystick constantly during the video*) using the computer mouse, ( $M = 5.66$ ,  $SD = 1.04$ ). In addition, we asked participants to indicate their (dis)agreement with the following statement: “While I was watching the video, I found it difficult to remember to move the joystick”. Participants could indicate their (dis)agreement by selecting one point from a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), ( $M = 2.34$ ,  $SD = 1.34$ ).

#### *Prior exposure to video*

We assessed whether participants had already seen the video before they took part in the study. All participants indicated that they had not seen the video before they participated in the study.

#### *Demographic information*

Finally, we asked participants to answer three questions in order to provide a description of the study sample. In an open question, we asked participants to indicate their age in years. Participants were also asked to answer the question “What is your biological sex?”, which they could answer by selecting one out of three options, namely “male”, “female”, or “other, namely: . . .”. Answering this question, 23.8% of the participants indicated that their biological sex was male and 76.2% of the participants that their biological sex was female. No participant indicated that their biological sex was something other than male or female. Finally, we asked participants to indicate how much they (dis)like animated films and videos. They could do so by selecting one point from a 7-point scale ranging from 1 (*dislike a great deal*) to 7 (*like a great deal*), ( $M = 5.5$ ,  $SD = 1.27$ , Skewness =  $-0.83$ , Kurtosis =  $3.21$ ).

## **Results**

### **Participant distribution**

Research has shown that individuals’ biological sex and their media genre preference predicts their entertainment experiences in response to media content (Hixson, 2006; Oliver, Weaver, & Sargent, 2000). To limit the risk that these two factors influence our results, we tested if the randomization ensured that participants were distributed equally across conditions in terms of their biological sex and their media preferences. First, a chi-square test showed that there were no differences between conditions with regard to participants’ biological sex,  $\chi^2(3, N = 214) = 2.23$ ,  $p = .527$ , Cramer’s  $V = .10$ . Second, a one-way analysis of variance (ANOVA) indicated that the conditions did not differ in terms of participants’ (dis)liking of animated short films,  $F(3, 210) = 0.74$ ,  $p = .529$ ,  $\eta_p^2 = .01$ . These results indicate that the participants were distributed approximately equally across conditions in terms of their biological sex and in terms of how much they (dis)like animated short films.

### Manipulation checks

To assess how participants perceived the manipulation of the valence of the social information, we first examined how participants had perceived the user comments to which they were exposed. The data showed that 11 participants indicated that they did not remember how positively or negatively the user comments discussed the video. An ANOVA using the data of the other 203 participants showed that those who were exposed to positive social information believed that the comments were more positive ( $M = 6.69$ ,  $SD = 0.70$ ) than participants who were exposed to negative social information ( $M = 2.29$ ,  $SD = 1.26$ ),  $F(1, 201) = 972.64$ ,  $p < .001$ ,  $\eta_p^2 = .83$ . Second, we examined how participants had perceived the likes that were presented together with the user comments. We found that 29 participants could not remember how positively or negatively previous viewers evaluated the video based on the likes. An ANOVA using the data of the remaining 185 participants showed that participants in the positive social information condition believed that previous viewers evaluated the video more positively ( $M = 6.20$ ,  $SD = 0.92$ ) than participants in the negative social information condition ( $M = 2.70$ ,  $SD = 1.39$ ),  $F(1, 183) = 407.57$ ,  $p < .001$ ,  $\eta_p^2 = .69$ .

Finally, we assessed whether participants knew if they had seen the social information before they watched the video, or after they had watched the video. We found that one participant could not remember whether (s)he first saw the video or the social information. The results of a chi-square test on the data of the remaining 213 participants indicated that of the 106 participants who were exposed to the social information before the video, 3 participants believed that they saw it afterwards. Of the 108 participants who were exposed to the social information after the video, one participant believed that the social information was presented before the video,  $\chi^2(1, N = 213) = 193.53$ ,  $p < .001$ , Cramer's  $V = .95$ . Based on the results discussed above, we deemed that overall, our manipulations were successful. Accordingly, and in line with the pre-registered criteria for data exclusion, no participants were excluded from the analyses based on their answers to the manipulation checks.

### Analyses of the judgement effect hypothesis and the processing effect hypothesis

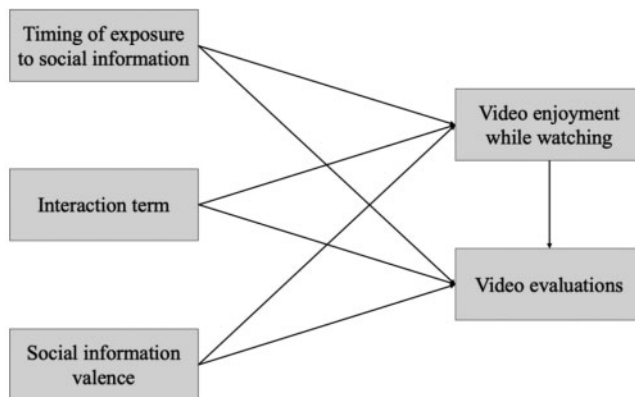
To unravel how social information affects viewers' evaluations and enjoyment of online videos, we ran two analyses. First, we focused on the judgement effect hypothesis by testing whether viewers' video evaluations were affected by the valence of the social information and whether this depends on the timing of exposure to social information. To this end, we ran an ANOVA that included participants' video evaluations as the dependent variable. The valence of the social information (negative versus positive social information) and the timing of exposure to the social information (exposure to social information after the video versus exposure to social information before the video) were included as the independent variables. Although no main effect of the timing of exposure to social information was expected, the

results regarding this main effect are reported below. This analysis was included in the preregistration of this study.<sup>3</sup>

The results of this analysis showed no difference between the video evaluations of participants in the positive social information condition ( $M = 4.77$ ,  $SD = 1.30$ ), and the video evaluations of participants in the negative social information condition ( $M = 4.44$ ,  $SD = 1.47$ ),  $F(1, 210) = 2.96$ ,  $p = .087$ ,  $\eta_p^2 = .01$ . Furthermore, there was no difference between the video evaluations of participants who were exposed to the social information before watching the video ( $M = 4.56$ ,  $SD = 1.39$ ) and those who were exposed to the social information after having watched the video ( $M = 4.67$ ,  $SD = 1.39$ ),  $F(1, 210) = 0.28$ ,  $p = .595$ ,  $\eta_p^2 < .001$ . Finally, there was no interaction effect of the valence of social information and timing of exposure to social information on video evaluations,  $F(1, 210) = 0.01$ ,  $p = .943$ ,  $\eta_p^2 < .001$ .

The ANOVA described above tested whether the valence of social information affected viewers' video evaluations. For a more nuanced comparison of the judgement effect hypothesis and the processing effect hypothesis, we tested the mediating role of viewers' enjoyment while watching the video. To do so, we ran a path model (see Figure 2) using Lavaan (version 0.6.5) that included participants' video evaluations as the dependent variable. The valence of the social information, the timing of exposure to social information, and their interaction term were included as the independent variables. Participants' enjoyment while watching the video were included as the mediator. This path model was pre-registered except for an explicit mentioning of an interaction term.<sup>4</sup> The model had perfect fit because it was saturated (i.e., the number of estimated model parameters equaled the number of unique elements in the model's covariance matrix).

The results showed no significant interaction effect of the valence of social information and the timing of exposure to social information on viewers' video evaluations,  $\beta = -0.09$ ,  $B = -0.28$ ,  $SE = 0.27$ ,  $p = .289$ , nor did they show a significant interaction effect on viewers' enjoyment while watching the video,  $\beta = 0.14$ ,



**Figure 2** Path model run to test the judgement effect hypothesis and the processing effect hypothesis.

$B = 0.65$ ,  $SE = 0.56$ ,  $p = .244$ . Based on these results, the valence of social information did not seem to affect viewers' video evaluations or their enjoyment while watching the video. This contradicts the judgement effect hypothesis, which states that the valence of social information affects viewers' video evaluations. It also contradicts the processing effect hypothesis, which states that the valence of social information alters viewers' enjoyment while watching a video.

As discussed before, the processing effect hypothesis implies that an effect of the valence of social information on viewers' enjoyment while watching can only emerge if viewers are exposed to social information before they watch a video. The effect cannot emerge if viewers are exposed to social information after they have watched a video because, in this case, it is impossible for the valence of social information to alter their enjoyment while watching a video. Hence, we aimed to assess whether the effect of the valence of social information on viewers' enjoyment while watching a video emerged for those viewers who saw the social information before they watched the video but not for those viewers who saw the social information after they had watched the video. Therefore, we inspected the effects of the valence of social information separately for viewers' who were exposed to social information prior to watching the video and for viewers' who were exposed to social information after having watched the video.

For participants who were exposed to the social information before watching the video, the results showed no direct effect of the valence of social information on viewers' video evaluations,  $\beta = -0.01$ ,  $B = -0.05$ ,  $SE = 0.19$ ,  $p = .785$ . However, the valence of social information did affect viewers' enjoyment while watching the video: Positive social information led to more enjoyment while watching the video, while negative social information led to less enjoyment while watching the video,  $\beta = 0.18$ ,  $B = 0.81$ ,  $SE = 0.39$ ,  $p = .039$ . In addition, there was an indirect effect of the valence of social information on viewers' video evaluations, mediated by their enjoyment while watching the video,  $\beta = 0.13$ ,  $B = 0.39$ ,  $SE = 0.19$ ,  $p = .041$ . Finally, the results showed no significant total effect (i.e., the sum of the direct and the indirect effect) of the valence of social information on viewers' video evaluations,  $\beta = 0.12$ ,  $B = 0.34$ ,  $SE = 0.27$ ,  $p = .206$ .

For participants who were exposed to the social information after having watched the video, the results showed no direct effect of the valence of social information on viewers' video evaluations,  $\beta = 0.08$ ,  $B = 0.23$ ,  $SE = 0.19$ ,  $p = .218$ . As expected, the valence of social information did not influence viewers' enjoyment while watching the video,  $\beta = 0.04$ ,  $B = 0.17$ ,  $SE = 0.39$ ,  $p = .673$ . Moreover, no indirect effect of the valence of social information on video evaluations mediated by viewers' enjoyment while watching the video was found,  $\beta = 0.03$ ,  $B = 0.08$ ,  $SE = 0.19$ ,  $p = .673$ . Finally, no significant total effect of the valence of social information on viewers' video evaluations was found,  $\beta = 0.11$ ,  $B = 0.31$ ,  $SE = 0.27$ ,  $p = .242$ .

In sum, the two analyses showed no direct effect of the valence of social information on viewers' video evaluations. This runs counter to the judgement effect



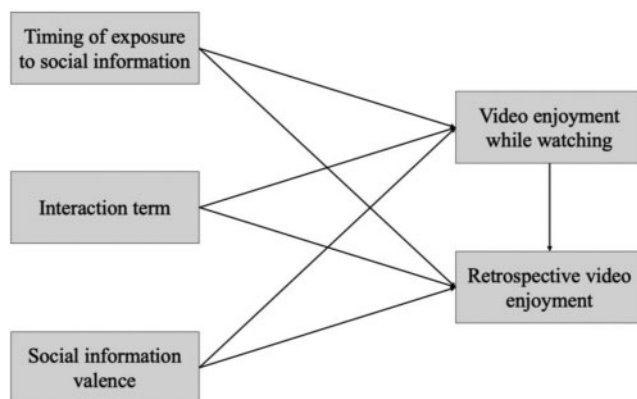
hypothesis. However, the results do support the processing effect hypothesis by showing that for viewers who were exposed to the social information before watching the video, the valence of social information affected their enjoyment while watching the video: Viewers who were exposed to positive social information before watching the video experienced more enjoyment while watching than viewers who were exposed to negative social information before watching the video.

### Post hoc analyses on retrospective video enjoyment

We found no effect of the valence of social information on viewers' video *evaluations*, which seems to be at odds with previous studies that did find an effect of the valence of social information on viewers' *retrospective video enjoyment*. To address this potential contradiction, we ran two post-hoc analyses (not pre-registered). The goal of these analyses was twofold: First, we aimed to replicate the results of previous studies, namely that the valence of social information has a direct effect on viewers' retrospective video enjoyment. Second, we aimed to learn more about the extent to which this effect can be explained by the judgement effect hypothesis or the processing effect hypothesis.

To replicate the findings of previous research, we ran an ANOVA that included participants' retrospective video enjoyment as the dependent variable, and the valence of social information as well as the timing of exposure to social information as the independent variables. The results showed that the valence of social information affected participants' retrospective video enjoyment: Participants who saw positive social information reported that they had enjoyed the video more ( $M = 4.72$ ,  $SD = 1.34$ ) than participants who were exposed to negative social information ( $M = 4.27$ ,  $SD = 1.40$ ),  $F(1, 210) = 5.77$ ,  $p = .017$ ,  $\eta_p^2 = .03$ . The results showed no difference between the retrospective video enjoyment of participants who were exposed to the social information before watching the video ( $M = 4.48$ ,  $SD = 1.42$ ) and participants who saw the social information after having watched the video ( $M = 4.53$ ,  $SD = 1.36$ ),  $F(1, 210) = 0.05$ ,  $p = .830$ ,  $\eta_p^2 < .001$ . There was also no interaction effect of the valence of social information and the timing of exposure to social information on retrospective video enjoyment,  $F(1, 210) = 0.17$ ,  $p = .677$ ,  $\eta_p^2 = .001$ . This finding replicates the results of previous studies that found that the valence of social information affects viewers' retrospective video enjoyment.

To learn more about how the effect of the valence of social information on viewers' retrospective video enjoyment emerges, we tested the mediating role of viewers' enjoyment while watching the video. To this end, we ran a path model (see [Figure 3](#)) that included viewers' retrospective video enjoyment as the dependent variable. The valence of social information, the timing of exposure to social information, and their interaction term were included as the independent variables. Furthermore, the model included viewers' enjoyment while watching the video as the mediator. Because the model was saturated, it had perfect fit. The results showed no interaction effects of the valence of social information and the timing of



**Figure 3** Path model run to test for the post hoc analyses examining the effect of the valence of social information on viewers' retrospective video enjoyment.

exposure to social information on viewers' retrospective video enjoyment,  $\beta = -0.15$ ,  $B = -0.48$ ,  $SE = 0.25$ ,  $p = .056$ , or their enjoyment while watching the video,  $\beta = 0.14$ ,  $B = 0.65$ ,  $SE = 0.56$ ,  $p = .244$ . To learn more about how social information affects viewers' retrospective video evaluations, we examined the results separately for participants who saw the social information before watching the video and for those who saw it afterwards.

For participants who saw the social information before they watched the video, the results showed no direct effect of the valence of social information on viewers' retrospective video enjoyment,  $\beta = 0.01$ ,  $B = -0.03$ ,  $SE = 0.18$ ,  $p = .852$ . However, as discussed before, the valence of social information did affect viewers' enjoyment while watching the video: Positive social information led to more enjoyment while watching the video than negative social information,  $\beta = 0.18$ ,  $B = 0.81$ ,  $SE = 0.39$ ,  $p = .039$ . Furthermore, the results showed an indirect effect of the valence of social information on viewers' retrospective video enjoyment, mediated by their enjoyment while watching the video,  $\beta = 0.13$ ,  $B = 0.41$ ,  $SE = 0.20$ ,  $p = .041$ . Finally, no significant total effect of the valence of social information on viewers' retrospective video enjoyment emerged,  $\beta = 0.14$ ,  $B = 0.37$ ,  $SE = 0.27$ ,  $p = .160$ .

For participants who saw the social information after they had watched the video, the results showed a direct effect of the valence of social information on their retrospective video enjoyment,  $\beta = 0.16$ ,  $B = 0.45$ ,  $SE = 0.18$ ,  $p = .011$ . However, as discussed above, there was no effect of the valence of social information on viewers' enjoyment while watching the video,  $\beta = 0.04$ ,  $B = 0.17$ ,  $SE = 0.39$ ,  $p = .673$ . There was also no indirect effect of the valence of social information on viewers' retrospective video enjoyment mediated by their enjoyment while watching the video,  $\beta = 0.03$ ,  $B = 0.08$ ,  $SE = 0.20$ ,  $p = .673$ . Finally, the results showed a significant total effect of the valence of social information on viewers' retrospective video enjoyment,  $\beta = 0.19$ ,  $B = 0.53$ ,  $SE = 0.26$ ,  $p = .044$ .

In sum, these findings show that for individuals who first see social information and then watch a video, social information impacts how much enjoyment they experience while watching the video. Exposure to positive social information leads viewers to experience more enjoyment while they watch the video than exposure to negative social information. However, when individuals see social information after having watched the video, a judgement effect emerges on their retrospective video enjoyment: Positive social information increases viewers' retrospective video enjoyment but negative social information decreases it.

## Discussion

By studying how enjoyment arises when individuals watch videos and their accompanying social information on online platforms, scholars have situated their work at the intersection of research investigating mass and interpersonal communication processes. Building on this research and following [Walther's \(2017\)](#) suggestion to study the role of metaconstructs, which apply to both mass and interpersonal communication, the present study investigated how a characteristic of social information, namely its valence, affects viewers' video enjoyment. Specifically, we tested two hypotheses about the mechanisms underlying the effect of the valence of social information on video enjoyment, namely the judgement effect hypothesis and the processing effect hypothesis. While the judgement effect hypothesis poses that the valence of social information alters viewers' video evaluations ([Waddell & Bailey, 2019](#); [Waddell & Sundar, 2017](#); [Winter et al., 2018](#)), the processing effect hypothesis suggests that the valence of social information affects viewers' enjoyment of a video while they are watching it ([Shedlosky-Shoemaker et al., 2011](#); [Tiede & Appel, 2020](#)). By investigating the role of the metaconstruct of message characteristics (i.e., the valence of social information), the current study investigated which of the two hypotheses best explains the effect of social information.

Our study offers two new insights into how interpersonal and mass communication processes together shape viewers' video enjoyment. First, our results showed that when viewers were exposed to positive social information, viewers retrospectively reported to have enjoyed the video more than when they were exposed to negative social information. However, for viewers who saw the social information before watching the video, this effect was fully mediated by their enjoyment during watching the video. Positive social information leads to more enjoyment *while watching* the video than negative social information. Thus, these findings provide support for the processing effects hypothesis: When exposed to social information before watching a video, people process the video differently than when they are exposed to it after having watched a video. This also has an effect on how positively or negatively they estimate their enjoyment retrospectively.

The second finding of this article relates to the judgement effect hypothesis. The judgement effect hypothesis states that social information can alter viewers' video evaluations ([Waddell & Bailey, 2019](#); [Waddell & Sundar, 2017](#); [Winter et al., 2018](#)).

However, our results do not support this notion as none of our analyses showed an effect of the valence of social information on viewers' video evaluations. Yet, the results of the post hoc analyses indicated that when viewers are exposed to social information after they watched the video, a judgement effect may still emerge on viewers' retrospective video enjoyment: Viewers who saw positive social information after having watched the video reported more retrospective enjoyment than viewers who saw negative social information after having watched the video. This stresses the role of the order in which viewers are presented to social information and videos. If viewers are exposed to social information before they watch a video, a processing effect on their enjoyment while watching the video emerges. If they see social information after having watched a video, a judgement effect on their retrospective video enjoyment emerges.

The findings of this study tentatively advance our knowledge about how the merger of interpersonal and mass communication processes (Walther, 2017) in social information on online video platforms shapes viewers' video enjoyment. On online video platforms, social information results from interpersonal communication between users and is then mass communicated alongside the videos that platforms present. Our findings show that social information, and its valence in particular, forms a central element of the content that is mass communicated by online video platforms. Social information can influence how video viewers process videos or how they retrospectively assess their enjoyment (depending on whether they first see the social information or the video). This goes beyond showing that online video viewers are affected by elements of both mass and interpersonal communication as they also show what mechanisms are at play when this influence emerges.

In addition to providing new insights into how enjoyment arises when individuals use online video platforms, the findings of this study help us contextualize findings of extant research. Previous studies typically exposed participants to social information either before they watched the video (i.e., Möller & Kühne, 2019), or while they were watching a video (i.e., Waddell & Bailey, 2019; Waddell & Sundar, 2017; Winter *et al.*, 2018). After watching the video, participants rated their video enjoyment. These studies found that viewers' retrospective video enjoyment was affected by the valence of social information. Based on our results, the most likely explanation for this finding of previous studies is that a processing effect of the valence of social information on viewers' enjoyment as they were watching emerged because viewers were exposed to social information before or while they watched the video. Viewers' enjoyment while watching the video, subsequently, also impacted their retrospective video enjoyment.

Our study showed that a judgement effect of social information on viewers' retrospective enjoyment emerged for those viewers who were exposed to social information after having watched the video only. For viewers who were exposed to social information before watching a video, no judgement effect emerged. An explanation for this finding may be that the judgement effect of social information on viewers'

retrospective video enjoyment is a recency effect. When video viewers are exposed to social information after having watched a video, the most recent information that they have about the video is provided by that social information rather than by their own experiences. In this case, they would base their retrospective video enjoyment on the social information that they saw as this is the most recent information about the video that they have. However, when video viewers watch a video after being exposed to its social information, their own experiences are the most recent information about the video at their disposal and they would base their retrospective video enjoyment on them. This would explain why we found no direct effect of the valence of social information on the retrospective video enjoyment of those video viewers who saw the social information before watching the video.

While our results show that a judgement effect of social information on viewers' retrospective video enjoyment can emerge, no such effect was found on viewers' video evaluations. This may be because while video viewers' retrospective video enjoyment refers to the experiences of the viewer, their video evaluations refer to characteristics of the media content itself (Raney & Ji, 2017; Vorderer, 2001). Our findings seem to indicate that social information elicits a change in viewers' interpretations of their own affective responses to a video, but not on their evaluations of the video itself. This is similar to cognitive reappraisal, a process whereby individuals alter their thoughts about the emotions that a stimulus elicits in order to change the affective impact that a stimulus has on them (Buhle et al., 2014; McRae, Ciesielski, & Gross, 2012). Similar to this notion, our findings indicate that individuals alter their thoughts about their affective responses to a video (i.e., their retrospective thoughts about their video enjoyment) when they are exposed to social information about that video after having watched it. However, an alternative explanation for our finding that a judgement effect emerged on viewers' retrospective enjoyment but not on their video evaluations is that it is a methodological issue: While viewers' retrospective video enjoyment was measured using a scale that consisted of multiple items, viewers' video evaluations were measured using a single-item scale. The single-item measure used to assess viewers' video evaluations may have been less reliable than the multi-item scale used to measure viewers' retrospective video enjoyment, leading to different results for viewers' video evaluations and viewers' retrospective video enjoyment. Yet, more research is needed to fully disentangle the psychological mechanisms through which viewers' video evaluations emerge.

The current study has at least three limitations. First, to investigate how social information affects viewers' video enjoyment, all participants were asked to watch the same video that was selected for them. This may have limited the external validity of this study. When using social media platforms, viewers watch online videos that they select themselves based on their own preferences. The present study does not indicate how social information impacts viewers' video enjoyment of videos that they selected because they expect to enjoy them. In addition, participants in this study watched a specific type of online video, namely an animated short film.

However, social media platforms offer viewers a choice between numerous different types of entertainment videos, ranging from unboxing videos to music videos. Although the effect of social information on viewers' video enjoyment has been found in several studies using different types of entertainment videos (e.g., Waddell & Bailey, 2019; Winter et al., 2018), it is unclear whether the findings of this study also apply to other types of videos.

Second, participants in this study were exposed to social information consisting of either many likes *and* positive user comments, or few likes *and* negative comments. While this stimulus material allowed us to focus on the effects of valence as a message characteristic of social information, outside of experimental settings, social information typically consists of both positive and negative user comments as well as both likes and dislikes. This raises the question of how social information with a mixed valence affects video viewers. From previous research showing that comments are more likely to affect video viewers than the number of likes, we can assume that if there is a discrepancy between the valence of user comments and the number of likes that a video receives, comments are likely to affect video enjoyment more (Möller et al., 2019; Winter, Brückner, & Krämer, 2015). However, extant research also found that viewers' video enjoyment is unaffected when they are exposed to a mixture of positive and negative comments (Möller et al., 2019). This suggests that social information's effect on viewers' enjoyment of videos depends on an additional message characteristic, namely the consistency of its valence. Moreover, extant research showed that a negativity bias emerges whereby viewers' video enjoyment is affected more by social information that consists of predominantly negative comments than by social information that consists of predominantly positive comments (Möller et al., 2019; Waddell & Bailey, 2019; Waddell & Sundar, 2017). Thus, user comments that are either exclusively positive or negative are most likely to influence viewers' video enjoyment, whereby exclusively negative user comments seem to have the strongest effect on video enjoyment.

Third, this study relied on a convenience sample consisting of mostly female college students. Although social media are popular among this specific demographic group, a sample consisting of exclusively college students limits the generalizability of this study's findings. While it seems unlikely that viewers' characteristics alter the mechanisms through which the effect of social information on video enjoyment emerges, it is possible that the overall effect of social information as found in this study differs for other demographic groups. By investigating this, future research could further advance our knowledge and indicate whose video enjoyment is most likely to change due to social information.

The current study investigated how videos and their accompanying social information collectively shape video enjoyment. It did so by manipulating a metaconstruct that applies to both mass and interpersonal communication, namely the message characteristic of valence (Walther, 2017). The results replicate those of previous studies and broaden our understanding of the effect of social information on video viewers, but they also raise new questions. For example, what is the role of

other metaconstructs that were held constant in the current study, such as viewers' relationships with the creators of the social information? Answering these questions may further our understanding of the effects of social information, the importance of which is emphasized by the theoretical insights provided here.

*Data availability:* The data collected and analyzed for this study are available upon request to A. Marthe Möller (a.m.moller@uva.nl).

## Notes

1. See <https://osf.io/jd5zk> for the full project pre-registration.
2. We asked participants to indicate how much attention they had paid to the user comments and the likes about the video on a continuous scale ranging from 1 (*I paid no attention to the likes and the comments at all*) to 7 (*I paid full attention to the likes and the comments*) ( $M = 4.24$ ,  $SD = 1.54$ , Skewness =  $-0.35$ , Kurtosis =  $1.96$ ). In response to this question, six participants indicated that they had not paid any attention to the likes and the comments. The data of these participants were excluded from the analyses. Despite our preregistration that participants who indicated that they had not paid any attention to the social information would be excluded from the analyses, self-reported attention may be biased. Therefore, we ran the analyses testing the hypotheses as well as the post-hoc analyses a second time using the data of the full sample. The results corroborated the original findings.
3. Refer to Note 1.
4. Refer to Note 1.

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