The Experience of Emotional Shifts in Narrative Persuasion

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Abstract

Recent theory on narrative processes suggests that changes in recipients' emotional responses (emotional shifts) are characteristic of immersed story processing and precursors of narrative impact. In two experiments and a pilot study, a novel *self-probed emotional retrospection task* was used to measure emotional shifts. We examined the link between transportation and emotional shifts and the association of these processes with story-consistent attitudes, social sharing intentions, and behavior. We manipulated transportation via positive and negative reviews prior to story exposure. Consistent with theory, and across both experiments, we found that transportation was positively associated with the number and intensity of emotional shifts. Transportation was linked to affective-level attitudes in particular. While emotional shifts were not related to attitudes in Experiment 1, they were related to affective-level attitudes and social sharing intentions in Experiment 2. We further discuss the validity of emotional shifts measured through self-probed retrospections in the light of the results of the presented studies.

Keywords: emotional shifts, transportation, narrative persuasion, self-probed emotional retrospection method

The Experience of Emotional Shifts in Narrative Persuasion

The experience and impact of stories is a growing field of research in communication science, psychology, and related disciplines. Meta-analyses and narrative reviews underscore the potential of stories, fictional or non-fictional, to change recipients' attitudes, beliefs, and behavior (e.g., Green et al., 2020; Ratcliff & Sun, 2020; Van Laer et al., 2014). The persuasive influence of stories is typically explained by their ability to immerse recipients, a mental state referred to as transportation or narrative engagement. Recent theorizing has directed attention towards the role that the shifting emotional responses recipients experience throughout a story may play in the narrative persuasion process. The notion that emotion and transportation mutually facilitate one another has been advanced by many scholars in the past (e.g., Carroll, 1999; Oatley, 1994; Tan, 1996). According to recent theoretical work by Nabi and Green (2015), the emotional shifts that recipients of a story experience act as indirect motors of narrative persuasion by reinforcing transportation. Furthermore, emotional shifts are hypothesized to affect engagement with the narrative after exposure, such as information seeking or interpersonal communication, thereby extending narrative impact beyond message exposure. The purpose of this paper is to provide an empirical test of some of the core predictions put forward by Nabi and Green (2015; see also Nabi, 2015). Specifically, we focus on the relationship of emotional shifts with narrative transportation (Green & Brock, 2000) and the role emotional shifts play for story-consistent outcomes and social sharing intentions.

Empirical research on the dynamic experience of primary emotions when following a story is rare, which can be traced back to a scarcity of appropriate methodological approaches. We present the *self-probed emotional retrospection method* as a method to assess dynamic emotional experiences during story exposure. This method is first examined in a pilot study. In two subsequent experiments, levels of transportation are manipulated through positive vs. negative reviews. Experiment 1 tests the expected relationships between transportation, emotional shifts, and story-consistent attitudes using a

fictional love story. Experiment 2 aims to replicate and extend the results of Experiment 1 using a different narrative stimulus, a journalistic reportage. Furthermore, it takes on a more fine-grained view on story-consistent outcomes by examining effects on cognitive- and affective-level attitudes, donation behavior, and social sharing intentions.

Experiencing Narrative Worlds

Narrative effects are typically attributed to an immersed experiential state that is characteristic of story experience: Stories have the power to capture recipients' attention, to evoke a rich mental representation of the events unfolding, and to elicit strong emotions. Over the last two decades, several concepts have been developed to describe the state of being psychologically immersed in a story. A large amount of research on story experience is based on *narrative transportation* (Gerrig, 1993; Green & Brock, 2000) and the related construct of *narrative engagement* (Busselle & Bilandzic, 2008). Both concepts include the understanding of a story, constructing mental models, and building mental imagery (Busselle & Bilandzic, 2009; Gerrig, 1993). Transportation is argued to be a key mechanism for narrative persuasion to occur: In a state of heightened transportation, participants experience rich imagery of the story events, take over the perspective of the protagonists, and suspend processes (such as counterarguing) that lead to a resistance to change (Green & Brock, 2000; Moyer-Gusé, 2008; Slater & Rouner, 2002). Indeed, meta-analytic evidence shows that transportation plays a crucial role for persuasive outcomes (Tukachinsky & Tokunaga, 2013; Van Laer et al., 2014). Based on this foundational work, recent theory and research has increasingly acknowledged the intra-individual changes in recipients' experiential states during the course of a story (e.g., Appel, Schreiner et al., 2019; Bezdek & Gerrig, 2017; Nabi & Green, 2015). Our focus here is on affective responses, in particular the emotional ups and downs when reading or watching a story.

Emotional Shifts

Characteristic changes in events throughout the course of a story and related emotional content have been described in narrative theories since Aristotle (Aristotle, 367-322 B.C.E./2001; see for example Bordwell, 1985; Cutting, 2016; Freytag, 1863). In recent years, software-based corpus analyses have provided evidence of typical narrative patterns: For example, sentiment analyses of books in the Project Gutenberg fiction database show that stories generally follow one of six basic narrative arcs, which are characterized by dynamic changes in emotional content (Reagan et al., 2016). By getting swept up in a story, audiences therefore become susceptible to the dynamic emotional experiences implied by the narrative events. A major theoretical approach at reconstructing affective changes on the part of the recipient is provided by Nabi and Green (2015) who highlight the role of emotional shifts as part of narrative experience and persuasion before, during, and after story exposure. Emotional shifts are conceived as changes in the audience's emotional experience when following a narrative, "from negative to positive (e.g., fear to relief), from positive to negative (e.g., happiness to sadness), and even from one negative or positive emotional state to another of a similar valence (e.g., fear to anger or happiness to pride)" (p. 143). Nabi and Green use the term *emotional flow* to describe the succession of the emotional shifts that recipients experience. We rather prefer the term *emotional shifts* to avoid confusion with the concept of Csíkszentmihályi's *flow* which has also been applied to narrative persuasion research, but is a distinct concept (Green et al., 2020).

Narratives are an effective means to evoke different emotions because stories usually follow the journey of a protagonist faced with and overcoming obstacles or conflict. Audiences are inclined to evaluate the actions of the characters in a story and form affective dispositions towards them (Zillmann, 2006). This is bound to create dynamic emotional responses throughout the story as the characters face events and outcomes the audiences hoped for or feared. Nabi and Green (2015; see also Nabi, 2015) suggest that emotional shifts drive narrative persuasion; first, by attracting audiences

to specific content, second, by reinforcing narrative transportation, and third, by promoting post-narrative engagement. Furthermore, emotions have different action tendencies and implications for information processing, and may therefore serve different aspects of the persuasive message in a complementary way (Nabi, 2015). For example, the careful information processing and problem-solving tendency elicited by sadness may benefit long-lasting attitude changes, whereas the passiveness it is associated with may be alleviated by the activating properties of a positive emotion like happiness, which is related to more heuristic processing, feelings of trust, and sharing behavior (Nabi, 2002).

The influence of emotional shifts extends beyond story exposure: Narrative experiences characterized by emotional shifts may prompt audiences to different forms of post-narrative engagement. These may include processes like retrospective imaginative involvement with a story or parasocial relationships with its characters (Slater et al., 2018), and behaviors such as repeated reception of a story, information seeking, or social sharing and thereby extending persuasive influence into one's social network (Nabi & Green, 2015). Some studies highlight the role of emotion for stimulating interpersonal communication and information diffusion in social networks: Bartsch (2012) identified the social sharing of emotions (i.e., being inspired to talk about a movie with others) as one of the emotional gratification viewers gain from movies and television series and suggests that social sharing may play an important role for emotion regulation. Other studies show that emotionally charged content is more likely to be shared and spreads faster on social media than more neutral content (e.g., Stieglitz & Dang-Xhuan, 2013).

Following Nabi and Green (2015), we assume that emotional shifts and the experience of transportation are processes that reciprocally drive one another: On the one hand, emotional shifts help sustain attention to a narrative and facilitate states that are critical for persuasive effects (e.g., transportation) through excitation transfer (Zillmann, 1996), by creating suspense (e.g., Bezdek &

Gerrig, 2017), and by prompting orienting responses that direct cognitive resources to the evolving

story (Clayton et al., 2019). Conversely, the likelihood to experience emotional shifts consistent with

the story should increase with one's narrative transportation (Appel, Schreiner et al., 2019; Nabi &

Green, 2015). Busselle and Bilandzic (2008) describe narrative engagement in terms of deictic shifts

theory (Segal, 1995), highlighting that the story world becomes the world of reference to the

recipients, which is a requirement for emotional engagement. Particularly for written stories, in which

blatant visual and auditive cues are missing, attentional focus, narrative understanding and vivid

imagination of the events unfolding are prerequisites for experiencing the emotional shifts implied by

the story. These aspects are core components of narrative transportation. Therefore, transportation

should facilitate audiences' experience of the emotional ups and downs of a story.

Emotional shift theory leads to a range of testable predictions (Nabi & Green, 2015), but

assessing emotions that are experienced at different time points in a story is a methodological

challenge. Thus, research on the dynamic experience of emotions when reading, watching, or listening

to a story and its role for persuasive outcomes is scarce. Several studies manipulated the emotional

content of a narrative and assessed the influence on narrative persuasion (Appel & Richter, 2010;

Carrera et al., 2008; 2010; Hamby & Brinberg, 2016; Rossiter & Percy, 1991; Rossiter & Thornton,

2004). Some health communication studies suggest that storylines with changing emotional content,

such as a shift from negative to positive (Carrera et al., 2010, Rossiter & Thornton, 2004) or from

positive to negative valence (Carrera et al., 2008), are more persuasive than a story with negative

valence throughout.

These studies manipulated story content which may have led to a range of psychological

effects, including, but not limited to, emotional shifts. Moreover, whether or not emotional shifts were

affected by these manipulations remains an open question, because no measure of emotional shifts

was employed. To date, there is little empirical evidence on the link between recipients' experience of

emotional shifts and transportation or between emotional shifts and story-consistent attitudes and behavior. To address this research challenge, we introduce and apply a method that measures emotional responses in the moment they occur.

Measuring Emotional Shifts

There are several ways to assess online emotional responses to a narrative, for example psychophysiological measures to capture the arousal (and, to some extent, valence) dimension of emotion, observations of facial expressions, or assessment of brain activity (Mauss & Robinson, 2009). However, all of these options are resource intensive and require complex data analysis. Furthermore, scholars disagree on the question if any of these methods is suitable as a stand-alone measure of emotional reactions beyond their basic affective dimensions (i.e., valence and arousal; Siegel et al., 2018; Kreibig, 2010; Mauss & Robinson, 2009).

Self-report measures offer insights into the subjective feeling component of emotion and are commonly used due to their easy implementation and interpretation (Lang & Ewoldsen, 2011). The study of emotional dynamics as narrative processes requires a method that allows for assessing emotional states multiple times during story exposure while keeping interference with the narrative experience itself to a minimum. On the other hand, retrospective accounts of emotions felt during different parts of a story are likely to be impaired by different biases. Importantly, the accessibility of episodic memories may decrease with time, causing participants to rely on generalized beliefs about emotions instead (Robinson & Clore, 2002, cf. Walentynowicz et al., 2018). Real-time response (RTR) measures that allow participants to indicate their experiences using a rating dial provide one way to approach this problem (Biocca et al., 1994; see Siegenthaler et al., 2021 for an implementation within the emotional shifts framework). However, to avoid interference with narrative experiences, assessment of emotion is limited to one dimension (Lang & Ewoldsen, 2011).

The work presented here utilizes a method to investigate emotional changes as they occur in an efficient and accessible way: The *self-probed emotional retrospection method*. This method is based on Larsen and Seilman (1988; Seilman & Larsen, 1989) who were interested in story-cued remindings during reading: Whenever a memory occurred, readers had to mark an "M" (for memory) at the text margins. This method was adapted by Eng (2002, described in Mar et al., 2011) who aimed at capturing emotional responses to expository texts and written narratives while minimizing interference with narrative engagement. Participants were instructed to mark an "M" at the text margin for a memory, and an „E" to signify an emotional response. After they finished reading, they returned to their e-markings to elaborate on their experiences. Self-probed retrospections – focused on emotional experiences – allow for a richer assessment of readers' emotional experiences than RTR procedures. At the same time, the "E"s participants draw on the text margin act as cues that later enable the recall of one's emotional experiences rather than their retrospective (and more likely to be biased) reconstruction. Similar cued-recall procedures have been validated as approximative measures of real-time assessments of emotion. For instance, Mauss et al. (2005) found that online-ratings of amusement and sadness obtained with a rating dial participants operated during film viewing correlated strongly with continuous cued-recall ratings of these emotions. Furthermore, cued-recall ratings were coherent with physiological arousal measures obtained during the initial viewing of the film. Similarly, McCall and colleagues (2015) measured physiological arousal (skin conductance and heart rate) of participants who were immersed in a threatening scene via virtual reality. Afterwards, participants re-watched the scene on a computer and provided continuous ratings of their arousal during the virtual reality setting. The study found high coherence between the physiological arousal patterns and the retrospective reports. Overall, there is strong evidence of the concurrent validity of cued-recall measures of continuous emotional experience, which should apply to self-probed emotional retrospections as well. Furthermore, a few studies have successfully applied this method to

capture varying affective responses to narratives (Eng, 2002; Koopman, 2016). For instance,

Koopman (2016) used self-probed retrospections to assess the effects of different literary techniques.

This study found that stories using foregrounding resulted in more reports of ambivalent emotions,

and both imagery and foregrounding led to more reports of aesthetic emotions, which speaks to the

sensitivity of the measure to capture emotional experiences of different quality.

Study Overview and Predictions

We present a pilot study and two experiments that examined emotional shifts with the help of

the *self-probed emotional retrospection method*. Emotional shifts were quantified using two

indicators: The number and the intensity of emotional shifts. Based on this method we were able to

investigate the theoretically proposed reciprocal relationship between transportation and emotional

shifts and their respective roles for enhancing story-consistent attitudes, behavior, and post-narrative

engagement (Nabi, 2015; Nabi & Green, 2015).

We predicted that with higher levels of transportation, the number of experienced emotional

shifts and the intensity of the shifts should increase (Hypothesis 1). We further expected that the

higher the number and intensity of emotional shifts, the more recipients endorsed story-consistent

attitudes (Hypothesis 2a), reported the intention to share the story (Hypothesis 2b), and engaged in

story-consistent behavior (Hypothesis 2c).

Given the difficulties associated with manipulating the emotional content of a story

independently from the persuasive messages conveyed with it, the experiments incorporated an

experimental manipulation of transportation as a causal anchor in our model. Transportation was

manipulated with the help of negative versus positive reviews presented in advance, a method that has

shown consistent and reliable effects on narrative transportation (e.g., Isberner et al., 2018;

Shedlosky-Shoemaker et al., 2011; Tiede & Appel, 2020). According to Tan (1996), the extent to

which media users invest cognitive and emotional resources in the processing of a stimulus depends

on their expectations of the gratifications to be derived from it. Reviews shape these expectations: If readers assume they are about to read a bad story, they are less likely to invest resources while reading and therefore experience lower levels of transportation (see Tiede & Appel, 2020, for a detailed introduction of the theoretical background and empirical support). Thus, we expected that a negative review about the story (vs. positive or no review) before reading the story would decrease levels of transportation (Hypotheses 3a and 3b). Although we intended the reviews mainly for the manipulation of transportation, they may also affect the experience of emotional shifts. However, it is uncertain if the extent to which readers experience emotional shifts is malleable by information other than the narrative itself. Studies manipulating emotional shifts did so by altering story structures and events (e.g., Carrera et al., 2008; Carrera et al., 2010). Therefore, we posed the research question: Do negative reviews (vs. positive or no review) have a negative effect on the experience of emotional shifts? Based on prior research (Tukachinsky & Tokunaga, 2013; Van Laer et al., 2014), we expected that transportation predicts story-consistent attitudes, sharing intentions and behavior (Hypotheses 4a, 4b, and 4c). The first four hypotheses constitute a two-step mediation model with the review manipulation as an independent variable, and attitudes, sharing intentions, and behavior as dependent variables. Transportation and emotional shifts served as sequential, i.e., successive mediators (Hypotheses 5a, 5b, and 5c for the three dependent variables).

Pilot Study

Our work started with a pilot study. The primary goal of this pilot was to test the feasibility of the self-probed emotional retrospection method and to gain insight into its validity. As a means to evaluate the construct validity of self-probed emotional retrospections, we assessed participants' need for affect. This trait explicates "people's tendency to experience, explore, communicate, and use their emotions to guide behavior" (Maio & Esses, 2001, p. 592). Assuming that the self-probed retrospection method is a suitable tool to capture emotional experiences of varying intensity,

individuals' need for affect should be positively related to the extent to which participants report

emotional experiences. Following Bartsch and colleagues (2010), our expectations concerning

emotional experience were focused on the approach component of the need for affect. Moreover, the

pilot study was meant to examine the review manipulations and the persuasive effect of the stimulus

material. To create favorable versus unfavorable conditions for transportation, we presented

participants with either a positive, a negative, or no review about the story beforehand (Shedlosky-

Shoemaker et al., 2011; Tiede & Appel, 2020).

Institutional approval is not a requirement for psychological research in Germany, as long as it

does not relate to issues regulated by law. However, the studies presented in this article were

conducted in full accordance with the Declaration of Helsinki, as well as the ethical guidelines

provided by the German Psychological Society (DGPs). Informed consent was obtained from all

subjects before taking part in the studies.

Method

Participants and Design

A total of 146 individuals participated in the study. Participants were students at the University

of Koblenz-Landau at Landau, Germany, 22.77 years old on average ($SD = 4.54$), and predominantly

female ($n = 96$). The experiment followed a one-factorial design with three conditions (negative

review vs. positive review vs. no review introducing the story). In the no review condition, story-

related attitudes were assessed before the story as a way to examine non-exposure attitudes.

Story and Manipulation of Story Experience

All participants read the short story *Das Ende der Reise* (*The end of a journey*, 3180 words,

Bjarnason, 2011). The story is set in a retirement home in Iceland. Stina, a widow who lives in the

retirement home feels lonely and frequently engages in daydreaming and reminiscing. Many years

ago, she met Jon at a midsummer night festivity, and they had an affair, but they lost track of each

other. One day a new resident of the retirement home is introduced – it is Jon. They revive their romantic relationship and spend a joyful time together. Retirement home officials as well as their families, however, disapprove of their relationship and Stina is scheduled to be relocated to a different place. Facing this involuntary separation, the couple jointly commits suicide.

Before reading the short story, participants were presented with a fictitious review about the story, ostensibly written by a literary critic. The review was positive, negative, or no review was provided (control condition). The positive review praised the story for its vivid descriptions, its ability to immerse the reader and to be touching and moving. The negative review contained negative evaluations of the same aspects and described the story as one-dimensional, superficial, and unable to immerse or touch the reader (see Online Supplement S1 for the exact wordings). After reading the review, participants were asked to summarize it in one or two sentences.

Self-Probed Emotional Retrospections

While reading the story, participants marked any section of the text in which they experienced an emotional response with an „E" on the margin. This task was introduced with a brief practice text before the experimental material was presented. After reading the complete story, participants were asked to specify the emotions they experienced. To this end, they had to number all „E"s and rate the intensity of each of six basic emotions (anger, happiness, sadness, fear, surprise, and disgust) for every „E" using a scale from 1 (not at all) to 7 (completely). We instructed participants to unite „E"s that were placed within three lines of the text and expressed the same emotional response.

Measures

Emotional Experience. We counted the number of "E"s participants marked during the story as an indicator for individuals' tendencies to report emotional experiences.[1]

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[1] Note that we only use this measure in the pilot study, not in the main experiments, as an indicator for the extent to which individuals experience and report emotional responses. This pilot study addresses the utility of the self-probed emotional retrospection method to capture varying emotional experiences and its sensitivity to individual differences in subjects'

Need for Affect. We assessed subjects' need for affect using the Need for Affect Questionnaire-Short Form (NAQ-S, Appel et al., 2012). This measure consists of two subscales comprising five items each (AV = avoidance tendency subscale, e.g., "I would prefer not to experience either the lows or the highs of emotion", AP = approach tendency subscale, e.g., "I feel that I need to experience strong emotions regularly"). Items were rated on a scale ranging from 1 (not at all) to 7 (very much). Cronbach's α was .65 for the approach tendency subscale and .76 for the avoidance tendency subscale.

Transportation. Transportation was measured with the German version of the Transportation Scale-Short Form (Appel et al., 2015). The scale consists of six items (e.g., "I could picture myself in the scene of the events described in the narrative") and a rating scale from 1 (not at all) to 7 (very much). For the two items capturing the imaginative component of transportation ("While reading the narrative I had a vivid image of [character]"), character names Stina and Jon were inserted (α = .81).

Attitude Measures. From a persuasion perspective, the story addressed two main topics, the acceptance of romantic love among individuals residing in retirement homes and attitudes towards suicide for elderly people as a self-determined end of life. We created five items to assess recipients' *attitude towards suicide in old age* (e.g., "It should be possible to end one's life in old age without any greater resistance", α = .67). Five additional items measured recipients' *attitude towards old-age romance* (e.g., "Romantic relationships in old age should be actively encouraged", α = .60). The attitude items went with 7-point response scales, ranging from 1 (not at all) to 7 (very much). All items are documented in Supplement S2.

Procedure

Participants entered the lab individually or in groups of up to four. Each participant was randomly assigned to one of the three conditions. First, they completed the need for affect

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need for affect. The pilot study is not intended to test our predictions regarding emotional shifts. Furthermore, problems encountered in the procedure (see below) led us to discard the emotion ratings.

questionnaire. Next, the self-probed emotional retrospection procedure was explained by the experimenter. Participants in the review conditions now read and summarized the review, whereas the control group answered the attitude questions. Then, participants read the story and completed the e-marking task. Immediately after reading, they answered the transportation items and then specified emotional experiences for each „E". Participants in the review conditions then completed the attitude items. Finally, all participants answered sociodemographic questions and were thoroughly debriefed.

Results

Overall, the general procedure of the self-probed retrospections appeared to be comprehensible and workable. However, there was great variation in the number of "E"s participants originally marked ($M = 36.36$, $SD = 25.21$, min = 4, max = 122). Due to the high number of „E"s to be qualified for some subjects and a fixed timeframe allocated per session, 50 participants were unable to finish the questionnaire and rate all "E"s, leading to a high number of non-random missing values. These cases were excluded from further quantitative analyses. Another participant was excluded because of missing data in the transportation scale, and one participant noted that they did not work on the study conscientiously, leaving a final sample of 94 participants (age: $M = 22.81$, $SD = 5.18$, $n_{female} = 58$). The number of „E"s in this sample ranged from 4 to 69 ($M = 22.49$, $SD = 13.16$, $Mdn = 19$).

As an indicator for the construct validity of the instrument, we used the remaining sample to examine the relationship between response patterns in the self-probed emotional retrospection task and participants' need for affect. Importantly, the number of „E"s participants stated was positively related to the approach dimension of the need for affect ($r = .230$, $p = .025$), but unrelated to the avoidance dimension ($r = -.031$, $p = .769$; see Supplement Table S3a).

Next, we checked whether reading the positive vs. negative reviews affected participants' levels of transportation as intended. Results of a univariate ANOVA show that indeed, groups differed significantly with regards to transportation, $F(2, 91) = 3.86$, $p = .025$, $\omega^2 = .06$. This effect was driven

by the negative review, which lowered participants' transportation (Table S3b). Finally, we were interested if there was a persuasive effect with regard to the attitudes we identified as relevant to the story. Univariate ANOVAs yielded no significant effect of condition with respect to attitudes towards old-age romance, $F(2, 91) = 2.75$, $p = .070$, $\omega^2 = .04$, and attitudes towards old-age suicide, $F(2, 91) = 2.99$, $p = .055$, $\omega^2 = .04$. However, for both variables means were lowest in the control condition and highest in the positive review condition. Post-hoc analyses revealed that this difference was significant for attitudes towards old-age romance and approached significance for attitudes towards old-age suicide (Table S3b).

Discussion and Implications for the Main Experiments

The pilot study provided encouraging results regarding the feasibility and validity of the self-probed emotional retrospection measure. That said, the issues encountered regarding the extreme number of "E"s to be qualified by some participants called for some modifications of the procedure for our main experiments. Whereas limiting the number of "E"s to be assigned by participants before reading the story seemed inappropriate given the likely influence on the task's cognitive demand and the reading experience, we decided to add a step to the procedure. After participants finish reading the story and assigning their "E"s, they are asked to revisit their "E"s and select a maximum of a given number of "E"s that they consider most relevant. These selected "E"s are then qualified with regard to the emotions experienced. The limit of "E"s to be selected greatly depends on the story used. Based on the median of 19 of the number of „E"s in the pilot, we deemed a limit of 24 in Experiment 1 (using the same story) a sufficient number to capture a broad spectrum of emotional experiences of the narrative. This limit allows for more predictable participation times and avoids fatigue on the side of participants, which may otherwise compromise data quality and cause non-random missing values resulting from dropouts. Moreover, setting a predefined limit as a frame of reference should help balance out inter-individual differences in subjects' response tendencies to report more or less „E"s.

The results regarding the review manipulation of transportation and the persuasive effects of the story seemed promising. Although we found a significant difference between the positive and the control group with regards to attitudes towards old-age romance only, this may have been due to a lack of power caused by the large number of subjects we had to exclude. Therefore, we retained both attitude variables for the main experiment.

<div align="center">**Experiment 1**</div>

Experiment 1 tested the relationships between transportation, the experience of emotional shifts, and story-consistent attitudes. We used the same materials and review manipulations as in the pilot study. Based on the experiences gained from the pilot study, a few changes were made with regard to the procedure of the self-probed emotional retrospections.

Method

Participants

Our main hypothesis was the association between transportation and emotional shifts. A priori sample size was determined with the help of g*power (Faul et al., 2009). Given a two-tailed test for a Pearson correlation, $\alpha = .05$ and power $(1-\beta) = .80$, a total of 123 participants would have been required to find a small-to-medium effect size of $r = .25$. A second aspect that guided our sample size were the main effects of the review manipulation on transportation. Our pilot study yielded a main effect difference of Cohen's $f = .31$ (which is similar to the $\eta^2 = .10$ that Tiede and Appel, 2020, Experiment 1, observed). Given a two-tailed F-test, $\alpha = .05$ and power $(1-\beta) = .80$, a total sample size of 102 participants were required (i.e., less than for the continuous measures associations). Thus, the sample size was based on the 123 participants required for the focal association. To account for potential exclusions, we set a goal of 140 participants in our lab experiment. Students of the University of Würzburg, Germany, participated for partial course credit. Of the 141 participants in the study, four had to be excluded because the experiment was disrupted by a security alert. We excluded

another four because of missing data in the attitude measures, and two participants who did not pick

the most relevant „E"s across the whole story but instead the first „E"s in the order of their

appearance, thereby ending their e-specifications in the middle of the story (details on the procedure

can be found below). One participant was excluded because they specified less than half of the 24

„E"s. One participant recommended that their data should not be analyzed (at the end of the

questionnaire, participants were asked if they had answered all questions conscientiously and if they

recommended their data to be analyzed or not). Another one was excluded because they indicated

insufficient language abilities. The remaining 128 participants were 20.84 years old on average ($SD =$

2.48), and most of them ($n = 90$) were female.

Self-Probed Emotional Retrospections

After reading the experimental story and completing the e-marking task, participants were

instructed to select and number up to 24 of the most relevant „E"s and to specify their emotional

experience for each by rating the intensity of six emotions (anger, happiness, sadness, fear, surprise,

disgust) on a scale from 1 (not at all) to 7 (completely).

Coding of Emotional Shifts

We operationalized the degree to which participants experienced emotional shifts (1) by coding

the number of emotional shifts reported over the course of the narrative, and (2) by computing a

measure for the intensity of emotional shifts from the sum of absolute differences across e-

specifications (for additional information on the treatment of missing values during the coding of

these variables, see Supplement S12).

Number of Emotional Shifts. The occurrence of an emotional shift was computed using the

following rules: a) For each experience the emotion with the highest score was specified as the

dominant emotion. b) Whenever two or more emotions obtained the highest score, this was specified

as a mixed dominant emotion. c) An emotional shift was coded when the dominant emotion or mixed

dominant emotion changed to a different dominant emotion or mixed dominant emotion. We then

counted the number of emotional shifts for each participant. Count variables tend to violate common

distribution assumptions. In our case, however, the distribution did not substantially differ from a

normal distribution (skewness = -0.60, SE = 0.21; kurtosis = 0.06, SE = 0.43; see Supplement S11 for

statistics and a graphical depiction of the distributions of this variable for both experiments).

Intensity of Emotional Shifts. For each emotion, we calculated and summed up the absolute

differences between subsequent e-specifications, resulting in six new variables (one each for sadness,

happiness, anger, fear, surprise, and disgust). Internal consistency among these variables was good

(Cronbach's α = .85). We then summed up the six individual scores into one variable, which indicates

the quantity of shifts in emotional intensity ratings while reading the story. We illustrate the

calculation of this variable with an example in Supplement S12.

Measures

The same measures were used as in the pilot study (transportation Cronbach's α = .83,

attitudes towards old-age suicide α = .76, and attitudes towards old-age romance α = .59).

Procedure

The same procedure was employed as in the pilot study, except that participants in the control

group (no review) answered the attitude items at the end of the questionnaire instead of beforehand.

Furthermore, we asked participants to pick a maximum of 24 of their most relevant „E"s to specify.[2]

Results and Discussion

We used two indicators to quantify emotional shifts (number and intensity) and two measures

for story-consistent attitudes. To avoid alpha-error accumulation, α was adjusted respectively prior to

the inference statistics (Holm-Bonferroni correction).

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[2] As in the pilot study, we measured participants' need for affect in both experiments. To keep the article concise, all
results regarding this individual difference measure are reported in Supplement S9.

Table 1 presents the zero-order correlations between the main variables. As expected in

Hypothesis 1, the number of emotional shifts, $r(126) = .324$, $p < .001$, as well as the intensity of

emotional shifts, $r(126) = .448$, $p < .001$, were positively associated with recipients' transportation

into narrative worlds. Among the four correlations between emotional shifts and story-consistent

attitudes, only the link between intensity of emotional shifts and attitudes towards old-age romance

approached significance, $r(126) = .197$, $p = .026$. Given that Hypothesis 2a was represented by four

associations, the Holm-Bonferroni-adjusted α was .0125. Thus, Hypothesis 2a was not supported. No

evidence was found that experiencing emotional shifts is associated with story-consistent attitudes.

Next, we tested whether reading a negative review prior to the story decreased transportation

compared to a positive review and compared to no review (Hypotheses 3a and 3b). Results from a

univariate ANOVA show that the three conditions differed significantly in terms of transportation,

$F(2, 125) = 4.47$, $p = .013$, $\omega^2 = .05$. Post-hoc comparisons using the Games-Howell test (Sauder &

DeMars, 2019) revealed that levels of transportation were lowest for participants who read the

negative review. The significant difference in transportation was driven by the difference between the

negative review and the no review group (see Table 2 for group means and group comparison p-

values). Thus, results provide support for H3b but not for H3a.

Supporting Hypothesis 4a, transportation was related to attitudes towards old-age romance,

$r(126) = .345$, $p < .001$, but transportation was unrelated to attitudes towards old-age suicide, $r(126) =$

.035, $p = .698$.

To test for a mediation of the effect of reading a story with either a positive, a negative, or no

review on story-consistent attitudes via transportation and emotional shifts (H5a), we estimated four

sequential mediation models using PROCESS v3.5 (Model 6, 5000 bootstrap samples; Hayes, 2018).

Review conditions served as independent variables ($X1$ = negative review vs. no review, $X2$ =

negative review vs. positive review), transportation ($M1$) and number or intensity of emotional shifts

(*M*2) as mediators, and one of the two attitude measures as the dependent variable. The results of

these two-step mediations are depicted in detail in Supplement S4. The total effect of the treatment on

attitudes was not significant in any of the models. Thus, no evidence was found that emotional shifts

mediate the influence of transportation on attitudes as predicted by Hypothesis 5a. Further, the

findings from these mediation models can be related to our research question whether reviews affect

not only transportation but also emotional shifts more directly. While a negative review affected

transportation negatively compared to no review and transportation was positively related to both the

number and intensity of emotional shifts, there was no direct effect of the review conditions on either

of the two emotional shift variables.

In sum, the results of this study provide some initial evidence of the link between

transportation and the experience of emotional shifts as postulated by Nabi and Green (2015).

However, we did not find evidence of a relationship between shifts and story-consistent attitudes.

Experiment 2

Experiment 2 extended and refined the design of our previous experiment in several ways. To

increase generalizability, we used a different stimulus text that represents a different narrative genre

(journalistic reportage). Again, the experimental treatment included a positive vs. negative review of

the experimental story. This time, we included a third group where participants read a text unrelated to

the dependent variables to enable a control of the overall persuasive impact of the main stimulus story.

Finally, we refined our assessment of narrative impact. In Experiment 1 our attitude measures did not

allow us to examine whether the experience of transportation and emotional shifts is related to

outcomes on different levels. However, meta-analytic evidence suggests that the persuasive potential

of narratives pertains to affective outcomes and intention in particular (Zebregs et al., 2015).

Therefore, we included measures for story-related cognitive- and affective-level attitudes and a

behavioral measure of persuasive effects in this study. Taking up Nabi and Green's (2015) prediction

that the experience of emotional shifts fosters post-narrative engagement, we further included a measure for social sharing intentions as a dependent variable.

Method

Participants

A priori sample size determination was the same as for Experiment 1. Participants ($N = 139$) were recruited on campus of the University of Würzburg, Germany, and participated for a monetary compensation of €12. Two participants were excluded because errors in completing the self-probed emotional retrospection task rendered their responses unusable. One participant was excluded from the sample because consent was retracted after the experiment and another one for missing data in all dependent variables, leaving a final sample of 135 participants. Participants were 23.42 years old on average ($SD = 6.09$), mostly female ($n = 89$), and students of the university ($n = 126$).

Design

The experiment was based on a three-group between-subjects design. Participants in two conditions read a text about a farmer in Burkina Faso who revolutionized harvesting techniques in the Sahel region. The text was preceded by a positive or a negative review to manipulate narrative transportation. In the third condition, participants read a different story that was unrelated to the dependent variables in this study. Story-consistent attitudes were assessed at the cognitive, affective, and behavioral level. We further included a measure for social sharing intentions.

Stories and Manipulation of Story Experience

All participants read a journalistic reportage employing storytelling techniques. Participants in the two review conditions read a version of the story *Der Mann, der die Wüste aufhielt* [The man who stopped the desert] (Jeska, 2012). The original text was slightly shortened to 2547 words. The text tells the story of Yacouba Sawadogo, a farmer from Burkina Faso who developed techniques to improve harvest and stop desertification of the Sahel region by planting and cultivating several

hectares of forest. Furthermore, the reportage addresses the history and dysfunctionality of most Western developmental aid in the Sahel region. Yacouba's techniques attract international attention and cause a shift in the United Nation's developmental aid strategies. However, Yacouba's success story features setbacks caused by locals' initial skepticism towards his techniques and bureaucratic hurdles that threaten the existence of his forest.

The third group read the reportage *Bis zum Letzten* [To the last] (Buhl, 2018) which tells the stories of a group of unsuccessful but persevering marathon runners. This control story was similar to the experimental story in length (2601 words) and quality (both stories won the same journalism award in the same category), but unrelated to the issues addressed by the experimental story.

Like in Experiment 1, we used positive and negative reviews to manipulate levels of transportation. The reviews were presented as background information about the text participants were about to read. The positive review praised the story for its coherence, vivid descriptions, and for being able to move and immerse the reader, while the negative review criticized it for a lack thereof. Both reviews made references to the author's (lack of) skillfulness and professionalism to manipulate quality expectations while being careful to not cast doubts on the truthfulness and plausibility of the story itself (see Online Supplement S5).

Self-Probed Emotional Retrospections

The task was administered like in Experiment 1. The number of „E"s participants were asked to pick and rate was limited to 18. This amount was estimated by generously counting the number of events and passages in the text that held emotional potential.

Measures

Cognitive- and Affective-Level Attitude Measures. Four items measured the extent to which participants endorsed cognitive-level story-consistent attitudes concerning the inappropriateness of European agricultural standards in Africa (e.g., "Solutions to improve harvests in Africa have to come

from European industrial nations", reverse-coded, α = .87). This issue is explicitly addressed in the

story. Another core issue in the experimental story is the lives and struggles of the people living in the

Sahel. Therefore, four items were created to reflect the degree to which participants felt a sense of

emotional involvement with this group (e.g., "I feel close to the people living in the Sahel region", α =

.78). All items were assessed on 7-point rating scales from 1 (disagree completely) to 7 (fully agree).

The item wordings of all scales can be found in Supplement S6.

Social Sharing Intentions. Participants indicated the likelihood of engaging in different social

sharing activities. Two items specifically addressed activities on social media (e.g., "I would share

this story on social media [e.g., Facebook, Twitter]"), another three described more general modes of

communication (e.g., "I would discuss the issues addressed in the story with friends, acquaintances, or

family members"). Internal consistency of this measure was good in both the experimental groups

(Cronbach's α = .82) as well as the control group (α = .88).

Behavior. Participants in all groups were given the option to donate a freely chosen share of

their 12€ compensation to the non-profit organization Terra-Verde e.V. They received a brief

description of the goals of this organization, which pertain to the issues addressed in the experimental

story (stopping desertification of the Sahel region). Participants were asked to note the amount they

wished to donate (see Supplement S12 for additional information).

Procedure

Participants entered the lab individually or in groups of up to ten and were assigned to one of

the three conditions randomly. After providing sociodemographic information, participants were

introduced to the e-marking task and practiced the procedure using an example story. Participants in

the review conditions then read and summarized either a positive or a negative review of the

following stimulus story. Participants who read the Marathon reportage received neutral background

information regarding the story. After reading the story and completing the e-marking task,

participants immediately answered the transportation items. Then they proceeded with the e-specification task. Lastly, dependent variables were assessed. In a separate room, participants were compensated, were given the opportunity to make a donation, and were debriefed.

Results and Discussion

Again, because two indicators served as measures emotional shifts, we adjusted the alpha-level (Holm-Bonferroni) to account for α-error accumulation where appropriate. Comparisons to the control story show that our stimulus story was indeed persuasive (positive or negative review condition) with regard to cognitive-level attitudes. Affective-level attitudes and social sharing intentions were significantly higher in the positive review group compared to the control story, but not in the negative review group. Donations were not affected by the treatment. For detailed results on the persuasive effect of our stimulus story versus the control story, see Supplement S8.

The following main analyses pertain to the groups that read the desertification story. Zero-order correlations between key variables are reported in Table 3. Consistent with Hypothesis 1 and the results from Experiment 1, transportation was positively associated with both the intensity, $r(89) = .368$, $p < .001$ (Holm-Bonferroni-adjusted $\alpha = .025$), and the number of emotional shifts, $r(89) = .222$, $p = .035$ (Holm-Bonferroni-adjusted $\alpha = .05$), for readers of the desertification story.[3] Hypothesis 2a predicted a positive relationship between emotional shifts and story-consistent attitudes. However, our two emotional shift indicators were not correlated with cognitive- and affective-level attitudes. Thus, Hypothesis 2a was not supported. As predicted in Hypothesis 2b, social sharing intentions increased significantly with both the intensity, $r(89) = .346$, $p < .001$ (Holm-Bonferroni-adjusted $\alpha = .025$), and the number, $r(89) = .216$, $p = .040$ (Holm-Bonferroni-adjusted $\alpha = .05$) of emotional shifts. Thus, Hypothesis 2b was supported. Hypothesis 2c predicted a positive association between the experience

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[3] For readers of the marathon story, both the intensity, $r(42) = .403$, $p = .007$ (Holm-Bonferroni adjusted α–level $= .025$), and the number of emotional shifts were correlated with transportation as well, $r(42) = .309$, $p = .041$ (Holm-Bonferroni α–level $= .05$).

of emotional shifts and the amount donated in favor of a story-related charity (our behavioral

measure). We conducted a logistic ordinal regression with the two emotional shift variables and

transportation as predictors and donations as the criterion. For readers of the desertification story,

odds for a higher donation for a story-related cause did neither increase significantly with the number

of emotional shifts ($OR = 1.03$, 95% CI [0.84; 1.25], $\chi^2(1) = 0.068$, $p = .794$), nor with the intensity of

emotional shifts ($OR = 1.00$, 95% CI [0.99; 1.01], $\chi^2(1) = 0.055$, $p = .815$). Therefore, Hypothesis 2c

was not supported.

Next, we compared the two review conditions to test whether reading a negative review before

reading the story decreased levels of transportation compared to reading a positive review, as

postulated by Hypothesis 3a. Results from a univariate ANOVA showed that groups differed

significantly in their levels of transportation, $F(1, 89) = 10.37$, $p = .002$, $\omega^2 = .09$, and that

transportation was significantly lower for participants who read a negative review compared to a

positive review (Table 4), supporting Hypothesis 3a.

Providing mixed support for Hypothesis 4a, we found that in the desertification story groups,

transportation was positively related to affective-level attitudes towards Sahel people, $r(89) = .314$, p

$= .002$, but not to cognitive-level attitudes towards agricultural techniques, $r(89) = .133$, $p = .210$. As

postulated in Hypothesis 4b, transportation was substantially associated with social sharing intentions

of the desertification story, $r(89) = .516$, $p < .001$. Regarding the predicted association between

transportation and donations, odds for a higher donation for a story-related cause did not increase

significantly with transportation ($OR = 1.14$, 95% CI [0.79; 1.66], $\chi^2(1) = 0.495$, $p = .482$ in the

desertification story groups). Thus, Hypothesis 4c was not supported.

Finally, we tested whether transportation and the experience of emotional shifts mediated the

relationship of reading a story with positive vs. negative reviews on story-consistent attitudes and

social sharing intentions as predicted in Hypotheses 5a and 5b. We estimated six sequential mediation

models using PROCESS v3.5 (Model 6, 5000 bootstrap samples) using the subsample that had read

the desertification story. The review manipulation served as the independent variable (1 = positive

review, 0 = negative review), transportation (*M*1) and number or intensity of emotional shifts (*M*2)

served as mediators, and cognitive- or affective-level attitudes or social sharing intentions as the

dependent variable. Results are reported in detail in Supplement S7. The total effect of the review

treatment was not significant for any of the three outcome variables. Results show no indirect effect of

the independent variable on cognitive-level attitudes. Transportation significantly mediated the

relationship of the review treatment and affective-level attitudes and social sharing intentions as

indicated by the indirect effects. In addition, there was a significant indirect relationship of the review

treatment and social sharing intentions through transportation and the intensity of emotional shifts

(Figure 1). Therefore, results provide mixed support for Hypothesis 5a and Hypothesis 5b. Again,

results of the mediation models provide an answer to our research question whether reviews affect

emotional shifts irrespective of the indirect effect through transportation. As in Experiment 1, reviews

did not directly affect the number or intensity of emotional shifts.

Hypothesis 5c predicted a mediation of the relationship of reviews and donations through

transportation and emotional shifts. We computed another ordinal logistic regression using the

positive (coded 1) vs. the negative (0) review group as independent and donations as dependent

variables. However, the odds donating a higher amount in the positive review group did not differ

significantly from the negative review group ($OR = 0.71$, 95% CI [0.33; 1.52], $\chi^2(1) = 0.792$, $p =$

.373). Given the missing associations between donations and any of the mediators (see Hypothesis 2c

and Hypothesis 4c) necessary for an indirect mediation, Hypothesis 5c was not supported either.

General Discussion

The experience of emotions is considered a key element to understanding narrative experience

and narrative effects. This set of experiments provided one of the first empirical tests of predictions

derived from Nabi and Green's (2015) emotional shifts framework by using a novel empirical

approach, self-probed emotional retrospections.

In line with theory, two studies consistently show that transportation is positively associated

with the experience of emotional shifts, as indicated by both their quantity and intensity. Moreover,

emotional shift experiences are linked to social sharing intentions (recommending a story and talking

about its contents with others both online and offline) as indicated by zero-order correlations and a

two-step indirect effect that included transportation as a more proximate mediator. This informs

theory on post-exposure engagement, an important ingredient of the persuasion processes and media

effects more generally (e.g., Slater et al., 2018; Southwell & Yzer, 2007; Thorson, 2014).

Consistent with previous research (e.g., Tukachinsky & Tokunaga, 2013), both studies provide

further evidence that in a heightened state of transportation, endorsement of story-consistent attitudes

becomes more likely. In Experiment 1, transportation was related to attitudes towards old-age

romance, but not to attitudes towards old-age suicide, which may be less malleable for being tied to

personal values or moral convictions (e.g., Skitka et al., 2005). In Experiment 2, the degree to which

participants reported being transported was positively linked to affective but not cognitive-level

attitudes. This finding is consistent with previous research suggesting that the persuasive potential of

narratives pertains especially to the affective dimension of attitudes (Zebregs et al., 2015).

Assessing Emotional Shifts via Self-Probed Emotional Retrospections

With our studies, we refined and tested a continuous self-report measure of emotional

experiences based on a method to examine memories by Larsen and Seilman (1988). Even though

self-report measures are sometimes dismissed for only capturing the subjective feeling component of

emotion that a subject is aware of, overall, they may be the best method currently available to assess

emotional experiences efficiently and with the possibility to differentiate between discrete emotions

(Barrett, 2016; Scherer, 2009). Assessing dynamic emotional responses to narratives via self-report

comes with the challenge of minimizing interference with narrative processes, especially if these processes are also subject of interest in a study. For this reason, continuous response measures (e.g., affect rating dials) are usually limited to one or a maximum of two dimensions of emotion (Lang & Ewoldsen, 2011). However, this method is unable to capture shifts between discrete emotions of similar valence and arousal (e.g., anger and fear). The self-probed emotional retrospection method employed in this experimental series allows researchers to quantify emotional shifts based on different discrete emotions. At the same time, in the manner of a cued-recall procedure, the „E"-markings participants make while reading the text function as reminders of an emotional experience that participants can later come back to. Thereby, some of the memory biases associated with retrospective self-reports of emotional states during multiple times of a story (Robinson & Clore, 2002) are mitigated (Mauss et al., 2005; McCall et al., 2015).

Furthermore, from the way we measured their emotional responses, it is highly improbable that participants inferred that we were interested in their experience of emotional shifts and the relationship of those shifts with transportation. Therefore, assessing emotional experiences this way minimizes the common-method bias that emerges when using the same type of measurement method for different constructs of interest (Podsakoff et al., 2003).

Validating a measure is a process that requires multiple studies and refinements of the procedure before it can be applied in different contexts. Taken together, the results from the pilot study and our two experiments provide some insight into the validity of the self-probed retrospection method and our emotional shifts indicators. The pilot study tested its practicability for a quantitative assessment of dynamic emotional responses while reading. Furthermore, it offers some evidence in support of the construct validity of self-probed emotional retrospections. We included need for affect to assess the sensitivity of the instrument to capture emotional experiences of varying intensity. As

expected, individuals with a higher tendency to approach affective experiences also marked more „E"s in response to the story.

In the main studies, we employed two indicators for emotional shifts, both of which represent possible operationalizations of Nabi and Green's (2015) definition with evident content validity: One quantifies the number of times the emotion participants dominantly experienced changed from one to another during the narrative. The other captures the overall extent to which the intensities of all emotions reported varied throughout the story, whether or not a shift from one dominant emotion to another occurred. Applying two indicators to quantify shifts helps to gain a better understanding of the qualities of emotional shifts that are crucial for narrative impact. Thereby this study informs theory and provides a starting point for future research on emotional processes during media reception.

The results of Experiment 1 and 2 further provide insights concerning the predictive validity of the emotional shift measures as indicated by their correlations with story-consistent outcome variables. The predictive validity of the intensity measure appears slightly superior to the number of shifts measure across both studies: whereas both indicators were associated with social sharing intentions in Experiment 2, only the intensity of shifts was associated with one attitude measure in Experiment 1. There are further questions to consider regarding the validation of self-probed emotional retrospections, e.g., whether this procedure and the emotional shift measures derived from it approximate to continuous response measures of emotion. However, previous research has demonstrated the criterion validity of different cued-recall procedures (e.g., Mauss et al., 2005), which suggests that similar results may be expected for self-probed emotional retrospections.

Limitations and Directions for Future Research

The aim of this research was to investigate the link between transportation, emotional shifts, and story-consistent outcomes. In our modelling of the narrative processes, we focused on the question how transportation may facilitate emotional shifts. This does not rule out the notion that

emotional shifts stimulate transportation. It is important to note that our intention was not to argue for one perspective over the other. Instead, our research serves as one building block in understanding the relationship between emotional shifts and transportation, which is most likely bidirectional and should therefore be investigated from both perspectives.

The evolving and mutually reinforcing relationship between emotional shifts and transportation may best be scrutinized using continuous measures for both emotional shifts and transportation. In our studies, we measured emotional responses dynamically, whereas we used a global and static measure to capture transportation. We opted for this established and validated scale because it is uncertain how transportation can be captured using a continuous self-report measure without interfering with self-probed emotional retrospections. Therefore, we prioritized our emotional shifts measure. However, the method we presented could be compatible with physiological process measures of transportation (e.g., skin conductance levels, Sukalla et al., 2015). There is evidence that recipients fluctuate from states of high to low transportation during a narrative (e.g., Bezdek & Gerrig, 2017). Combining process measures of transportation and emotional shifts is an important task for future research to disentangle the dynamics of emotional shifts and transportation over the course of a narrative with greater precision. Similarly, future research should investigate the link between emotional shifts and the different subcomponents of narrative engagement or transportation (e.g., attentional focus, presence, emotional engagement) to gain a more nuanced understanding of the mechanisms of narrative processing.

Furthermore, although the self-probed retrospection method is geared to written narratives, similar procedures may be adapted for audiovisual or auditive narratives (e.g., by recording time-stamps which are later revisited by participants to describe their emotional experience). Keene and Lang (2016) have shown that emotional valence has different implications for processing of visual and auditive information. Thus, effects of emotional shifts may vary with media modalities.

The narratives we used as stimulus materials were stories from different genres, which benefits the generalizability of our findings across messages. We chose narratives with a persuasive subtext, although they were not created with the primary purpose of persuasive communication (like health campaigns or advertising). Even so, narratives may shape attitudes no matter their persuasive intent. We deduced what could be perceived as the main take-away message from the story in an interpretative process. However, with the exception of one correlation marginally above the Holm-Bonferroni adjusted alpha (Experiment 1), our measures of emotional shifts were not associated with story-consistent attitudes. It is possible that this association may manifest itself more clearly in stories that are primarily created for a persuasive purpose (e.g., health communication narratives). Furthermore, a recent study by Siegenthaler et al. (2021) shows that personal relevance of a message may be a prerequisite for observing persuasive effects of emotional shifts.

We explored the relationship of emotional shifts with story-consistent attitudes using two variables that measured shifts across the whole narrative in terms of their quantity and intensity, without taking into account the kind of emotions involved. Our goal was to apply a general measure that could easily be applied in other research contexts, independent of the particular story and without extensive coding effort. However, the self-probed emotional retrospection method enables researchers to examine more nuanced questions, such as the role of shifts between particular emotions relevant to the narrative or during key moments of the story (e.g., Appel, Schreiner et al., 2019), which may reveal different results with regards to persuasive outcomes. We encourage future studies to explore these questions to specify our understanding of the role emotional shifts play in narrative persuasion.

Finally, the theory predicts influences of emotional shifts not only during, but also before (during media selection) and after narrative exposure. We addressed the latter by including a measure for social sharing intentions in Experiment 2. However, we hope this manuscript inspires further empirical tests of the influences of emotional shifts before, during, and after story processing.

Conclusion

The increased scholarly attention to narrative processes in recent years calls for appropriate methodology to measure these processes. Most research in this domain relies on participants' self-reported retrospective accounts of their experiences that pertain to the narrative as a whole, which often does not live up to the dynamic nature of these experiences. The present research has overcome this limitation. Based on a novel *self-probed emotional retrospection task* we examined emotional shifts and their associations with transportation and story-consistent attitudes. This experimental series advances our understanding of the role of emotional shifts as a mechanism of narrative persuasion. The *self-probed emotional retrospection task* was shown to be a viable methodological approach to study emotional experiences dynamically. We believe that it could play a key role at measuring emotions as they occur in future research.

Disclosure Statement

We have no known conflict of interest to disclose.

Data Availability Statement

The stimulus material underlying this article as well as the data and codes are available at https://osf.io/879gc/.

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Tables

Table 1

Zero-Order Correlations of the Continuous Variables (Experiment 1)

Variable	1	2	3	4	5
1. Transportation	-				
2. Number of emotional shifts	.324 (<.001)	-			
3. Intensity of emotional shifts	.448 (<.001)	.766 (<.001)	-		
4. Attitude towards old-age suicide	.035 (.698)	−.074 (.407)	.086 (.334)	-	
5. Attitude towards old-age romance	.345 (<.001)	.041 (.648)	.197 (.026)	.208 (.019)	-

Note. $N = 128$. Correlation *p*-values are shown in brackets.

Table 2

Descriptives, Post-Hoc Group Comparison p-*Values and Cohen's* d*s (Experiment 1).*

Measure	Negative Review (n = 43)	Positive Review (n = 42)	Control (n = 43)	Negative vs. Positive		Negative vs. Control		Positive vs. Control	
	M (SD)	*M (SD)*	*M (SD)*	*p*	*d*	*p*	*d*	*p*	*d*
Transportation	4.77 (1.05)	5.03 (1.14)	5.44 (0.94)	.510	0.24	.007	0.67	.179	0.39
Number of emotional shifts	13.19 (4.95)	13.71 (3.47)	13.93 (3.77)	.836	0.12	.714	0.17	.959	0.06
Intensity of emotional shifts	154.58 (65.93)	183.62 (66.49)	176.84 (59.78)	.113	0.44	.235	0.35	.874	-0.11
Attitude towards old-age suicide	4.02 (1.13)	3.70 (1.22)	4.01 (1.15)	.425	-0.27	.997	-0.01	.472	0.26
Attitude towards old age romance	6.21 (0.73)	6.12 (0.75)	5.92 (0.57)	.863	-0.12	.110	-0.44	.345	-0.30

Note. N = 128. The Games-Howell post-hoc test was used to determine *p*-values.

Table 3

Zero-Order Correlations of the Continuous Variables (Experiment 2)

Variable	1	2	3	4	5	6
1. Transportation	-					
2. Number of emotional shifts	.222 (.035)	-				
3. Intensity of emotional shifts	.368 (<.001)	.769 (<.001)	-			
4. Cognitive-level attitudes (agriculture)	.133 (.210)	−.001 (.992)	−.028 (.792)	-		
5. Affective-level attitudes (Sahel people)	.314 (.002)	.128 (.228)	.203 (.054)	.076 (.474)	-	
6. Social sharing intentions	.516 (<.001)	.216 (.040)	.346 (<.001)	.001 (.993)	.482 (<.001)	-

Note. $n = 91$. Correlation *p*-values in brackets.

Table 4

*Means, Standard Deviations, and Results of Analyses of Variance (Experiment 2)*

Measure	Negative Review (*n* = 48)	Positive Review (*n* = 43)			
	M (SD)	*M (SD)*	*F*(1, 89)	*p*	*d*
Transportation	4.40 (1.22)	5.12 (0.88)	10.37	.002	0.67
Number of emotional shifts	10.71 (3.40)	11.19 (2.71)	0.54	.464	0.16
Intensity of emotional shifts	146.19 (55.77)	151.12 (50.28)	0.19	.660	0.09
Cognitive-level attitudes (agriculture)	4.80 (1.44)	5.01 (1.29)	0.56	.458	0.15
Affective-level attitudes (Sahel people)	4.39 (0.98)	4.54 (1.07)	0.50	.480	0.15
Social sharing intentions	4.11 (1.42)	4.61 (1.38)	2.85	.095	0.36

Note. n = 91.

Figures

Figure 1

Sequential Mediation Model for the Effect of Negative Review Condition (X) on Social Sharing

Intentions (Y) Through Transportation (M1) and the Intensity of Emotional Shifts (M2)
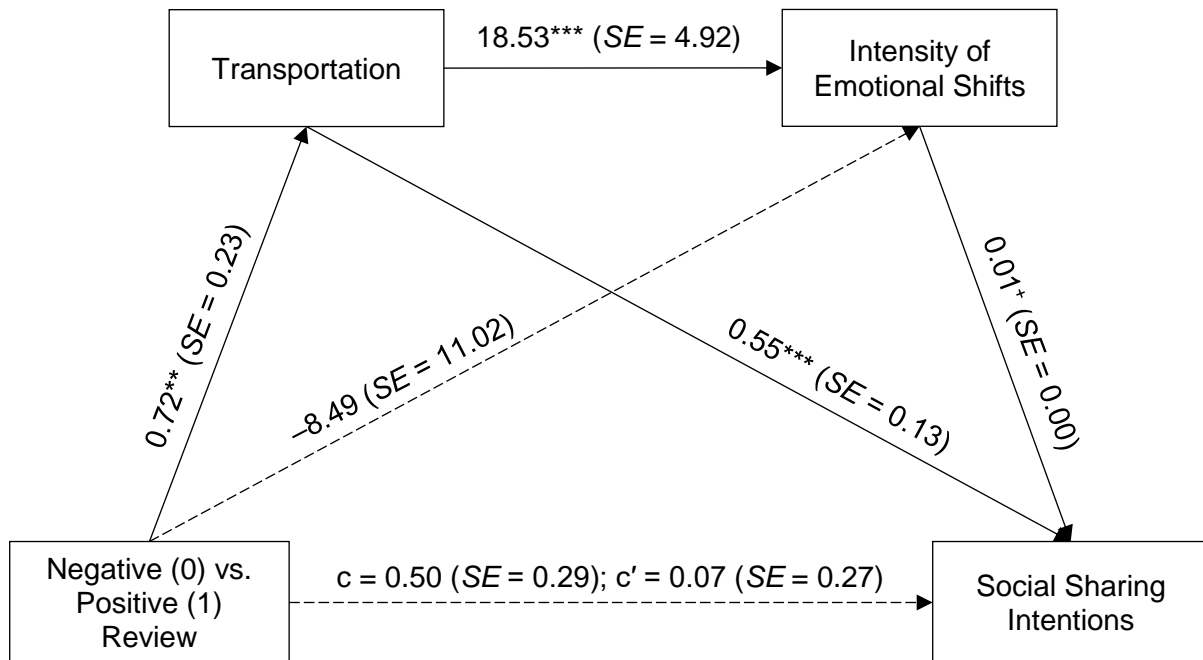
Note. Results for participants who read the desertification story (*n* = 91). Unstandardized

regression coefficients are reported. Bold paths indicate significant sequential mediation.

Non-significant paths are marked by dotted lines.

*** *p* < .001, ** *p* < .01, * *p* < .05, ^{+}p = .063.