

Moved to Act: Examining the Role of Mixed Affect and Cognitive Elaboration in “Accidental” Narrative Persuasion

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This research assesses the persuasive potential of being moved. We propose that emotionally moving film fragments may “accidentally” persuade viewers by promoting reflective thought, which, in turn, may prompt action in line with the behavior modeled in a movie. Cognitive load was manipulated to assess whether limiting participants’ capacity for reflective thought decreased persuasion. Hypotheses were tested in a 2 (movie fragment: moving, control) × 3 (cognitive load: during watching, after watching, no load control) between-subjects design among 119 participants. Key dependent measures were mixed affect, transportation, retrospective reflection, and intentions to engage in physical activity. Findings reveal that a manipulation of cognitive load decreases mixed affect and transportation for the moving but not for the control fragment. Transportation mediated the effect of mixed affect on intentions only for the moving film fragment. Mixed affect and transportation were unrelated to health intentions in the control condition, and retrospective reflection was unrelated to other measures for both movie fragments. Being moved may motivate action by stimulating reflective thought.

Keywords: eudaimonic entertainment, narrative, persuasion, mixed affect, transportation, reflective thought

The consumption of media entertainment is usually not characterized as a healthy behavior, but rather as a pleasant activity that may be generally benign if done in moderation. The popular characterization of media entertainment in hedonic terms is reflected in a host of metaphors, including

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Date submitted: 2017–03–08

¹ The authors thank Maureen Berentsen, Anne-Wil Kloosterboer, Jillis Reijmers, and Damian Wesseloo for their contributions to the research reported in this article.

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references to entertainment as a “guilty pleasure,” a “trivial pursuit,” or an “amusing diversion.” Indeed, the use of the term *binge watching* to refer to prolonged consumption of media entertainment parallels the use of the term *binge eating* to refer to the overconsumption of unhealthy foods such as sweets or snacks.

However, recent theorizing recognizes that entertainment can do more than provide viewers with pleasurable experiences; it can also provide individuals with meaningful and moving experiences that may reflect gratifications more akin to appreciation than enjoyment (Oliver & Bartsch, 2010; Vorderer & Reinecke, 2015). Many scholars have employed the term *eudaimonic gratifications* (in contrast to *hedonic gratifications*; see Aristotle, 1931) to refer to viewers’ experiences of deeply touching and insightful entertainment experiences (Oliver & Raney, 2011; Wirth, Hofer, & Schramm, 2012). Evidence is mounting that eudaimonic entertainment can motivate altruism, feelings of connectedness with others, and feelings of deeper insight, life purpose, or gratitude (Knobloch-Westerwick, Gong, Hagner, & Kerbeykian, 2012; Wirth et al., 2012). The broad purpose of the present research is to extend this concept to the health domain by examining whether entertainment can also inspire individuals to take good care of themselves through healthy living.

This study seeks to connect the viewing of meaningful entertainment to research that has examined the persuasive potential of stories in a health context. Previous research on narrative persuasion and entertainment education has shown that incorporating important health messages about, for example, HPV vaccination in entertaining narratives specifically designed for this purpose can be more powerful in reaching and convincing target audiences than rhetorical messages (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013). The key question examined in this research is whether entertainment that was originally designed to move, rather than persuade, target audiences can be used as an “accidental” persuasive vehicle in health contexts, and whether such forms of entertainment are better at persuading target audiences than narratives that trigger less complex emotions. In the next sections, we discuss recent conceptions of eudaimonic entertainment and elaborate on narrative persuasion processes and the potential link between moving entertainment and accidental persuasion. We then present an experiment that tests our assumptions.

Beyond Hedonic Motivations: Eudaimonic Entertainment Experiences

Contemporary forms of entertainment, including many types of films (e.g., romantic comedies, action adventures), videos games, and television genres have generally been considered to be merely pleasurable diversions (Oliver, 2009). As such, research from a media-psychology tradition has tended to focus on the audience response of “enjoyment,” which is generally understood as involving positive affect and little cognitive effort (for overviews, see Tamborini, 2011; Vorderer, 2001; Vorderer, Klimmt, & Ritterfeld, 2004). More recently, scholars recognize that media entertainment, like historical forms of entertainment, can be deeply meaningful to individuals. Hence, rather than focusing on enjoyment as the only audience motivation or experience, researchers have begun to explore additional experiences better captured by alternative terms such as *appreciation* or *gratification* (Oliver & Raney, 2011). Although both enjoyment and appreciation (or hedonic and eudaimonic experiences) are not generally thought to be orthogonal constructs (e.g., individuals can both enjoy and appreciate a film), the explanations for these

responses and the descriptions of their cognitive and affective components point to some important differences between the reactions.

Oliver and Bartsch (2011) argue that meaningful entertainment experiences typically arise when the entertainment focuses on questions of human virtue and provides individuals with a feeling of deeper insight into existential questions such as purpose in life or the human condition. As such, depictions such as courage, compassion, kindness, and justice are argued to be commonly depicted in entertainment that is deeply appreciated, in contrast to entertainment that is merely enjoyed (see also Oliver & Hartmann, 2010). Many scholars have pointed to the unique affective reactions that individuals often experience when consuming meaningful media (Oliver, Bartsch, & Hartmann, 2014). Although early research seemed to equate meaningful media with sadness (perhaps because sad films or tragedies are often meaningful), more recent scholarship argues that meaningful affective responses are more aptly described in terms of mixed affective responses (Slater, Oliver, & Appel, 2016). For example, Oliver, Hartmann, and Woolley (2012) found that when individuals describe their responses to meaningful films, they often use terms such as *touched*, *moved*, or *inspired*, with these affective states associated with elevated levels of both positive and negative affect.

Further, mixed affective responses to meaningful media may give rise to heightened cognitive processing. Specifically, a recent study randomly assigned participants to watch one of two versions of a short film that elicited different levels of feeling moved while keeping the cognitive, propositional content constant. The researchers found that the more moving fragment elicited more reflective thoughts—a sign of heightened cognitive processing, which in turn predicted individuals' overall positive experience of the fragment (Bartsch, Kalch, & Oliver, 2014). Our research builds on these findings by examining whether, in addition to increasing reflective thought, moving film fragments are also more persuasive than similar fragments that evoke lower levels of mixed affect. In the next section, we examine the role of reflective thought in the narrative persuasion process.

Transportation, Retrospective Reflection, and Cognitive Load

Meaningful media consumption can result in positive changes for viewers, such as altruism, feelings of connectedness with others, and feelings of deeper insight, life purpose, or gratitude (Knobloch-Westerwick et al., 2012; Wirth et al., 2012), but research has generally not conceptualized these changes in terms of *persuasion*. However, a substantial body of scholarship has examined *narrative persuasion* in research that compares the effects of professionally produced or experimentally manipulated narratives with a specific health message against the effects of other genres with the same message, such as an information leaflet or a public service announcement. Several studies suggest that packaging a health message in a narrative format can increase persuasion (e.g., Moyer-Gusé & Nabi, 2010; Murphy et al., 2013; Slater & Rouner, 2002).

A large body of research findings points to the centrality of transportation in narrative persuasion effects. When individuals become transported into a narrative, they become consumed into the narrative world, away from one's reality and focused on the characters and events as they unfold in the story. Scholars have proposed that transportation involves a blending of viewers' imagination, emotions, and

attention with the story world, which makes it possible for viewers or readers to incorporate story elements into their belief system and, hence, change attitudes (Green & Brock, 2000) and intentions (Kim, Bigman, Leader, Lerman, & Cappella, 2012; Murphy, Frank, Moran, & Patnoe-Woodley, 2011).

The nature of narrative thought processes appears less bound by rationality than the systematic processing typically implied through analytical persuasion following overtly persuasive messages (Slater & Rouner, 1992). In analytical persuasion, receivers carefully evaluate the arguments in a message and generate thoughts related to the arguments, provided they are willing (e.g., motivated through high issue or ego involvement) and able (e.g., have the cognitive capacity; Petty & Cacioppo, 1986) to process the message. Transportation does not necessarily entail critical processing of story content or thoughtful reflection of messages embedded in a narrative and appears of a different, more affective, experiential nature (Wentzel, Tomczak, & Herrmann, 2010). Overall, research findings indicate that when viewers blend with a narrative storyline, they can somehow come out of the experience with new or changed attitudes that may persist over time, even though they did not engage in analytical processing of the key message (Appel & Richter, 2007).

Some scholars argue that the transportation process alone cannot completely account for narrative persuasion effects. For example, recently the concept of retrospective reflection has been proposed as a second necessary factor in the narrative persuasion process (Hamby, Brinberg, & Daniloski, 2017). Retrospective reflection is the process of recalling relevant memories from one's own life based on story elements. It is proposed to occur when viewers compare their own memories with the situation in the narrative, which can subsequently increase story acceptance. Other authors refer to processes similar to retrospective reflection with terms such as *resonance* (Larsen & László, 1990) or *self-referencing* (Escalas, 2007). According to these perspectives, stories do not have to be "real" to influence viewers, but they need to resonate with the viewers' beliefs and experiences to change their reality and induce persuasion (Larsen & László, 1990).

To empirically test the relationship between transportation, retrospective reflection, and persuasion, Hamby and colleagues (2017) used a manipulation of cognitive load during and after message processing. Previous research had shown that applying a cognitive load decreases individuals' capacity to engage in reflective processes (e.g., Trope & Gaunt, 2000). If the premise holds that retrospective reflection is the missing link between transportation and persuasion, then applying a manipulation of cognitive load *after* individuals have read or viewed a narrative should hinder viewers to engage in retrospective reflection—that is, in their attempts to connect a story to their own experiences—and negatively affect persuasion. Results confirmed this premise; applying a cognitive load after the narrative (versus applying a load during or applying no load) affected retrospective reflection, which, in turn, reduced persuasion (Hamby et al., 2017, study 3).

The present research builds on previous findings to further explore the effects of moving (versus nonmoving) entertainment on transportation, retrospective reflection, and persuasion. In the next section, we elaborate on the expected differences between moving and nonmoving entertainment fragments in terms of persuasive outcomes.

How Moving Entertainment May Induce Accidental Persuasion

Prior research on meaningful entertainment has demonstrated that feeling moved or touched by meaningful entertainment may enhance reflective thought (Bartsch et al., 2014) and induce positive changes in viewers, such as gratitude and feelings of greater insight (Knobloch-Westerwick et al., 2012), thus attesting to the persuasive potential of this form of entertainment. Research on narrative persuasion in the health context suggests that narratives may positively affect attitudes and intentions toward healthy recommendations through transportation and retrospective reflection (Hamby et al., 2017). This research has typically embedded a persuasive or target message in a narrative, such as "HPV vaccination is important to prevent cervical cancer" (Murphy et al., 2013), or "Vaccination decreases your risk of Hepatitis B" (de Wit, Das, & Vet, 2008). As far as we know, no studies have examined the accidental persuasive potential of moving entertainment in the health context or the relationship between mixed affect, transportation, and persuasion.

The present research connects these different research fields by examining whether moving entertainment may be used to accidentally persuade target audiences to adopt healthy lifestyles. Especially moving stories have great persuasive potential because they instill story-related reflective thoughts that may transform a viewer's belief system (Knobloch et al., 2012). Because story-related reflection is not a rational process, but rather a blending of viewers' imagination, emotions, and attention with the story world, it opens the door to accidental persuasion effects for key elements in the movie fragment in terms of leitmotif, characters, behaviors, or even preference for specific scenery. In this research, we assess whether a moving fragment in a sports movie may positively affect viewers' motivation to be physically active. Tentatively, this reflective process may be rooted in story-based inspiration to change—for example, to step outside predefined boundaries of the self (Slater, Johnson, Cohen, Comello, & Ewoldsen, 2014)—or in false attributional processes related to the self, such as self-perception or self-persuasion (Bem, 1972). In the former case, viewers are so moved by the fragment that they are inspired to imitate the behavior; in the latter case, viewers who are moved by a film fragment may retrospectively conclude that they must really like sports based on their emotional response to the fragment.

The Present Study

In this research, we make a first step in examining accidental persuasion effects following a moving (versus nonmoving) sports film fragment on viewers' intentions to engage in physical exercise. In line with previous research, we propose that watching an emotional fragment will trigger a mixed affective state that promotes reflective thought about the story world (transportation) and one's own experiences triggered by the story world (retrospective reflection), which, in turn, predict persuasion. Following Hamby and colleagues (2017), we use a manipulation of cognitive load *during* viewing to decrease reflective thought about the story world (transportation) and apply cognitive load *after* viewing to decrease reflective thought about one's own experiences triggered by the story world (retrospective reflection). If the reasoning is correct, as some scholars argue (Green & Brock, 2000) that transportation is key in narrative persuasion, then a cognitive load during watching should reduce transportation and, therefore, persuasion. If, on the other hand, retrospective reflection plays a key role in the persuasion process, then a cognitive load after watching should reduce retrospective reflection and, therefore, persuasion.

The aim of the present research is threefold: (1) to examine the persuasive potential of being moved; (2) to empirically assess the relationship between mixed affective responses and reflective thought; and (3) to explore the relationship between transportation, retrospective reflection, and accidental persuasion. Based on previous findings that especially moving entertainment promotes reflective thought, we propose this hypothesis:

H1: Cognitive load decreases reflective thought for moving but not control movie fragments.

We further propose, based on the premise that reflective thought is required for persuasion effects to occur:

H2: A moving (versus control) film fragment about sports increases intentions to engage in physical activity, especially under no load conditions.

Finally, we explore the role of transportation and retrospective reflection in the narrative persuasion process by comparing cognitive load effects during viewing with cognitive load effects after viewing and no load conditions across the moving and control film fragments.

Method

Participants and Design

A total of 343 participants started the online experiment, of which 145 participants fully completed the questionnaire. The majority of the sample were women (62.7%, $n = 94$), and the mean age was 30.68 ($SD = 13.80$). Most participants were highly educated (87.9%). Participants were randomly assigned to a 2 (movie fragment: moving, control) \times 3 (cognitive load: no load, load during exposure, load after exposure) between-subjects design. Participants were evenly distributed across conditions with regard to age ($p = .78$), gender ($p = .41$), and education ($p = .76$).

Procedure and Materials

The experiment was conducted online. Participation was voluntary (no incentive), and participants were recruited via online channels by posting links on five different personal Facebook pages. When opening the URL, the participants received a short introduction and were then forwarded to their randomly assigned version of the experiment. After the randomization process, the participants received instructions and were asked to view the movie fragment, with or without the cognitive load manipulation, after which they completed the questionnaire.

The entertainment materials were matched by using two comparable fragments of approximately equal length from the comedy sports film *Cool Runnings*, directed by Jon Turteltaub (1993). *Cool Runnings* tells the story of the first Jamaican bobsled team to try for the Olympic Games; the movie is loosely based on the true story of the Jamaica national bobsled team's debut in competition during the 1988 Winter Olympics in Calgary, Alberta, Canada. The rationale for choosing two fragments from the

same movie was to make sure that visual, sound, and narrative effects (e.g., main characters, leitmotif) were constant and thus comparable across conditions, ruling out alternative interpretations to potential differences between conditions. Both fragments showed the bobsled team practicing their skills, and both fragments showed the athletes working toward success in the Olympic Games. The moving fragment included a deeper conversation between the coach and a team member about the value of winning and the price of cheating; the coach was once a professional bobsled athlete who was disqualified after he was found cheating, and tells the team member at the end of the conversation, "A gold medal is a wonderful thing, but if you're not enough without it, you'll never be enough with it." This fragment was assumed to trigger reflections of human virtue (Oliver & Bartsch, 2011) and morality (Tamborini, 2012) and thus score higher on mixed affective states than the control fragment.

Both fragments were about the same length, with slight differences due to optimal scene cuts (moving: 7 minutes, 45 seconds; control: 6 minutes, 56 seconds). We conducted a pilot test among 23 participants (age: $M = 27.1$, $SD = 10.69$; range 19–53; 60.9% female) to check whether the moving fragment indeed triggered higher levels of mixed affect and whether the fragments were comparable on other relevant dimensions. Participants watched either the moving fragment ($n = 11$) or the control fragment ($n = 12$) and then filled out 12 items on a 5-point scale (Oliver & Raney, 2011, study 4). Factor analyses confirmed a similar four-factor solution as in the original article, with meaningful affect (inspired, contemplative, introspective; Cronbach's $\alpha = .78$), fun affect (entertained, amused, excited; Cronbach's $\alpha = .72$), happy affect (happy, optimistic, $r = .42$, $p = .044$), and sad affect (sad, emotional, compassionate, humored [reverse-coded]; Cronbach's $\alpha = .80$). The two film fragments did not differ in meaningful affect and fun affect ($F_s < 1$). To assess mixed affective reactions, we used Ersner-Hershfield, Mikels, Sullivan, and Carstensen's (2008) procedure that computes the minimum of happy and sad affect scores for each participant, leading to high mixed affect scores only if participants score high simultaneously on both happy and sad affect, and low scores in all other combinations. A one-way analysis of variance confirmed that the moving film clip ($M = 3.88$, $SD = 1.12$) elicited higher levels of mixed affect, with a large effect size, $F(1, 21) = 14.61$, $p = .001$, $\eta_p^2 = .41$, than the hedonic film clip ($M = 2.32$, $SD = 0.82$).

To assess to what extent and at what point in time the movie fragments elicited reflective thought, participants' capacity to reflect on the movie fragments' content was limited in two of three conditions with a manipulation of cognitive load during or after viewing (versus no load in the control condition; cf. Hamby et al., 2017). Previous research had suggested that individuals need cognitive effort to process and reflect on especially moving film fragments. We tested this premise by giving participants an additional cognitive task while processing the narrative. One-third of the participants were asked to add up five numbers that appeared on the screen while they were watching the movie fragment. One-third of the participants were asked to memorize five numbers that appeared immediately after the movie fragment and to recall the numbers after a filler math task. We chose five digits because individuals can generally reproduce maximally nine digits (Miller, 1956). This task was a more difficult "load after" task than the one used by Hamby et al. (2017) to rule out alternative explanations regarding task difficulty. One-third of the participants did not receive a cognitive load during or after viewing.

Measures

Mixed affect was measured on a 7-point scale with two items each from the Oliver and Raney (2011) scales for happy (happy, optimistic) and sad affect (sad, emotional). As in the pretest, mixed affective reactions were assessed by computing the minimum of happy and sad affect scores for each participant, leading to high mixed affect scores only if participants score high simultaneously on both happy and sad affect, and low scores in all other combinations.

Transportation was adapted from Appel, Gnambs, Richter, and Green (2015), using five items on a 7-point Likert scale (1 = *not at all*; 7 = *very much*): "While I was watching the fragment, I could easily picture the events in it taking place," "I could picture myself in the scene of the events shown in the fragment," "I was mentally involved in the fragment while watching it," "I wanted to learn how the film ended," "The film affected me emotionally."

Retrospective reflection was measured with four items on a 7-point Likert scale (1 = *not at all*; 7 = *very much*) based on Hamby et al. (2017): "The fragment reminded me of some of my personal experiences," "Some parts of the movie reminded me of people I know," "Some parts of the movie reminded me of situations other people I know have been in," and "I thought about other people I know while watching the movie."

Intention to engage in physical activity was measured with four items on a 7-point scale (1 = *not at all*; 7 = *very much*) adapted and translated from Hoeken, Hornikx, and Hustinx (2012): "I intend to engage in physical activity in the coming month," "I will engage in physical activity next month," "I am willing to engage in physical activity in the next month," "In the next month I am going to engage in physical activity."

Factor analyses across all items yielded the expected five-factor solution (eigenvalues > 1). The reliability of the composite scale for transportation was good: $\alpha = .86$. The reliability of the composite index for retrospective reflection was good: $\alpha = .88$. The reliability of the composite scale for intentions to engage in physical activity was very good: $\alpha = .97$. The two positive ($r = .60, p = .000$) and two negative ($r = .446, p = .000$) affect items correlated significantly.

Gender, age, education level, and English proficiency were included as control variables as the language spoken in the movie fragments was English (7-point Likert scale; 1 = *very poor*; 7 = *very good*).

Data Analysis

Seven participants were excluded from the analyses because their English proficiency was too low (*bad* or *very bad* on a 6-point scale ranging from *very bad* to *very good*) to understand of the movie fragment. Participants who spent less than eight minutes in the online questionnaire were also excluded from the analyses ($n = 20$) because they could not have watched the entire movie fragment. This left a total of 119 participants for the final analyses. Analyses of variance were used to assess effects of the

independent variables on mixed affect, transportation, and sports intentions. Regression analysis was used to test for indirect effects.

Results

Mixed Affect

A 2 (movie fragment: moving, control) \times 3 (cognitive load: no load, during movie, after movie) analysis of variance on mixed affect revealed a main effect of movie fragment, $F(1, 113) = 28.53, p = .000, \eta_p^2 = .20$. As expected, and in line with the pretest, participants who viewed the moving fragment reported higher levels of mixed affect ($M = 3.86, SD = 1.18$) than participants in the control condition ($M = 2.78, SD = 1.06$). The main effect of cognitive load was not significant ($F < 1$). The interaction between movie fragment and cognitive load was near significant, $F(2, 113) = 2.99, p = .054, \eta_p^2 = .05$. Further analyses of simple effects determined that cognitive load significantly impacted mixed affect in the moving movie fragment, $F(2, 113) = 3.43, p = .036, \eta_p^2 = .06$, but not in the control fragment ($F < 1$). See Table 1.

Table 1. Mixed Affect and Transportation Means (SDs) as a Function of Movie Fragment and Cognitive Load.

	Moving fragment	Control fragment
Mixed affect		
No cognitive load	4.25 (1.03) _a	2.67 (1.18)
Cognitive load during	3.38 (1.22) _b	2.95 (0.84)
Cognitive load after	3.96 (1.16) _a	2.71 (1.17)
Transportation		
No cognitive load	5.35 (1.33) _a	5.02 (0.73)
Cognitive load during	5.41 (0.82) _a	4.67 (1.45)
Cognitive load after	4.26 (1.88) _b	5.19 (1.20)

Note. Means with different subscripts differ significantly

Transportation

The 2 (movie fragment: moving, control) \times 3 (cognitive load: no load, during movie, after movie) analysis of variance on transportation revealed no significant main effects of movie fragment or cognitive load ($F_s < 1.20$), but did reveal a significant interaction between load and movie fragment, $F(2, 113) = 4.32, p = .016, \eta_p^2 = .07$. Further analyses of simple effects determined that cognitive load impacted transportation for the moving fragment, $F(2, 113) = 4.53, p = .013, \eta_p^2 = .07$, but not the control fragment ($F < 1$). This confirms H1 (see Table 1).

Retrospective Reflection

The 2 (movie fragment: moving, control) \times 3 (cognitive load: no load, during movie, after movie) analysis of variance on retrospective reflection revealed no significant main effects and no significant interaction ($F_s < 1.60, p_s > .20$).

Predicting Intentions to Engage in Physical Activity

The 2 (movie fragment: moving, control) \times 3 (cognitive load: no load, during movie, after movie) analysis of variance on intentions to engage in physical activity revealed no significant main effects and no significant interaction ($F_s < 2.20, p_s > .12$).

To gain additional insight into indirect effects on the intention to engage in physical activity, we first ran a full factorial correlation matrix, revealing no significant correlations between mixed affect, transportation, retrospective reflection, and intentions. When the correlation matrix was run again for the control fragment only, a significant relationship was observed only between transportation and retrospective reflection ($r = .28, p = .031$; all other $r_s < .19$). A correlation matrix run only for the moving fragment revealed a marginally significant correlation between mixed affect and transportation ($r = .25, p = .053$), a significant correlation between mixed affect and retrospective reflection ($r = .32, p = .014$), and between transportation and intentions ($r = .30, p = .020$). Based on the correlational and analysis of variance findings, we then used a row of analyses based on procedures to assess indirect effects for the moving fragment, as recommended by Hayes (2013). In the following discussion, all regression coefficients are reported in unstandardized form.

We first tested whether transportation mediated the effects of mixed affective states on intentions for the moving fragment (Model 4, Hayes, 2013). This yielded a near significant model for the prediction of the mediator ($R = .25, R^2 = .06, p = .053$). The effect of mixed affect on transportation was significant ($b = .306, p = .053$). The model for the prediction of intention was also significant ($R = .35, R^2 = .12, p = .024$) and revealed a significant effect of transportation on intention ($b = .442, p = .009$) with no direct effect of mixed affect ($b = -.291, p = .147$). The indirect effect of mixed affect on intention via transportation was significant: CI [.0097, .3845]. This confirms H2. We then tested additional models to assess whether the manipulations of cognitive load moderated the observed mediation through transportation, either from mixed affect to transportation (Model 7), or from transportation to intentions (Model 14), or both (Model 75), using dummy-coded variables (load1 = no load vs. load; load2 = load during vs. other; load3 = load after vs. other). These analyses revealed no significant models, partially confirming H2 (see Figure 1).

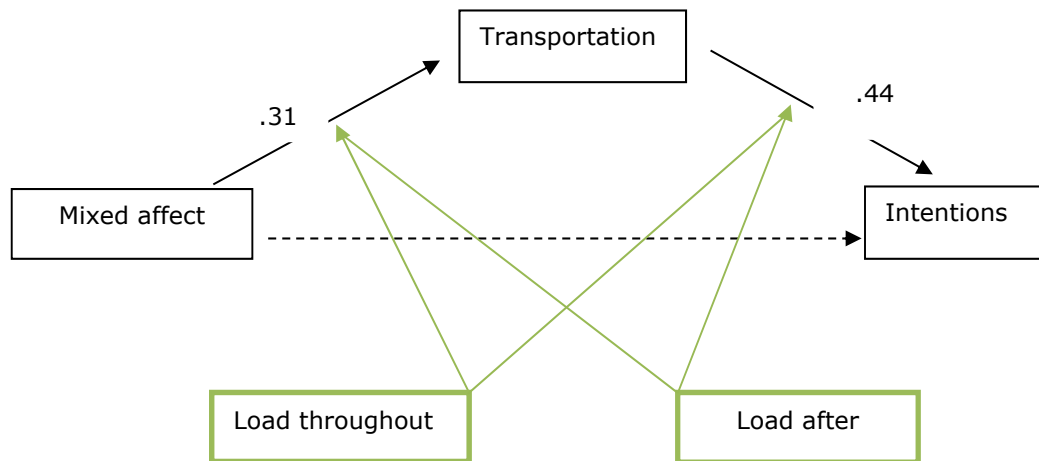


Figure 1. Indirect effect of mixed affect on intentions to engage in physical activity via transportation following the moving film fragment.

Discussion

The aim of the present research was threefold: (1) to examine the persuasive potential of being moved; (2) to empirically assess the relationship between mixed affective responses and reflective thought; and (3) to explore the relationship between transportation, retrospective reflection, and accidental persuasion. We conducted an experimental study that used two comparable fragments from the same movie and manipulated cognitive load during or after viewing (versus no load) to gain insight into reflective narrative processes. As expected, cognitive load decreased transportation for the moving movie fragment, but not for the control movie fragment. Furthermore, mixed affective responses predicted transportation into the story world, which, in turn, predicted intentions to engage in physical activity—but, again, only when the entertaining film fragment moved viewers.

Our findings lend some support to the proposition that entertainment that is not designed to persuade viewers can still be accidentally persuasive, especially if it triggers mixed affective responses. Of particular interest is that the movie fragment we used to trigger mixed emotions in a generally humorous movie pertained to a moral dilemma about the value of winning and the price of cheating in sports. This movie scene did not model physical activity per se, but rather moral behavior. Nevertheless, and most likely because the main story was about sports, this movie fragment indirectly increased viewers' intentions to engage in physical activity. The findings underscore that not all entertainment experiences motivate action; mere entertainment is unlikely to do so, because mere fun is not enough to motivate reflective thought, and reflective thought appears needed to motivate action. The finding that mixed affect predicted transportation, which, in turn, increased intentions to engage in physical activity only for the moving fragment suggests that especially movies that trigger reflective thoughts have persuasive potential.

Our findings also extend previous research that had suggested that eudaimonic entertainment typically requires greater cognitive involvement than hedonic entertainment, because it is associated with more meaningful, contemplative, or morally ambiguous content (Bartsch & Schneider, 2014; Tamborini, 2012). Our findings reveal that limiting participants' cognitive capacity had no impact on their responses toward an entertaining movie fragment per se, and only negatively affected transportation into the story world for fragments that elicited mixed affect. Especially intriguing is the finding that transportation was not affected by type of entertainment per se. The main difference between the two fragments appears to lie not in their potential to seduce viewers toward becoming transported, but in their potential to trigger complex emotions and thoughts which, in turn, may alter viewers' realities. Thus, participants who viewed the moving fragment experienced fewer mixed affective responses, and were less transported, when a cognitive load hindered narrative processing of story content, suggesting that processing complex emotions and reflective thought both require cognitive capacity (Das, Vonkeman, & Hartmann, 2012). Findings also suggest that being transported in a hedonic, less emotional story does not require such processing capacity, which is in line with previous findings (Wentzel et al., 2010).

This research set out to gain insight into the question of how viewers take elements from a fictional world back into their own thoughts and actions after watching a movie. Current empirical evidence on this topic is limited. Previous scholarship had suggested transportation and retrospective reflection as routes through which narratives can induce persuasion. Although our findings confirm the idea that transportation into the story world and retrospective reflection about the connection with one's own life are two separate constructs, they do not confirm recent findings that retrospective reflection mediates the effects of transportation on persuasion (Hamby et al., 2017). Whereas the measure of retrospective reflection yielded null effects of the independent variables and no relationship with transportation and behavioral intentions, transportation was affected by entertainment fragment and cognitive load, and it mediated the effects of mixed affect on intentions. These findings thus suggest that retrospective reflection—that is, the process of recalling relevant memories from one's own life based on story elements—is not a necessary condition for persuasion effects to occur, and transportation is a necessary condition. Because these findings differ from recent findings from another study (Hamby et al., 2017), future studies should further examine the role of retrospective reflection in predicting narrative persuasion. It may be that self-relevant memories do play a role, but are somehow blended with the transportation experience, or with other relevant factors in narrative persuasion such as identification (Moyer-Gusé et al., 2012). The finding that a cognitive load after the story decreased transportation into the moving film fragments hints at the possibility that transportation is an ongoing process that does not end immediately after a movie has ended. Indeed, just as a good book can make readers ponder tragic events and moral dilemmas, so can a meaningful movie make viewers think about story events long after the movie credits roll.

Future Directions

To our knowledge, this research is the first to examine the occurrence of accidental persuasion to engage in physical exercise following exposure to entertaining movie fragments. We found that movies not designed to persuade can nonetheless persuade viewers—for example, when a sports movie contains moving fragments that trigger reflective thought. By examining the concept of accidental persuasion, we

were challenged to use existing and professionally made experimental materials that were comparable across conditions in terms of storyline, main characters, visual elements, and other factors that crucially determine narrative persuasion effects. This resulted in an experimental comparison of two movie fragments with similar scenes from the same movie that differed on the meaningful dimension. We acknowledge that including multiple fragments for each experimental condition would be preferred to rule out alternative explanations for the observed effects, but this is difficult to achieve within the accidental persuasion paradigm. It would entail, for example, finding fragments from different movies that focus on the same moral dilemma and, at the same time, on the same outcome behavior, using the same narrative elements. Perhaps using professionally produced movie fragments that merely differ on the meaningful dimension would be an interesting alternative for future studies. Future studies should, in any case, focus on replicating the observed effects for different moral dilemmas; for different, more varied, outcome behaviors while checking for socially desirable answers; and for movies with different narrative features. It would be especially interesting to compare movie fragments that differ in how they elicit meaningful affect and fun affect. Our study used fragments from the rather lighthearted movie *Cool Runnings*; findings should be extended to more meaningful, eudaimonic movie fragments.

Future studies could also examine the role of reflective thought in the accidental persuasion processes to obtain a better understanding of what it is exactly that viewers reflect about during or after viewing the film fragment, and whether these thought processes can be captured in overarching generalizable categories. The present research measured the role of reflective thought indirectly, by examining the effects of cognitive load on outcome measures. Given the premise that meaningful movies about courage, compassion, kindness, or justice can inspire and elicit contemplative, reflective thoughts, it would be interesting to assess the content of such thought—for example, by using a thought-listing measure whereby participants reflect on the thoughts they were having while viewing the movie. Combining such a measure with the experimental manipulation of cognitive load may also advance academic understanding of how transportation into the story world translates into thoughts and actions in viewers' real world. Specifically, it should be worthwhile to replicate currently observed effects of cognitive load *during* watching on mixed affect and cognitive load *after* watching on transportation for the moving film fragment. Replicating current evidence that individuals may indeed remain transported into the story world after they have finished watching a movie, and gaining additional insight into the content of their reflective thoughts on this movie may increase our understanding of the (implicit) attributional processes involved in accidental narrative persuasion.

The present findings contrast with recent findings regarding the role of retrospective reflection in the narrative persuasion process (Hamby et al., 2017). Retrospective reflection occurs when individuals connect story elements to events from their own lives, thus relating fictional story content to real-world content. Whereas Hamby and colleagues found that retrospective reflection played a key role in persuasion following short, experimentally produced written narratives, we found no evidence that retrospective reflection played a significant role in longer, professionally produced, entertaining film fragments. Replicating Hamby and colleagues (2017), we did find evidence that retrospective reflection can be distinguished from transportation at the conceptual level. Future studies should investigate these differences and attempt to reconcile the diverging findings by examining methodological and theoretical issues involved in the measurement of retrospective reflection effects. It has recently been argued that,

by consuming narrative entertainment, the individual is able to momentarily transcend the strict boundaries of the self-concept, which allows for other perspectives and the rehearsal of different possible selves (e.g., Slater et al., 2014). Further investigations into the specific role of the self in narrative persuasion—accidental or intended—should be especially fruitful.

Concluding Remark

It has been argued that stories may be viewed as flight simulators that prepare readers for difficult situations in real life (Gottschall, 2012). The present findings suggest that moving stories may be especially good flight simulator candidates by aligning viewers' thoughts about the movie world with their actions in the real world. Meaningful stories may thus inspire healthy living.

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