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The differential effects of related and unrelated emotions on judgments about media messages

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Abstract: The present study investigated the influence of related and unrelated emotions on judgments about a news article. An experimental study was designed to manipulate both the relatedness of an elicited emotion (i. e., anger) to the news article and processing depth. Following mood and emotion effects theory, related anger was expected to have a stronger effect on judgments about the media message than unrelated anger. Processing depth was expected to moderate this effect. The results showed a main effect of relatedness and a main effect of processing depth, but the interaction effect was not found. Implications of the findings for understanding how emotions influence the processing of media stimuli are discussed.

Keywords: related emotions, unrelated emotions, processing depth, judgment, media content

1 Introduction

A crucial topic in media effects research is the influence of emotions on judgments and opinion formation. Previous research has investigated the effects of related emotions – that is, emotions which are elicited by, or thematically related to, the object or topic which is evaluated – (e. g., Bless, Bohner, Schwarz, and Strack, 1990; Wirth, Schemer, and Matthes, 2010) as well as the effects of unrelated emotions – that is, emotions which are elicited by a different source than the target object or topic (e. g., Goodall, Slater and Myers, 2013; Nabi, 2003). Communication scholars have surmised that the relatedness of emotions may be an important boundary condition of emotional effects. Nabi (1999) suggested that

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message- and topic-relevant emotions are likely to have different effects than message and topic-irrelevant moods. Kim and Cameron (2011) proposed that research on unrelated emotions may be of limited use to understand the effects of message-related emotions. However, a systematic comparison of the effects of related and unrelated emotions does, to our knowledge, not yet exist. Such a comparison is relevant for two reasons. First, because media messages are typically complex and because media users actively interpret messages, a multitude of emotional reference objects emerge during media use (e. g., actions, events, and conditions that are depicted in a media message or construed by the recipient). Any given emotional response may, thus, have different degrees of relatedness to specific aspects of a media message and corresponding judgments. Therefore, relatedness is a particularly important boundary condition in the context of media use. Second, communication research has identified a broad range of effect sizes (perhaps intensities instead of sizes) when investigating emotional effects, including weak (Wirth et al., 2010) as well as moderate to strong effects (Kühne, Schemer, Matthes, and Wirth, 2011). A closer inspection of the role of emotional relatedness may help to understand why there exists substantial heterogeneity in the size of emotional effects.

All in all, a clear understanding of the differential effects of related and unrelated emotions as well as their boundary conditions is necessary to be able to accurately predict how emotions during media use influence recipients' judgments. The present study systematically compares the effects of related and unrelated anger on judgment formation during media use.

For this purpose, we first review empirical findings on the effects of related and unrelated emotions in communication research. Second, we discuss how emotional relatedness and its effects are conceptualized in mood and emotion theories. Third, we employ these theoretical frameworks to derive hypotheses about the effects of the relatedness of anger when forming a judgment about a news article. Fourth, the design and results of an experimental study that tested our theoretical assumptions are presented. Finally, the implications of the findings for mass media communication and future research are discussed.

Emotional media effects on judgments

In recent years, the investigation of emotional effects has received increasing attention in communication research (for a review, see Nabi, 2009; Wirth and Schramm, 2005). Particular attention has been paid to negative emotions such as anger, sadness, and fear. The focus on negative emotions is the result of two tendencies in communication research. First, pivotal lines of research aim at under-

standing the effects of negative media contents which are likely to elicit negative emotions. For instance, political communication scholars aim at understanding the effects of negative campaigning (Lau, Sigelman, and Rovner, 2007), youth and media scholars the effects of media violence (Fikkers, Piotrowski, and Valkenburg, 2017) and cyberbullying (Sumter, Baumgartner, Valkenburg, and Peter, 2012), and health scholars the effects of fear appeals (Witte and Allen, 2000). Second, negative emotions are often conceived as undesirable media effects that warrant special scholarly attention. For instance, scholars of media violence are concerned with the effects of exposure to violent media on angry feelings (Bushman and Huesmann, 2006) and children's fear responses to media contents (Valkenburg and Piotrowski, 2017). Similarly, political communication scholars aim at a better understanding of political cynicism by studying the effects of media use on negative emotions (e. g., Hibbing and Theiss-Morse, 1998).

Most research on emotional media effects is rooted in psychological frameworks (e. g., Lerner and Keltner, 2000). Within these frameworks, emotions are defined more narrowly than in lay language, and the narrow conceptualization is typically distinguished from moods. In comparison to emotions, moods have a longer duration and lower intensity, and they are more diffuse (Forgas, 1995; Frijda, 1993). Moods are more diffuse than emotions because they are not related to a specific stimulus (e. g., event or object), while emotions typically constitute responses to a specific stimulus. Accordingly, moods are mainly characterized by their valence (i. e., positivity or negativity), whereas emotions have a more complex structure, as they are characterized by multiple appraisals of a specific stimulus (Ellsworth and Smith, 1988). For instance, anger should be elicited if one thinks that an actor is responsible for a negative event, which the actor brought about intentionally or through reckless behavior, and if one believes one has adequate resources to cope with the situation. Thus, valence is but one of the different components of an emotion. Both emotions and moods are summarized under the broader term affects or affective states (e. g., Forgas, 1995; Frijda, 1993).

Influences of affective states on judgments are well-corroborated in communication research. One strand of research has investigated the effects of related emotions. In this perspective, emotions are typically regarded as response states that explain the effects of media contents on judgments related to the media content (Valkenburg and Peter, 2013). That is, emotions mainly function as mediators of media effects (Nabi, 2003). For instance, Goodall et al. (2013) investigated fear and anger responses to news stories about car accidents. They found that fear and anger mediate the effects of news stories on the causal attributions regarding car accidents. Similarly, in current framing effects research (Kühne, Weber, and Sommer, 2015; Lecheler, Schuck, and de Vreese, 2013), emotions are regarded as

mechanisms that explain the effects of news frames on attitudes, and in health communication, emotions function as mediators of the effects of fear appeals on attitudes and behaviors (e. g., Das, de Wit, and Stroebe, 2003).

A second line of research focused on the effects of moods and emotions which are not in any way connected to the media content which is to be evaluated. Unrelated moods and emotions are typically regarded as predictors of judgments about media contents or as moderators of media effects. A study which exemplifies the effects of unrelated moods on judgments was conducted by Wirth et al. (2010). In their experimental study, they induced positive and neutral moods by showing people humorous or neutral television advertising. Individuals in the good-mood condition judged the subsequent news stories more positively than those in the neutral-mood condition, even though the mood induction – the exposure to the humorous or neutral advertisements – was not associated to the subsequent attitude object (a news story). Lecheler, Schuck, de Vreese, Nelson, and de Lange (2012) investigated the moderating role of unrelated moods in framing effects. In their experimental study, they first measured participants' current mood and then presented them with either a speech advocacy or a speech opposition frame. They found that moods did indeed moderate the framing effect on the opinion toward free speech: The framing only affected the attitudes of those participants who were in a bad mood.

Explaining the effects of related and unrelated emotions

Even though previous research has found evidence for the effects of related and unrelated emotions, a systematic comparison of the differential impact of the two types of emotions does, to our knowledge, not yet exist. The likely reasons for this research gap are that both related and unrelated emotions have been shown to influence judgments and that main psychological theories suggest that both related and unrelated affect can influence judgments.

The affect-as-information approach (Schwarz, 1990) and the affect infusion model (Forgas, 1995) propose that moods have a valence-congruent effect on judgments. That is, positive moods lead to more positive evaluations of a certain object, theme, or content, whereas negative moods lead to more negative judgments. In the appraisal tendency framework (Lerner and Keltner, 2000), an emotion's valence is one of multiple determinants of judgments. The specific effect of an emotion depends on the particular pattern of appraisals that characterizes the emotion. Thus, each emotion is assumed to have idiosyncratic effects on judgments (e. g., Lerner, Gonzalez, Small, and Fischoff, 2003). For instance, anger, in line with its characteristic core appraisals, promotes the perception that

an event is negative, predictable, under human control, and brought about by others (Lerner and Keltner, 2000). Accordingly, anger typically increases the preference for punitive measures and negative attitudes toward actors (Weiner, 1995). Importantly, the appraisal tendency framework suggests that the effects of an emotion are restricted to judgments that are related to the emotion's appraisals (Han, Lerner, and Keltner, 2007). For instance, anger should have strong effects on evaluations of actors because its appraisals emphasize human control and responsibility, whereas other emotions with alternative appraisal tendencies (e. g., sadness) should have weaker effects on the evaluation of actors (Lerner and Keltner, 2000).

Two aspects of the above theories are noteworthy. First, the models agree on the explanation of affective influences. Namely, moods and emotions are assumed to influence judgments by activating mood- or emotion-congruent cognitions or by functioning as judgment heuristics. Second, the models suggest that these explanatory mechanisms can, in principle, be triggered by related and unrelated affect (Forgas, 1995; Han et al., 2007).

However, a close reading of the same theories indicates that the relatedness of an emotion can still play a decisive role in determining affective influences. An exact discussion of emotional relatedness first requires a clear definition of the concept. The differentiation between related and unrelated affect has its roots in social and emotion psychology (e. g., Lerner and Keltner, 2000; Perrott and Bodenhausen, 2002). Here, an emotion is regarded as related or connected to a judgment when it was elicited by the object which is evaluated. For instance, anger is related to the judgment of a person when characteristics or behaviors of that person elicited the anger. In contrast, an emotion is unrelated to a judgment when it was elicited by another object than the object which is evaluated. For instance, if someone is angry because they lost their job and the anger influences their evaluation of another person, this is an effect of an unrelated emotion. This definition suggests that relatedness is a *dichotomous variable*: Either the emotion was elicited by the object which is evaluated or not. However, a more plausible perspective is that emotions may be more or less related to a judgment, and that relatedness is a *continuum* (see Kühne, 2012). An emotion is fully related when it was elicited by the object under evaluation. However, some degree of relatedness may still exist when the emotion was elicited by an object which is conceptually similar or thematically related (see Collins and Loftus, 1975) to the object under evaluation. For instance, if an individual is angry about the legislative performance of the president, the anger may be related to the performance of congress, too.

The degree of relatedness of an emotion is likely to influence the strength of the emotional effect because individuals strive for accurate judgments and try

to correct evaluations when they perceive them to be biased. Accordingly, when individuals notice that their judgments are influenced by an unrelated emotion, they should try to correct for this influence by de-biasing their judgment (Petty, Wegener, and White, 1998; Schwarz, 1990). Lerner and Keltner (2000, p. 489) suggest that "conscious monitoring of one's judgment process will lead individuals to focus on judgment-relevant information and discount such judgment-irrelevant information as incidental affect". Discounting an incidental, that is, unrelated emotion consists in filtering out a perceived emotional impact on judgments and aims at forming an unbiased evaluation. Thus, the emotion itself is not reduced (as in emotion regulation), but the (irrelevant) emotional information is not incorporated into, or removed from, the judgment. Discounting depends on the presumed influence of the unrelated emotion on a judgement (Petty et al., 1998).

Because discounting necessitates the conscious monitoring of one's judgment process, as Lerner and Keltner (2000) point out, it constitutes a cognitively demanding task. It not only requires the individual to be able to identify the relatedness of an emotional state to a judgment but to also assess the scope of the bias and to adjust the judgment. Accordingly, correction processes should only take place when individuals have ample cognitive capacities available and when they are motivated to reflect upon a judgment (Albarracín and Kumkale, 2003; Ottati and Isbell, 1996), that is, when they employ the central processing route (Petty and Cacioppo, 1986) or process substantively (Forgas, 1995).

Because discounting emotions requires ample cognitive resources, related and unrelated emotions should have similar effects when individuals process heuristically but distinct effects when individuals process substantively (Kühne, 2012). Because individuals are not able to assess the relatedness of an emotion to a judgment under heuristic processing, related as well as unrelated emotions can exert an effect. In contrast, when individuals process substantively, they should be able to recognize to what degree an emotion is related or unrelated to a judgment. The more closely related an emotion is to a judgment, the higher is its diagnostic value for the individual and its impact on the judgment. In contrast, the weaker the link of an emotion is to a judgment, the less weight the emotion will have in the judgment process and discounting becomes more likely.

The differential effects of related and unrelated anger on the processing of news

In the preceding sections, we have outlined why related and unrelated emotions should have differential effects on judgments. Below, we apply this theoretical rationale to derive hypotheses about the effects of related and unrelated anger on judgments in response to a news article. We study anger because it is one of the most studied negative emotions (e. g., Kühne, 2012) and because it plays a crucial role in communication theories such as the general aggression model (Anderson and Bushman, 2002) and the cognitive functional model (Nabi, 1999). News articles are focused on for four reasons. First, news is a pivotal category of media messages, which are frequently investigated in communication research (Potter, 2009). Second, news is often emotionally charged (Gross, 2008; Potter, 2009), and emotional influences on judgments related to news may thus regularly occur. Third, anger should play a particularly important role in judgments related to news. News reports regularly discuss the responsibility of actors and suggest certain attributions of responsibility and evaluations of actors (Semetko and Valkenburg, 2000). Anger is a crucial emotion in news contexts because, on the one hand, it can be elicited by attributions of responsibility within news and, on the other hand, because it is likely to influence attributions of responsibility and evaluations of actors (e. g., Lerner and Keltner, 2000). Fourth, emotional biases in the processing of news can be regarded as particularly problematic. A core function assigned to news is to inform the public about relevant issues and facilitate rational opinion formation (e. g., Curran, 2005). Against this backdrop, biasing influence of ephemeral emotions on evaluations of political issues is typically, but not always, regarded as problematic (see Ferree, Gamson, Gerhards, and Rucht, 2002).

We first propose that individuals are more likely to form anger-congruent judgments about the content of a news story when they experience related anger than when they experience unrelated anger. More specifically, a news story which addresses the potential wrongdoings of an organization should result in more negative attitudes toward the organization when people experience related anger. The reason for this is that the appraisal tendencies of anger (which emphasize human control and responsibility over a negative event) should exert a stronger effect on the attitude toward the organization when the experienced anger is related than when the experienced anger is unrelated. We thus hypothesize:

> H1: When being exposed to a news story about the potential wrongdoings of an organization, readers will form a more negative attitude toward the organization when they experience related anger than when they experience unrelated anger.

Second, we suggest that the differential effects of related and unrelated anger on the attitude toward the organization should be moderated by processing depth. When readers process the news article heuristically, they may not be able to evaluate the relatedness of their anger to the evaluation of the organization. Thus, readers should not discount unrelated anger, and related and unrelated anger should result in similar attitudes. In contrast, substantive processing of the news article allows readers to evaluate the relatedness of their anger and to discount unrelated anger. We hypothesize:

> H2a: The effect of the relatedness of anger on the attitude toward the organization is moderated by processing depth. Under heuristic processing, the effect of relatedness will be smaller than under substantive processing.

The proposed interaction pattern implies that readers who experience unrelated anger and process substantively will, in comparison to other readers, have more positive attitudes toward the organization mentioned in the news article. The reason for this is that only readers who experience unrelated anger and who process substantively will discount their anger and not use it when evaluating the organization.

> H2b: Individuals who experience unrelated anger and process substantively will evaluate the organization more positively than individuals who experience unrelated anger and process heuristically or than individuals who experience related anger and either process substantively or heuristically.

2 Methods

An online experiment with undergraduate students was conducted. The experiment employed a 2x2-factorial design. The independent variables were relatedness (unrelated anger vs. related anger) and processing depth (heuristic vs. substantive processing). The dependent variable was the attitude toward a travel agency that was described in a news article.

Participants

Participants were undergraduate students at a large European university. They were recruited through a website and via e-mail. Thirty-five participants were excluded because they did not complete the questionnaire. Moreover, 16 participants were excluded because they did not spend an adequate amount of time

on reading the news article. More specifically, they were excluded because their reading time was below 120 seconds (the minimum time to properly read the article as determined by the authors) or above 472 seconds (i. e., two standard deviations above the mean). Two participants were excluded because they had negative values on the time counter, which is likely to be the result of a technical failure. Thus, 151 participants remained in the sample (119 females, 32 males; M_{age} = 23.91, SD = 8.93). As reward for their participation, they could choose to either obtain credits or participate in a raffle for two movie tickets.

Design and procedure

The study was conducted in German. Participants were randomly assigned to one of four conditions (35 in related/substantive condition, 40 in related/heuristic condition, 34 in unrelated/substantive condition, 42 in unrelated/heuristic condition). At the start of the experiment, the participants were asked to write about a personal life experience in which they had received unfair treatment either during a journey (related anger condition) or during an interpersonal interaction in everyday life (unrelated anger condition). Half of the participants were advised to read the article carefully (substantive processing), and the other half were asked to merely skim the article (heuristic processing). Participants then read an article about a travel agency. The article was fictitious to ensure that none of the participants had any preexisting attitude toward the agency. The article's style and formatting emulated a real news article.

After reading the article, the participants were asked about their attitude toward the travel agency. Participants' emotions, processing depth, and the relatedness of their personal life experience to the stimulus were subsequently measured. To assess the quality of the news article, participants were asked to indicate their perception of the professional workmanship and ambiguity of the article. Then, participants completed a knowledge test. Finally, participants selected the reward for their participation (course credits or chance of winning cinema tickets), and they were debriefed.

Stimulus materials and manipulation

News stimulus. A realistically looking news article was created, which had to fulfil several criteria. Emotional influences on judgments mainly arise when the judgment is not predetermined by existing attitudes (Forgas, 1995). Accordingly, we opted for a non-political issue because political judgments often have a strong

attitude base and are determined by ideological beliefs. To allow for the induction of related anger, a topic was required which related to participants' personal life experiences. Because all participants presumably have some personal experience with traveling, the news article described a travel agency that was supposedly involved in minor criminal activity: The travel agency attracted attention by offering extreme dumping prices for all-inclusive journeys. A closer look at the travel agency showed similar incidents in various travel destinations (e. g., Tunisia, Greece, and Turkey). Waiting for hours at the airport, tourists were coerced into visiting marketing events before transportation to the hotels. Therefore, the travel agency was accused of making illegal agreements with merchants and marketing organizations. However, these were merely allegations, with little actual evidence, and it was unclear whether the agency's actions had actually caused any damage to the tourists. Overall, the article thus included a high degree of ambiguity, which allows for emotional influences on judgments (Forgas, 1995). Perceived ambiguity and professional workmanship were found to be sufficiently high to ensure the possibility of emotional influence.[1]

Induction of related and unrelated anger. Participants were instructed to describe a personal experience in which they had received unfair treatment either during a journey, with examples of possible events such as airplane delays or poor organization by travel agencies (related condition), or during a human interaction in everyday life, such as bad or unfair treatment by a superior, family, or friends (unrelated condition). According to appraisal theories (e. g., Lerner et al., 2003), anger is caused when a negative event occurs due to someone else's responsibility. It was assumed that describing unfair treatment (i. e., a bad event that happened to the participants due to another person's responsibility or that of an organization) would provoke anger. Because the main theme of the article was a travel agency, anger caused by a bad travel experience was thematically related to the article, while anger due to a human interaction in everyday life was thematically unrelated to the article. It is important to note that the manipulation only aimed at eliciting different levels of anger relatedness but not of anger intensity across the experimental groups.

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1 Ambiguity and professionality were both measured using five indicators and a 5-point Likert scale (1= *not at all* to 5 = *very much*). The indicators of the article's professionality formed a reliable measure (α = .86). They were averaged to form a total score of professionality. A reliability analysis revealed that two indicators of ambiguity were responsible for the insufficient reliability. After excluding the two indicators, the remaining three indicators resulted in a reliable measure of ambiguity (α = .65), and a mean score was calculated. Inspecting the distribution of the two total scores revealed a mean professionality score of 3.45 (*SD* = 0.78) and a mean ambiguity score of 3.01 (*SD* = 0.91).

To test the induction of related and unrelated anger, a pilot study was conducted with eleven participants (related condition: 6, unrelated condition: 5). Anger and sadness were measured (see below) immediately after the recounting of the personal-life experience. Sadness was measured as a control variable: Because a negative travel (or personal) experience could potentially elicit sadness, it may function as a confounder. Results showed that participants in the related (M = 3.26, SD = 1.02) and the unrelated condition (M = 3.14, SD = .32) experienced about the same degree of anger (*part*. η^2 = .01). Moreover, participants experienced more anger (M = 3.21, SD = .75) than sadness (M = 2.66, SD = 1.38) (*part*. η^2 = .10*)*. However, it is important to note that recalling life events that elicited anger also seems to have elicited sadness. This suggests that sadness should be considered as a control variable in the main study (see also discussion of manipulation check in main study).

Processing depth. Participants in the substantive processing condition were told to read the following article carefully with all the time they needed. They were also informed that the topic was highly important and that they should thus consider the arguments carefully. Participants in the heuristic processing condition were led to believe that they had a limited amount of time to read the article, and they were instructed to just skim through the text.

Measures

Anger and sadness. To measure anger and sadness we adjusted the German scale by Renaud and Unz (2006) by adding additional indicators of the two emotions. The resulting set of indicators included eight adjectives referring to anger and five adjectives referring to sadness. Participants were asked to indicate the extent to which they currently felt specific emotions on a 5-point Likert scale from 1 = *not at all* to 5 = *very much*. In contrast to the pilot study, emotions were not measured immediately after the emotion induction but after the measurement of the dependent variable (i. e., the attitude toward the travel agency). This approach was chosen because measuring emotional responses via self-reports can make individuals aware of their emotional state, which can artificially trigger discounting processes (Ottati and Isbell, 1996). A principal axis factor analysis with oblique rotation revealed that 11 of the 13 emotional adjectives loaded correctly on an "anger" and a "sadness" factor. *Angry*, *indignant*, *mad*, *offended*, *irate*, *annoyed*, and *upset* loaded on the factor "anger". The items *sad*, *distressed*, *hurt*, and *unhappy* loaded on "sadness". The items *peevish* and *concerned* did not load clearly on either of these two factors and were excluded when mean indices of anger (M = 2.04, SD = 0.95, α = .91) and sadness (M = 1.86, SD = 0.87, α = .85) were calculated.

Relatedness to the stimulus. To check whether the description of an experience during a journey was more related to the stimulus than the description of an experience in an everyday interaction, we developed a measure of relatedness, which included five items. Participants indicated their response on a 5-point Likert scale from 1 = *not at all* to 5 = *very much*. An example of an item is "The topic in the article reminded me of my described personal life experience". The scale was reliable (M = 1.81, SD = 0.93, α = .85).

Involvement. To check whether the processing depth differed between the substantive and heuristic processing groups, we used an involvement scale (Schemer, Matthes and Wirth, 2007) with three items (e. g., "I have read the article attentively"). Participants could answer on a 5-point Likert scale, ranging from 1 = *not at all* to 5 = *very much*. The scale was reliable (M = 3.34, SD = 0.91, α = .81). A knowledge test was conducted, which functioned as a further proxy of processing depth. The measure was based on four open questions. The answers were coded from 1 (not at all correct) to 3 (completely correct); therefore, total scores could range from 4 to 12 (M = 8.13, SD = 1.90). A second person coded 10 % of the questions. Cohen's Kappa indicated that the intercoder reliability (κ = .83) was acceptable (Greve and Ventura, 1997). As a third indicator of involvement, the time participants needed to read the article (M = 232.92 seconds, SD = 61.05 seconds) was measured.

Familiarity with the issue. To ensure that differences in familiarity with the issue would not produce differences in judging the travel agency, we measured participants' familiarity with all-inclusive journeys. The item was "Are you familiar with the topic of all-inclusive journeys?" (Yes/No).

Attitudes toward the travel agency. Attitudes toward the travel agency described in the news article were measured using ten items constructed for this study. The participants could indicate their response on a 5-point Likert scale, which ranged from 1 = *not at all* to 5 = *very much*. An example of a positive item is "I would book a journey with this travel agency", and an example of a negative item is "I would not recommend this travel agency to my friends". The scale was reliable (M = 2.29, SD = 0.67, α = .85).

3 Results

Manipulation checks

Anger. All analyses were conducted in SPSS 25. A two-way ANOVA with relatedness and processing depth as independent variables and anger as dependent variable was conducted. Because Levene's test indicated heteroskedasticity (p = .005), heteroskedasticity-consistent estimation (HC4) was used (Darlington and Hayes, 2016).[2] The anger scores for the related anger group (M = 2.03, SD = 0.97) did not differ significantly from those for the unrelated anger group (M = 2.05, SD = 0.93): $t(3)$ = 0.25, p = .806, *part*. η^2 =.00. Nor did the anger scores differ significantly between the substantive processing group (M = 2.00, SD = 0.94) and the heuristic processing group (M = 2.08, SD = 0.96): $t(3)$ = 0.51, p = .608, *part*. η^2 =.00. Notably, a significant interaction between relatedness and processing depth emerged: $t(3)$ = –2.03, p = .044, *part*. η^2 =.03. However, because a series of pairwise comparisons (via planned contrasts with HC4-estimation) revealed no significant differences between the experimental conditions, we can assume that similar levels of anger were induced across the experimental conditions.

Sadness. A two-way ANOVA with relatedness and processing depth as independent variables and sadness as dependent variables was conducted. Because of heteroskedasticity (p = .006), HC4-estimation was used. In contrast to our expectations, we found that relatedness decreased the intensity of sadness: $t(3)$ = 2.44, p = .016, *part*. η^2 =.04. Processing did not have a main effect on sadness: $t(3)$ = −0.217, p = .828, *part*. η^2 = .00. There existed a significant interaction on sadness: $t(3)$ = –3.01, p = .003, *part*. η^2 = 06. The disordinal interaction seems to be the result of sadness being higher in the unrelated (M = 2.26, SD = 1.06) than the related condition (M = 1.50, SD = 0.65) when individual process substantively, and the unrelated (M = 1.81, SD = 0.82) and the related condition (M = 1.89, SD = 0.81) producing similar levels of sadness when individuals process heuristically.

A dependent samples t-test confirmed that participants experienced more anger (M = 2.04, SD = 0.95) than sadness (M = 1.86, SD = 0.87): $t(150)$ = 2.57, p = .011. The manipulation check showed that participants experienced similar

2 Standard ANOVA uses effect coding. However, in SPSS 25, dummy coding is used when an ANOVA (UNIANOVA) with heteroskedasticity-consistent standard errors (such as HC4) is estimated. To increase the comparability between OLS- and HC4-estimates, we used the LMATRIX sub-command to implement effect coding with HC4-estimation. Respective contrast codes were derived from the contrast coefficient matrix, which can be obtained with the PRINT TEST(LMATRIX) sub-command.

levels of anger across the experimental conditions and that they experienced more anger than sadness. However, the manipulation check also revealed that sadness unexpectedly differed across the experimental conditions. Consequently, we conducted two tests per hypothesis: a test with and a test without sadness as covariate. As the tests virtually produced the same pattern of significant findings, we report the results of the tests with sadness as a covariate. Results of the tests without a covariate are described if discrepancies exist. Moreover, we address implications of the differing levels of sadness in the discussion section.

Manipulation check for relatedness. A two-way ANOVA with the relatedness and processing depth as independent variables and perceived relatedness as the dependent variable was conducted. HC4-estimation was used to account for heteroskedasticity ($p < .001$). As predicted, the related anger group ($M = 2.04$, $SD = 1.11$) perceived the described personal-life experience to be significantly more related to the content of the article than the unrelated anger group ($M = 1.58$, $SD = 0.64$): $t(3) = -3.01$, $p = .003$, *part*. $\eta^2 = .06$. The substantive processing group ($M = 1.81$, $SD = 0.94$) did not differ significantly from the heuristic processing group ($M = 1.80$, $SD = 0.93$) in emotional relatedness: $t(3) = 0.04$, $p = .971$, *part*. $\eta^2 = .00$. No significant interaction emerged: $t(3) = -0.72$, $p = .473$, *part*. $\eta^2 = .00$.

The results show that individuals who described a bad experience during a journey experienced anger that was thematically more related to the described travel agency than anger of individuals who described a bad everyday interaction. Processing depth had no significant influence on perceived relatedness. Therefore, manipulation of relatedness was successful.

Manipulation check for processing depth. Two-way ANOVAs were conducted with relatedness and processing depth as independent variables and with involvement, knowledge, and reading time as the dependent variables. Involvement ($p = .304$), knowledge ($p = .110$), and reading time ($p = .755$) did not exhibit heteroskedasticity.

The mean values of involvement did not differ significantly between the related anger group ($M = 3.28$, $SD = 0.85$) and the unrelated anger group ($M = 3.40$, $SD = 0.90$): $F(1, 147) = 1.17$, $p = .280$, *part*. $\eta^2 = 01$. In contrast, the substantive processing group ($M = 3.63$, $SD = 0.80$) had a significantly higher processing depth than the heuristic processing group ($M = 3.09$, $SD = 0.93$): $F(1, 147) = 14.48$, $p = .000$, *part*. $\eta^2 = .09$. There existed no significant interaction: $F(1, 147) = 1.66$, $p = .200$, *part*. $\eta^2 = .01$.

The mean values for knowledge about the article did not differ between the related anger group ($M = 7.93$, $SD = 1.98$) and the unrelated anger group ($M = 8.32$, $SD = 1.82$): $F(1, 147) = 1.83$, $p = .178$, *part*. $\eta^2 = 01$. In contrast, the substantive processing group ($M = 8.51$, $SD = 2.04$) scored significantly higher than the heuristic

processing group (M = 7.80, SD = 1.72): $F(1, 147) = 5.36$, $p = .022$, *part.* $\eta^2 = .04$. There existed no significant interaction: $F(1, 147) = 0.47$, $p = .495$, *part.* $\eta^2 = .00$.

The mean values for reading time did not differ between the related anger group (M = 228.91, SD = 61.70) and the unrelated anger group (M = 236.88, SD = 60.54): $F(1, 147) = 1.23$, $p = .270$, *part.* $\eta^2 = 01$. In contrast, the substantive processing group (M = 257.80, SD = 61.66) scored significantly higher than the heuristic processing group (M = 211.99, SD = 52.34): $F(1, 147) = 24.81$, $p < .001$, *part.* $\eta^2 = .14$. There existed no significant interaction: $F(1, 147) = 2.90$, $p = .091$, *part.* $\eta^2 = .02$.

The results indicate that the participants who were advised to read the article carefully processed the information more elaborately than those who were advised to skim through the article. Therefore, the manipulation of processing depth was successful.

Check of familiarity with the issue

χ^2-tests were conducted to test whether there existed differences across the experimental conditions with regard to familiarity with all-inclusive journeys. There were no significant differences with regard to participants' familiarity with the topic: $\chi^2(3) = 1.19$, $p = .756$. The result of the χ^2–tests suggest that there are no differences in familiarity with all-inclusive journeys across the experimental conditions that may account for differences in the outcome variable.

In summary, the results of the manipulation checks showed that all participants felt a comparable level of anger when reading the article and that the manipulations of relatedness and processing depth succeeded. Moreover, issue familiarity was comparable across experimental conditions. However, because levels of sadness differed across experimental conditions, sadness was included as a covariate in the hypothesis tests.

Hypothesis tests

A two-way ANCOVA was conducted to test the effects of relatedness and processing depth on attitudes toward the travel agency (Hypotheses 1 and 2a), while controlling for sadness. Levene's test indicated heteroskedasticity ($p < .001$) and, thus, HC4-estimation was employed. There was a main effect of relatedness on attitudes toward the travel agency: $t(3) = 2.07$, $p = .040$, *part.* $\eta^2 = .03$. The unrelated anger group (M = 2.39, SD = 0.75) judged the travel agency significantly better than the related anger group (M = 2.19, SD = 0.57). There was also a main effect of

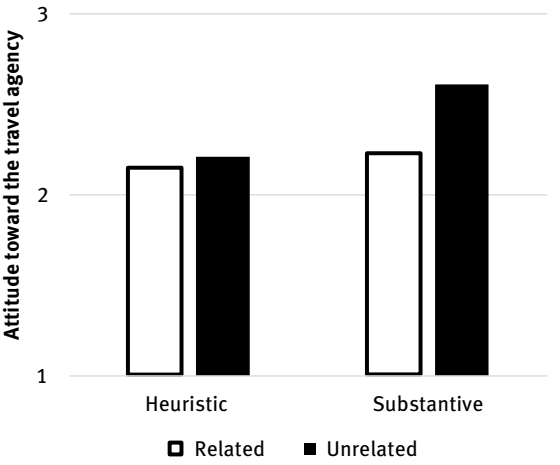

Figure 1: Attitude toward travel agency across experimental conditions.

processing depth on attitudes toward the travel agency: $t(3) = -2.13$, $p = .035$, *part.* $\eta^2 = .03$. Participants who processed substantively ($M = 2.41$, $SD = 0.81$) judged the travel agency significantly better than participants who processed heuristically ($M = 2.18$, $SD = 0.51$). There was no interaction between relatedness and processing depth: $t(3) = -1.55$, $p = .124$, *part.* $\eta^2 = .02$. The results provide evidence in favor of Hypothesis 1: Relatedness influenced the attitude toward the travel agency. Hypothesis 2a was not confirmed: Processing depth did not moderate the effect of relatedness.

Hypothesis 2b posited that the travel agency should be evaluated more positively by participants who both experienced unrelated anger and processed substantively. To compare the corresponding experimental condition with the other conditions, we conducted planned comparisons (Rosenthal and Rosnow, 1985) with sadness as control variable. Because of heteroskedasticity, HC4-estimation was employed. As shown in Figure 1, the analysis revealed that the unrelated anger / substantive processing group evaluated the travel agency significantly better compared to the other groups: $t(1) = 2.51$, $p = .013$. We also conducted planned pairwise comparisons between the unrelated anger / substantive processing group and each other group. The unrelated anger / substantive processing group ($M = 2.61$, $SD = 0.96$) evaluated the travel agency more positively than the related anger / substantive processing group, $t(1) = 2.10$, $p = .038$ ($M = 2.23$, $SD = 0.61$)[3]; the unrelated anger / heuristic processing group, $t(1) = 2.31$, $p = .022$ ($M = 2.21$, $SD = 0.47$); and the

3 When sadness was not included as a covariate, this comparison did not reach significance: $t(1) = 1.95$, $p = .053$.

related anger / heuristic processing group, $t(1) = 2.55$, $p = .012$ ($M = 2.15$, $SD = 0.55$). Overall, the analyses provide evidence in favor of Hypothesis 2b.

Finally, because our manipulation check indicated that sadness differed across experimental conditions and to provide additional evidence for the proposed mechanism of affect discounting, we conducted a set of ad-hoc analyses. In the related and the unrelated anger condition, partial correlations between anger and sadness, on the one hand, and the attitude toward the travel agency, on the other hand, were estimated. The second emotion and the processing condition functioned as covariates. If anger was the crucial determinant of attitudes toward the travel agency and if this effect was dependent on emotional relatedness, we would expect a significant effect of anger in the related emotion condition but not in the unrelated emotion condition, and no effect of sadness in either condition. The expected pattern was confirmed by the analyses: Anger led to a more negative attitude in the related emotion condition ($r = -.32$, $p = .005$) but not in the unrelated emotion condition ($r = .03$, $p = .834$), whereas sadness had no effect in either condition ($r = .08$, $p = .484$; $r = -.03$, $p = .807$).

4 Discussion

This study investigated whether the relatedness of emotions affected participants' judgments of a fictional travel agency. A main effect of relatedness was found: Individuals who felt unrelated anger judged the travel agency more positively than individuals who felt related anger. This finding corroborates the notion that the reference object of an emotional experience and, accordingly, the relatedness of an emotional experience to a judgment is a crucial variable to understanding emotional influences on judgments.

Furthermore, our expectation that processing depth would influence the effect of the relatedness of anger was partially confirmed: Although we did not find a significant interaction effect of emotional relatedness and processing depth on the evaluation of the travel agency, the experimental groups significantly differed in their evaluation of the agency: Participants who experienced related anger and who processed substantively evaluated the agency more positively. This finding is in line with our theoretical assumption that individuals will be able to identify and discount influences of unrelated emotional states if they sufficiently reflect, whereas unrelated emotions influenced judgments when individuals process heuristically.

A possible explanation for the missing interaction between emotional relatedness and processing depth may be that negative affect promoted relatively

high levels of processing depth in all conditions. Research has shown that moods and emotions impact processing depth and that negative affect often promotes more elaborate information processing (e. g., Bless and Schwarz, 1999). Accordingly, anger may have overridden the manipulation of processing depth and prompted more substantive processing, which allowed participants in both processing conditions to evaluate the relatedness of their emotions and employ discounting if necessary. In line with this explanation, the knowledge test showed significantly less knowledge for those who processed heuristically, but the values were still high, indicating that these individuals did not process completely heuristically. Future studies should investigate how the valence of emotional responses affects the likelihood of emotion discounting. Since negative emotions typically increase processing depth (Forgas, 1995), it is plausible to assume that discounting will be more prevalent when one experiences (unrelated) negative affect.

Our findings on the differential effects of related and unrelated emotions suggest that communication theories can be refined by considering the reference objects and relatedness of emotions. Identifying reference objects is relevant because plenty of them exist during media use: Media stimuli, such as news articles, address a variety of issue aspects (e. g., problems, perpetrators, victims, actors that can resolve the problem); media users can switch between different frames of reference (e. g., focus on the media content or the situation of the media use) (Wirth and Schramm, 2007); and individuals actively construe reference objects when processing a stimulus (Ortony, Clore, and Collins, 1988). Thus, media users may, for instance, be angry about a societal problem mentioned in an article; about the solutions political actors propose; about the way a journalist depicts an issue; or because they perceive the proposed solutions to the problem as an attack on their values. Identifying reference objects of emotions within media messages will help to evaluate which judgments are the likely subject of emotional influences. For instance, anger in response to a journalist should primarily influence evaluations of the journalist, and anger in response to a societal problem should primarily influence evaluations of the societal problem. At the same time, emotional spillover effects are possible, and emotional relatedness is an important variable to understand the strength of these effects. For instance, anger in response to a societal problem is related to political and economic actors that are responsible for the problem but not so much to the journalist who discusses the issue. Thus, anger in response to a societal problem is more likely to affect judgments of actors involved than judgments of the journalist. All in all, identifying reference objects and the relatedness of emotions to certain judgments will benefit the explanatory and predictive power of communication theories.

A series of limitations of the present study should be considered. First, we did not measure the process of emotion discounting directly in the present study. Albeit we can thus only make inferences about the psychological mechanism, these inferences are well grounded in existing theory and in the specific pattern of empirical results: The related and the unrelated emotion condition differ in the relatedness and not the intensity of the elicited anger, and, as shown in the ad-hoc analyses, anger is only associated with the attitude toward the travel agency in the related emotion condition. Still, we cannot fully preclude alternative theoretical explanations for the attitudinal differences. Notably, emotion regulation theory suggests that individuals can down-regulate emotional experiences if necessary (e. g., Gross, 2002). Individuals may have noticed that their emotions were not relevant for the judgment at hand and thus decided to regulate their emotional experiences. However, this hypothesis does not seem to be corroborated by our data because there were no differences in anger intensity across experimental decisions. Thus, affect discounting, at this point in time, still seems to provide the most plausible explanation for our findings. Moreover, it should be noted that an increasing number of researchers voice concern regarding the measurement of mechanisms in experimental research (Pirlott and MacKinnon, 2016; Stone-Romero and Rosopa, 2008). Accordingly, the mediation models which are typically employed in experimental research do not allow for causal analyses of psychological mechanisms, and psychological mechanisms can often be hardly measured in a valid way. The latter is specifically true for affective and automatic processes, such as emotional discounting: It may be possible to observe the outcomes of such processes, but valid indicators of the process itself are difficult to assess. Nonetheless, future research should try to learn more about the process of emotional discounting. Possibly, more can be learned about this process by investigating the boundary conditions that may affect emotional discounting (such as affective orientation, which is an individual's tendency to use emotions to form judgments, or topic-related cognitive schemata, which may influence how individuals evaluate the relatedness of an emotional experience) (Booth-Butterfield and Booth-Butterfield, 1990).

Another limitation is the relatively weak relatedness of the emotion anger in the related emotion group. As discussed, emotions can be more or less related to an object to be judged. The recalled experience of a journey was perceived as being only moderately related to the news story about the travel agency – which may have elicited (partial) emotion discounting. However, it is noteworthy that anger in the related-emotion group was significantly more related than anger in the unrelated-emotion group and that this difference led to significantly different judgments about the travel agency. Overall, these results support the validity and sufficient strength of the experimental manipulation of emotional

relatedness. Still, future research could aim for a stronger manipulation of relatedness, for instance, by adding an experimental condition with a high level of relatedness. This would facilitate the identification of the theoretically proposed interaction effect. However, it should be noted that, operationally, it is difficult to create high levels of emotional relatedness without simultaneously activating relevant cognitions, which would confound the effects of emotions. Because of this trade-off, we opted for a manipulation of emotional relatedness that was weaker but that was more likely to preclude confounding effects and ensure internal validity.

In the pilot, the induced anger was stronger than in the main study. This could be explained by the timing of the measurement. The manipulation check of the emotion anger was measured directly after participants described their personal experience. In the main study, the emotions were measured after participants finished answering the items measuring the dependent variables. This method avoided participants' awareness of their emotions influencing their responses to the dependent variables. It is highly probable that in the main study, individuals had a similar amount of anger as they had in the pilot study, but their anger decreased during the study.

Overall, the present study connected psychological and communication research on the influence of emotional states on judgments. It particularly emphasized the role of a hitherto understudied boundary condition – the relatedness of an emotional experience to a judgment – and its interplay with processing depth. It suggested that emotional discounting processes may explain the differential effects of related and unrelated emotions. Future research should investigate emotional discounting more closely because it may be a prevalent phenomenon, particularly in media use settings, which frequently elicit related as well as unrelated emotions.

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