

## **Transportation into narrative worlds and the motivation to change health-related behavior**

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Stories are considered to be a potent means to change health-related attitudes, beliefs, and behavior due to recipients' transportation into the narrative world. Little emphasis, however, has been given to the link between transportation and process variables that are pertinent to health behavior. Connecting narrative persuasion to the Health Action Process Approach (HAPA), a model comprising of transportation, risk severity, self-efficacy, and outcome expectancies was specified to predict behavioral intentions. In an experiment, a short narrative video clip on drinking and driving was presented under conditions of low vs. high transportation. A structural equation model showed that transportation directly influenced risk severity, which in turn influenced outcome expectancies and self-efficacy. Whereas outcome expectancies and self-efficacy were positively related to behavioral intentions, the link between risk severity and intentions was negative when the other variables were included in the model. Implications and future research on narrative health communication are discussed.

*Keywords: health narratives, health action process approach, transportation, drunk driving, narrative persuasion*

Much of information that individuals encounter on a daily basis is presented in the form of a story. Stories or narratives (both terms will be used synonymously throughout this paper) have been defined as “the representation of an event or a series of events” (Abbott, 2002, p. 12) and they often entail a schematic plotline consisting of one or more protagonists, a conflict or significant life event, and a resolution. Stories attract attention, they elicit thoughts and emotions, and they appear to fit the cognitive architecture of humans particularly well (cf. Gottschall, 2012). Thus, stories could be an effective way to achieve goals in the field of health communication.

A substantial part of the available research on the effects of narratives on attitudes, beliefs and behavior includes dependent variables that deal with health issues (e.g., cancer screening, organ donation, tobacco use; see De Graaf, Sanders, & Hoeken, 2016, for an overview). To date, however, a systematic connection between theory and research on story processing on the one hand and theory and research on health behavior change on the other hand is rare. Variables such as self-efficacy or threat severity – key components of theories on health behavior change – have hardly been addressed.

The present work connects research on narrative persuasion with the motivational phase of the Health Action Process Approach (HAPA, Schwarzer, 2001; 2008). An experiment is presented that focused on the effects of being transported into the story world of a short narrative video about the potentially fatal consequences of drunk driving. A special emphasis is given to risk severity, outcome expectancies and self-efficacy which were specified to translate the influence of being transported into the narrative world on behavioral intentions to drink no alcohol when supposed to be driving. We start with a brief introduction on health behaviors, social cognitive models, and the HAPA (Schwarzer, 2001), the model our research is based on. We subsequently introduce current research on narrative influence, with an emphasis on Transportation Theory.

### *Understanding health behaviors*

In contemporary high-income countries, notably in North America and Western Europe, it has become somewhat of a cultural truism that behavior plays a critical role in the health outcomes of individuals, social groups and society as a whole. Increasingly this is also the case in countries with developing economies, reflecting what has become known as epidemiological transition (Santosa, Wall, Fottrell, Högberg, Byass, 2014). As living and working conditions of the population improve through socio-economic progress, leading causes of death evolve from acute, communicable diseases, such as pneumonia, influenza and tuberculosis, to life-style related conditions, for instance cardiovascular disease and cancer (cf. Benzinger, Roth & Moran, 2016). A limited set of health-impairing behaviors is thought to account for much of the contemporary morbidity and mortality from chronic conditions, in particular smoking, poor diet and physical inactivity, and alcohol consumption (Mokdad, Marks, Stroup, & Gerberding, 2004). It hence comes as no surprise that these behaviors have become a focus of health promotion efforts to improve population health.

Health communication is a critical component of the health promotion activities to increase awareness of a health threat, educate people of ways to mitigate risks, and promote the uptake of a recommended course of action. Health communication may be concerned with the diversity of behaviors related to health, including, possibly most prominently, diminishing health-impairing behaviors (e.g., smoking), as well as encouraging health-promoting (e.g., regular physical exercise), health detection (e.g., regular Pap-smear), and health-maintaining (e.g., adherence to a medication regimen) behaviors, to prevent ill health (primary prevention), ensure timely detection (secondary prevention), and safeguard wellbeing (tertiary prevention), with a range of audiences. Health communication executions typically also differ widely with respect to characteristics of the source, message and channel, and the present study is in particular concerned with the impact of message characteristics and related processing on health-related behavior. People's beliefs about themselves and the world around them are thought to exert proximal influence on their behaviors, mediating other psychological,

interpersonal, cultural and systemic influences; beliefs are also considered relatively open to change, and an ideal target for health communication messages to behavior change (also see Conner & Norman, 2015). As health promotion activities generally have more impact if they address the factors that are known to shape the targeted behavior (cf. Bartholomew Eldredge, Markham, Ruitter, Fernández, Kok, & Parcel, 2016), health communication needs to address those beliefs that are associated with the behavior, and do so in effective ways. While health communication theory and research are mostly concerned with the conditions and processes whereby influence and change are obtained, understanding of factors that shape behavior is mostly guided by behavioral theory and research in social and health psychology, in particular with respect to so-called social cognition models.

### ***Social cognition models of behavior***

Social cognition models are a prominent class of behavioral theories developed in social psychology and health psychology, branches of psychology particularly concerned with understanding the proximal determinants of decision-making regarding health and social behaviors (for a detailed discussion see Conner & Norman, 2015). These types of theories emphasize the importance of social cognitions in behavioral decision-making, that is, the various beliefs people hold which guide their thinking, evaluations and decisions, and that are shaped through social interactions and experiences with the world. Social cognition models have a common foundation in classic notions of decision-making that highlight the importance of people's expectancies about outcomes of a particular course of action and the value they attach to those outcomes, whereby choices are thought to reflect maximum subjective utility, that is, the course of action that results in maximum benefit and minimum cost.

Specific social cognition models differ in the specific types of beliefs they highlight, as well as in the processes through which they assume beliefs guide behavior. These models also differ as to whether they were developed to explain health behaviors in particular or social behaviors more generally, and whether they see behavior change as

reflecting a gradually increasing likelihood (i.e., continuum models) or a series of qualitative distinct steps that people go through in a set order (i.e., stage models). The Health Action Process Approach, which guides the current study, is an integrative, hybrid social cognition model that combines insights regarding the types of beliefs that shape a person's behavioral intention in the motivational phase with a consideration of processes that occur in the post-intentional planning and action phases.

### ***The Health Action Process Approach***

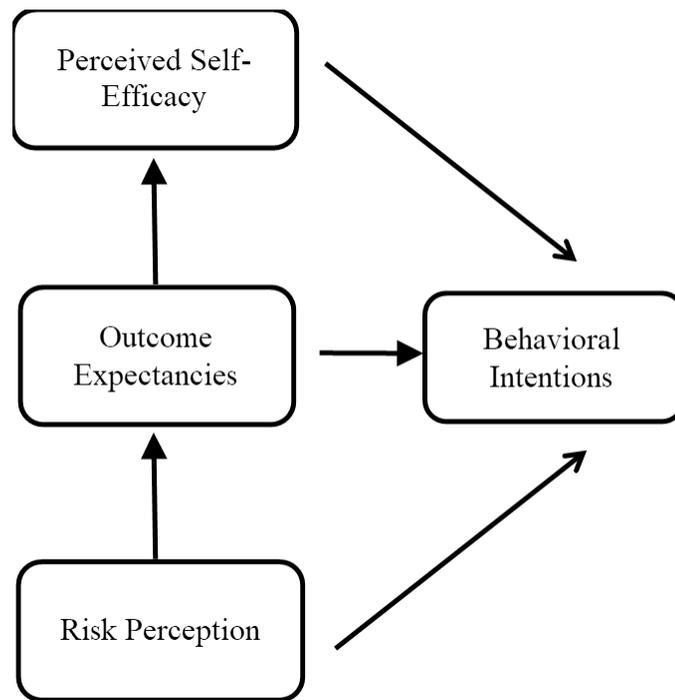
The Health Action Process Approach (HAPA) is meant to describe and explain health behavior and health behavior change (Schwarzer, 1992; 2001; 2008). As the HAPA model combines predictors and components of other models, it can, in part, draw on empirically well-founded associations (Schwarzer, 2001). Our emphasis in the current paper is on the first, the motivational phase of the HAPA model (Figure 1). According to the model, three variables, *risk perception*, *outcome expectancies*, and *self-efficacy* influence behavioral intentions.

*Risk perception* is a basic component of many models of health behavior (e.g., the Health Belief Model; Rosenstock, 1966). The conceptual idea is that, to develop a motivation to change, individuals first need to become aware of the risks associated with a behavior. This includes perceptions of subjective vulnerability as well as acknowledging the severity of a health threat (see also Ajzen, 1991). Perceived severity is the assessment of the seriousness of negative health consequences of a given behavior, and thus the appraisal of how severe the consequences of the respective target behavior are. In the HAPA model, risk perception is a basic motivational force that is associated with increased behavioral intentions and more favorable outcome expectancies.

*Outcome expectancies* are the expectations regarding the consequences of a behavior and correspond to a weighing up of the costs and benefits of the behavior. These (partly unconscious) considerations influence a person's decision for or against engaging in a particular health behavior, such as not drinking alcohol when one is going to drive.

For the outcome expectancy, it is necessary that several alternative behaviors are available and also recognized. This construct is part of many theoretical models of health behavior, sometimes under different labels, are part of classic economic theorizing of rational decision-making. The balance of positive and negative outcome expectancies influences behavioral intentions and self-efficacy.

*Self-efficacy* is well-known for its key role in social cognitive theory (Bandura, 1977). Bandura describes it as a belief “in one’s capabilities to organize and execute courses of action required to produce given attainments” (Bandura, 1997, p. 3). It corresponds to one’s own competence expectation, but cannot be equated with optimism, as the individual trusts in his/her own competences and not in external resources. In the HAPA-model, self-efficacy is the third variable that influences behavioral intentions.



***Figure 1. Early stages of the health action process approach. The three predictors of behavioral change and behavioral intentions as the first stage of change***

### *Narrative Persuasion and Transportation*

Theory and research on story processing and narrative effects suggest that the processes underlying the influence of stories differ from those delineated for non-narrative texts or simple lists of arguments, and therefore from the mechanisms outlined in the classic dual-process models of persuasion (e.g., Petty & Cacioppo, 1986). The influence of stories has often been attributed to recipients' deep immersion into the story world. Following Gerrig (1993) this experience has been termed *transportation*, an “integrative melding of attention, imagery, and feelings, focused on story events” (Green & Donahue, 2009, p. 241). An alternative concept, *narrative engagement* (Busselle & Bilandzic, 2009), has a substantial overlap with transportation and has attracted considerable amount of research as well. Transportation is widely considered to be a psychological state that depends on several factors, most importantly the text or media product encountered (e.g., Gerrig, 1993; Green & Brock, 2002). Other factors include the situational context (e.g., watching a movie alone or in company, Tal-Or, 2016) and information about the story, such as reviews encountered prior to the exposure (Dixon, Bortolussi, & Sopčák, 2015; Shedlosky-Shoemaker, Costabile, DeLuca & Arkin, 2011). Moreover, individuals vary in their propensity to get transported into a story world, with, for example, individuals high in need for affect (Maio & Esses, 2001) being more strongly transported than individuals low in need for affect (Appel & Richter, 2010). “Transportability” is another related trait (e.g., Dal Cin, Zanna, & Fong, 2004; Mazzocco, Green, Sasota, & Jones, 2010). It refers to individual differences in the tendency to become transported into a narrative world; whereas transportation is a state, transportability seeks to capture the trait component of being immersed into story worlds (see Gnambs, Appel, Schreiner, Richter, & Isberner, 2014, for a latent state-trait analysis of transportation).

Research on the impact of stories has attracted the attention of researchers from a variety of fields. Story influence was examined regarding consumer brands and goods (e.g., Escalas, 2007; Kim, Ratneshwar, & Thorson, 2017), attitudes toward out-group members (e.g., Green, 2004; Johnson, 2013), as well as climate change attitudes and

related behavior (e.g., Appel & Mara, 2013; Jones, 2014). Health outcomes, have received particularly strong attention, including topics such as organ donation (e.g., Appel & Richter, 2010; E. L. Cohen, 2010; Feeley, Marshall, & Reinhart, 2006), sun protection (Dunlop, Wakefield, & Kashima, 2010) or Human Papilloma Virus prevention (e.g., Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013; Nan, Dahlstrom, Richards, & Rangarajan, 2015). Research on binge drinking showed positive effects of a story on alcohol drinking behavior, intentions to decrease alcohol use, and perceived normative pressure, with stronger effects among less educated viewers (Van Leeuwen, Renes, & Leeuwis, 2013; Van Leeuwen, Van Den Putte, Renes, & Leeuwis, 2017).

We identified only one published study in the narrative persuasion tradition in which the risks of drinking and driving had been the focal topic (Moyer-Guse, Jain, & Chung, 2012). In this study the effects of an explicit persuasive appeal at the end of a crime drama (an episode of *Law & Order: SVU*) were investigated, with counterarguing and attitudes as the main dependent variables. The results indicate that, at least for men, including an explicit appeal that explicitly asked viewers to avoid drinking and driving led to less favorable attitudes toward drunk driving.

Although transportation was not of focal interest in the latter study, a substantial amount of research has yielded evidence for a positive association between self-reported transportation and indicators of persuasive effects such as attitudes (e.g., Mazzocco et al., 2010; Wang & Calder, 2006), beliefs (e.g., Appel & Richter, 2007; Bilandzic & Busselle, 2008), and behavioral intentions (e.g., Banerjee & Greene, 2013; Moyer-Guse & Nabi, 2010). Several mechanisms have been proposed as to how transportation facilitates narrative persuasion. First, transportation is expected to reduce counterarguing and other cognitive activities that signal a resistance to persuasive attempts (cf. Green & Brock, 2000). Second, a key component of transportation is the experience of vivid mental representations of the events described, which – at least in the long run – could lead to a melding of these events with actual real-world experiences (cf. Johnson, Hashtroudi, & Lindsay, 1993). Third, transportation implies strong emotional experiences. These can facilitate narrative persuasion via positive mood induction, arousal or positive links to the

story characters and their actions and perceptions (Appel & Richter, 2010; cf. Jo. Cohen, 2001; Nabi & Green, 2015).

To date, however, little is known about the link between transportation and actual behavior, the link between transportation and variables other than attitudes, beliefs, and intentions, such as self-efficacy (van Laer, de Ruyter, Visconti, & Wetzels, 2014), and the relationship between these supposed mechanisms. More generally, the current state of research is characterized by a lack of integration of research on stories and story processing on the one hand and models of behavior change, such as the HAPA-model, on the other hand.

### *Narrative influence on risk perceptions, outcome expectancies, and self-efficacy*

Among the few studies on risk perceptions within the field of narrative health communication the influence of narrative health messages on perceptions of the personal risk of getting infected with the hepatitis B virus and intentions to obtain hepatitis B vaccination was examined (De Wit, Das, & Vet, 2008). Participants received one out of four messages, consisting of a personal account (narrative evidence), prevalence data (statistical evidence), a mere assertion of increased risk, or no risk information. Narrative evidence was expected to entail a strong vividness (cf. Taylor & Thompson, 1982) which should in turn increase the likelihood that the information would come to mind more easily and faster when judging personal risk and planning behavior (Tversky & Kahneman, 1973). Moreover, narrative transportation and the reduced counterarguing associated with this state should increase message-consistent risk perceptions and behavior. In line with the authors' predictions, the narrative message yielded higher risk perception scores (e.g., "The likelihood of me becoming infected with HBV because of my sexual behavior is substantial"), whereas perceived severity was unaffected (e.g. "In your view, how severe is an infection with hepatitis B?"). Health-risk message type further had a marginally significant effect on intentions, which was mediated by message-induced differences in risk perception. In a recent study, however, no difference in risk perception was found between experimental groups exposed to statistical versus

narrative evidence within the field of HPV vaccination (Nan et al., 2015). Hybrid messages that contained both narrative and statistical components yielded highest perceptions of risk associated with HPV. Although De Wit and colleagues and Nan and colleagues had transportation theory as a key theoretical underpinning, they did not measure transportation.

The impact of stories on risk perceptions has been further highlighted in the risk convergence model (So & Nabi, 2013). The model posits that the psychological closeness to a mediated character who experiences a risk event drives the media's influence on personal risk perceptions. This psychological closeness (or reduction of perceived social distance) is represented in the experience of transportation, as well as the related concepts of personal relevance, identification, parasocial interaction, and perceived realism. In support of their framework, recipients' transportation into popular TV shows that involved issues related to STDs was positively associated with personal risk perceptions. Taken together, stories can have a substantial influence on risk perceptions (possibly in combination with statistical information, cf. Nan et al., 2015) and initial evidence suggests that transportation is positively associated with risk perceptions.

It was further suggested that stories are a potent means to influence outcome expectancies (e.g., Moyer-Guse, 2008) because they initiate learning from positive (or negative) models. When watching or reading a story, recipients follow a protagonist who is rewarded for his or her behavior which may positively motivate and reinforce the behavior. Likewise, behavior that is punished is negatively reinforced (cf. Bandura, 2004). Transportation is supposed to increase the effects of these vicarious encounters (Green & Brock, 2000; 2002). Empirical studies on outcome expectancies within the field of narrative health communication are rare; van Leeuwen and colleagues (2013) found no effect of a story (pre-post) on positive or negative outcome expectancies.

Based on a similar rationale, stories should be a potent means to increase self-efficacy. When a narrative message was compared to a no message control condition, self-efficacy was enhanced (Falzon, Radel, Cantor, & d'Arripe-Longueville, 2015), but in

another study when compared to a non-narrative (but informative) control condition, narrative messages (conversational and testimonial approaches) did not elicit higher self-efficacy (Slater, Buller, Waters, Archibeque, & LeBlanc, 2003). In partial support of the notion that transportation is a predictor of increased self-efficacy, identification with characters from the TV series *Sex and the City* who discussed STDs was found to be positively associated with self-efficacy which was in turn positively related to behavioral intentions to discuss the topic of STDs themselves with their partner or other close persons. After a quantitative review of the transportation literature van Laer and colleagues identified the link between transportation and self-efficacy as a major research avenue for researchers in the field (van Laer et al., 2014).

### ***Study overview and predictions***

Our aim was to connect research into narrative influence and the concept of transportation with the HAPA model, a well-established framework in the field of health behavior and health behavior change. Our research was set in the field of drinking and driving. More specifically, our focus was on zero alcohol consumption, that is, on drinking no alcohol at all before driving, even if one or two drinks would be within the legal range. In Germany, the country where the study was conducted, thresholds are 0.03% (if drivers show some sign of impairment) and 0.05% (definite legal threshold) alcohol per volume of blood for experienced drivers over 21 years. We presented a short narrative clip on drinking and driving and manipulated the experiential state of transportation by means of reviews allotted prior to the movie. Research showed that presenting positive vs. negative reviews upfront is a feasible way to manipulate transportation (cf. Shedlowski-Shoemaker et al., 2011). We measured transportation as well as risk perception (notably risk severity), outcome expectancies, self-efficacy, and behavioral intentions. We assumed that the latter four variables would be interrelated as outlined in the HAPA model (Schwarzer, 2001). Importantly, we further assumed that being transported into the narrative world would be positively associated with risk severity, outcome expectancies, and self-efficacy, with these variables resulting in an

indirect effect of transportation on behavioral intentions to drink no alcohol when expecting to drive.

## **Method**

### ***Participants and Procedure***

Information about the study was sent out by email to all students of the University of Koblenz-Landau, Germany. Students who were eligible to receive partial course credit got credit for participation. Participation was voluntary and a link in the email provided access to the study.

After a brief introduction to the study participants were randomly assigned to one of two movie review conditions to manipulate transportation (see below). Next, participants were asked to reproduce the content of the review, to ensure that they had actually read it. Subsequently, the experimental movie was shown, followed by the measures of process and outcome variables, as well as demographic variables and additional measures. Response times for answering the survey and watching the clip were assessed to identify any offhand responding. We excluded participants who failed to reproduce the gist of the review correctly, participants who indicated that they did not watch the movie until the end, and participants with extreme response times (2%-4% of the highest and lowest response times). In the end the initial sample of 227 participants was reduced to an analytical sample of 190 participants (127 women). Their age ranged from 18 to 64 years, with a mean age of 25.65 years ( $SD = 9.28$ ).

### ***Stimulus Movie and Experimental Treatment***

The short movie clip “Letter of a Daughter” (German: “Brief einer Tochter”) by Ammar Sonderberg was presented. The clip is around 100 seconds long and adheres to a narrative form. The movie is about a young woman, who retrospectively describes the events of one fatal night. The voice of the young woman is heard from the off,

supposedly reading aloud a letter to her mother. The movie starts with a party scene and the young woman is seen to follow the advice of her mother not to drink any alcohol at the party because she planned to drive home. In an unfortunate turn of events, the young woman has an accident on her way home. A young man, who drove his car after having drunk alcohol, had caused the accident. It becomes clear that the young woman had died from the impact of the drunk driver's car and that the letter she reads aloud for her mother was written posthumously.

All participants watched the same movie clip. Our experimental manipulation took place before the movie was presented. One of two reviews of the clip to follow next was shown randomly. One review was positive (group size = 103), highlighting the quality of the short movie, while the other was negative (group size = 87). The reviews were meant to manipulate the state of transportation without interfering with basic comprehension processes (e.g., Shedlowski-Shoemaker et al., 2011).

### *Measures*

**Transportation.** We used the Transportation Scale-Short Form (Appel, Gnambs, Richter, & Green, 2015) to measure participants' state of transportation. The default TS-SF scale includes two items to assess imagery for two different main characters. The stimulus material (i.e., the short movie clip), however, is about one main protagonist only (the young woman). Thus, we followed the authors' advice to include one character-centered imagery item and to add the alternative second imagery item ("I had a vivid mental image of the story setting"). The Transportation Scale-Short Form contains six items overall, rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*); Cronbach's  $\alpha$  of the items was .86.

**Risk severity.** Three items asked about perceived severity of the risk portrayed, encompassing the health risk for oneself as well as the risk for other road users after drinking alcohol, even if the blood alcohol level would be within the legal range ("How much do you put your own health at risk when you drive after you have drunk alcohol,

e.g. one beer instead of no beer at all”, “How much do you put the health of other traffic users at risk, when you drive after you have drunk alcohol, e.g. one beer instead of no beer at all”, “How much do you put your own health at risk, if you drive with somebody who has drunk alcohol, e.g. one beer instead of no beer at all”). The items were rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*very high / life-threatening*).<sup>1</sup> Internal consistency of the scale was excellent, as indicated by Cronbach’s  $\alpha = .95$ .

**Outcome expectancies.** Our assessment of outcome expectancies focused on positive outcome expectancies and consisted of two items (“If I drive and do not drink alcohol at all, other people will perceive me as more responsible than when I have drunk alcohol, e.g. one beer”<sup>2</sup>; “If I do not drink alcohol at all before driving instead of, for example, one beer, I will feel safer while driving”); Cronbach’s  $\alpha = .56$ )<sup>3</sup>. The items were scored on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

**Perceived self-efficacy.** Our measure of perceived self-efficacy consisted of three items that asked about perceived efficacy regarding not to drive a car after consuming alcohol and self-efficacy regarding not drinking any alcohol at all, if the person was going to drive a car later (“If I drive, it is easy for me – even at parties – not to drink alcohol at all”; “It is no problem for me not to drive with the car after having drunk

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<sup>1</sup> The item wordings and response options are based on work by Schwarzer and colleagues (2013). Although the wordings involve the notion of degree of risk (from low to high) it was intended to be a measure of severity by Schwarzer and colleagues, as well as by us.

<sup>2</sup> Although this item could possibly be interpreted as social norm at the conceptual level, it was meant to represent positive outcome expectancies.

<sup>3</sup> Participants additionally answered three items on negative outcome expectancies. This scale showed an unacceptable reliability (Cronbach’s  $\alpha = .13$ ) and therefore we excluded this scale from our analyses. Further, we originally included one additional item meant to measure positive outcome expectancies. This item was excluded from the scale due to a very low item-scale correlation ( $r_{it} = -.10$ ). Moreover, the perceived self-efficacy scale included one additional item, which was excluded from the scale because it showed poor fit ( $r_{it} = .31$ ).

alcohol, for example only one beer”, “Even if I drink only one beer, I will recognize that I should not be driving home”). The items were scored on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency was acceptable, as indicated by Cronbach’s  $\alpha = .73$ .

**Behavioral intentions.** Two items asked about participants’ intention not to drive while having drunk alcohol, even if the blood alcohol level would be within the legal range (“I intend not to drink any alcohol if I plan to drive later – not even, for example, one beer”; “I intend not to drive after having drunk a low amount of alcohol, for example only one beer”). The items were scored on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The internal consistency of the scale was good, as indicated by Cronbach’s  $\alpha = .88$ .

**Additional measures.** At the end of the survey we asked participants about whether or not they had a driver’s license. In our sample all but five participants did have a driver’s license (all but one in the positive review condition, all but four in the negative review condition). Additional analyses show that excluding the participants without a license did not change the results. Among the remaining 185 participants with a license, 31 (16.75%) indicated on a subsequent item that they did not drive regularly (i.e., at least once a month, all others drove more often). Among these participants 13 had been allocated to the positive review condition and 18 to the negative review condition. The difference between conditions is not significant  $\chi^2(1,185) = 2.62, p > .10$ . As individuals with a driver’s license who do not drive regularly could still face situations in which drinking and driving is an issue (e.g., being the only person at legal driving age among a group of friends; driving the parents’ car during semester breaks) we included these participants in our analyses. The gender distribution was similar in both experimental groups with 66.67% women and 66.99% women respectively. Likewise, the average age did not differ between conditions,  $M = 25.39, SD = 8.12$  vs.  $M = 25.86, SD = 10.23, t(187.32) = -0.36, p > .70$ .

## Results

### *Effect of the transportation manipulation*

We expected participants who read a positive review to score higher on transportation than participants who read a negative review. Descriptive results were as expected, with  $M_{\text{negative}} = 4.95$  ( $SD = 1.37$ ) and  $M_{\text{positive}} = 5.34$  ( $SD = 1.10$ ). A two-tailed  $t$ -test was performed, with degrees of freedom corrected due to a somewhat unequal number of participants (Welch, 1947). The mean scores of transportation were significantly different across the two conditions,  $t(164.30) = -2.12$ ,  $p < .035$ , with a small effect size, as indicated by  $d = .31$  (Ja. Cohen, 1988)<sup>4</sup>.

### *Structural equation modeling of narrative effects*

The hypothesized model was tested with structural equation modeling (SEM), using AMOS (Arbuckle, 2010). Zero-order correlations of the continuous variables included in the model are presented in Table 1.

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<sup>4</sup> Consistent with gender effects on transportation reported in prior research (cf. van Laer, De Ryter, Visconti & Wetzels, 2014), females showed higher scores on transportation ( $M_f = 5.34$ ,  $SD = 1.13$ ;  $M_m = 4.80$ ,  $SD = 1.37$ ;  $t[104.98] = 2.73$ ,  $p = .007$ ;  $d = .45$ ) as well as on risk severity ( $M_f = 4.43$ ,  $SD = 1.63$ ;  $M_m = 3.78$ ,  $SD = 1.61$ ;  $t[124.58] = 2.61$ ,  $p = .010$ ;  $d = .40$ ), and behavioral intentions ( $M_f = 5.14$ ,  $SD = 1.88$ ;  $M_m = 4.23$ ,  $SD = 2.28$ ;  $t[105.18] = 2.74$ ,  $p = .007$ ;  $d = .45$ ). Marginally significant differences were found for outcome expectancies ( $M_f = 5.41$ ,  $SD = 1.60$ ;  $M_m = 4.89$ ,  $SD = 1.82$ ;  $t[110.94] = 1.94$ ,  $p = .055$ ;  $d = .31$ ) and for perceived self-efficacy ( $M_f = 5.59$ ,  $SD = 1.30$ ;  $M_m = 5.20$ ,  $SD = 1.41$ ;  $t[115.25] = 1.86$ ,  $p = .066$ ;  $d = .29$ ).

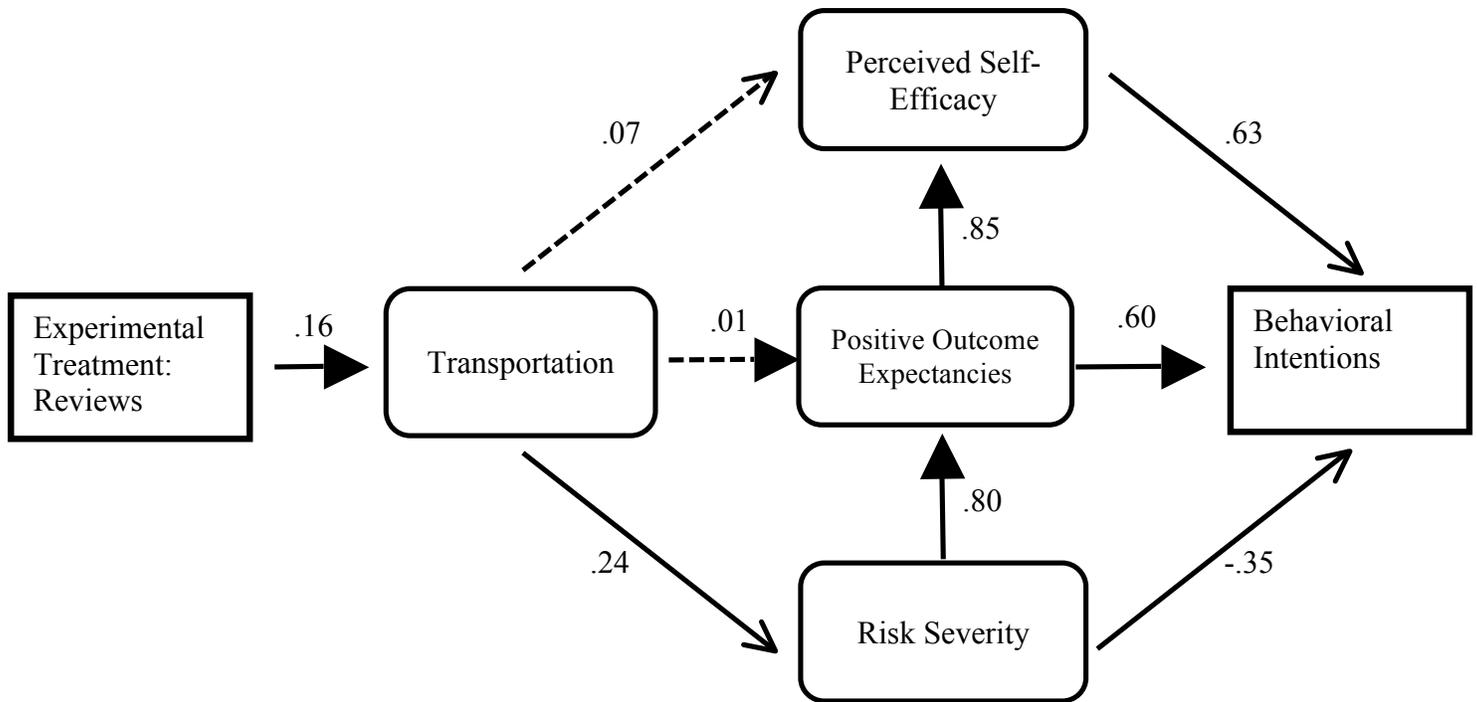
**Table 1. Means, Standard Deviations, and Zero-Order Correlations Between the Continuous variables**

	<i>M</i> (SD)	1	2	3	4
1 Transportation	5.16 (1.24)				
2 Risk Severity	4.21 (1.65)	.24 ***			
3 Positive Outcome Expectancies	5.24 (1.69)	.19 **	.54 ***		
4 Perceived Self-Efficacy	4.88 (1.56)	.19 **	.59 ***	.53 ***	
5 Behavioral Intentions	4.84 (2.06)	.19 **	.57 ***	.64 ***	.80 ***

*Note.* Manifest variable correlations.  $N = 190$ . \*\*  $p < .01$  \*\*\*  $p < .001$ .

The SEM included risk severity, positive outcome expectancies, and perceived self-efficacy as latent variables, with the respective items as indicator variables. The endogenous variable *behavioral intentions* was added into the model as a manifest variable. This was due to potential model identification problems with only two indicator variables. The manifest variable was built by averaging both items. Model estimations were conducted using Maximum Likelihood estimation, which is robust to multivariate non-normality. To evaluate overall goodness-of-fit, several indices were considered. Values of the chi-square-to-degree of freedom ratio ( $\chi^2/df$ ) less than 3.0, a comparative fit index (CFI) and norm fit index (NFI) greater than .90, and a root mean square of approximation (RMSEA) of .08 or lower indicate adequate fit (cf. Bentler, 1990; Browne & Cudeck, 1992; Kline, 2005). The model included the (dummy coded) review condition as an exogenous variable, which was assumed to influence transportation. We did not expect associations between the HAPA variables to differ between experimental conditions, a presumption that was supported by the data when the model was examined separately for both review conditions. The hypothesized model had an acceptable fit to

the data, as indicated by  $\chi^2(190) = 183.44, p < .001, \chi^2/df = 1.89, CFI = .95, NFI = .90, RMSEA = .07$  (90 % CI= .05; .08), and SRMR = .06. The standardized parameter estimates are shown in Figure 2.



**Figure 2. Results of the structural equation model. Dotted lines indicate a non-significant path ( $p > .05$ )**

Findings indicate that review condition had a significant effect on transportation. Transportation in turn was positively associated with perceived risk severity. The paths from transportation to positive outcome expectancies and perceived self-efficacy were not significant. Consistent with the HAPA model, positive associations between risk severity, positive outcome expectancies, and perceived self-efficacy were found.

Behavioral intentions were associated with risk severity, outcome expectancies, and perceived self-efficacy. Whereas more positive outcome expectancies and higher perceived self-efficacy were associated with higher behavioral intentions not to drink and drive, the regression weight of risk severity on behavioral intentions was negative. In contrast to expectations derived from the HAPA model, in our complete model, risk severity was negatively associated with intentions (zero-order correlations showed a positive relationship).

### **Discussion**

Research on the processing and the effects of stories in the context of health promotion is thriving, but a thorough connection between theory and research on narrative effects on the one hand and health psychology and health communication theory on the other hand is rare. The aim of the present paper was to address this research lacuna and to connect the motivational components of the Health Action Process Approach (HAPA, Schwarzer, 2001) to transportation theory and research (cf. Gerrig, 1993; Green & Brock, 2002). Our health topic was driving under the influence of alcohol, with a special emphasis on driving without drinking alcohol at all.

We tested a theory-guided structural equation model including an experimental manipulation of transportation as an exogeneous variable, behavioral intentions as the outcome variable, and latent factors for transportation, risk severity, outcome expectancies, and self-efficacy as process variables. Transportation was influenced by our experimental manipulation as predicted. Transportation scores, in turn, had a significantly positive influence on risk severity, but in the structural equation model no direct influence of transportation on outcome expectancies or self-efficacy were found. The limited influence of transportation on the latter variables is in line with some of the prior studies in the field (van Leeuwen et al., 2013; Slater et al., 2013). However, we cannot rule out the notion that for stories that involve a more extensive modeling of behavior than the story we presented (such as more didactic stories in the entertainment education tradition, cf. Singhal, Cody, Rogers, & Sabido, 2004) transportation could be more

strongly related to outcome expectancies and self-efficacy. In particular, these relationships could hold, even when risk severity would be included in a comprehensive model.

Risk severity was positively related to outcome expectancies, and outcome expectancies were positively related to self-efficacy. Whereas zero-order correlations of risk severity, outcome expectancies and self-efficacy with behavioral intention were positive, in the structural equation model only outcome expectancies and self-efficacy were positively related to intentions; the direction of the association was reversed for the association between risk severity and behavioral intentions. The lack of a positive association between risk perceptions and intentions has been observed in many studies before. As noted by Parschau, Schwarzer and colleagues (Parschau et al., 2014, p. 45) “previous studies on the HAPA also failed to find risk perceptions associated with intention formation (e.g., Barg et al., 2012; Chiu et al., 2011; Perrier et al., 2012) and therefore argued for the assumption that risk perception is a rather distal predictor of intention.” It seems that risk perceptions can lead to further elaborations (represented in outcome expectancies and self-efficacy), but they are not sufficient to form an intention (Parschau et al., 2014). Our finding that risk severity is negatively associated with intentions – once expectancies and efficacy are included in a structural equation model – may further indicate the presence of defensive processes. On the one hand (transportation-triggered) increases in risk perception contribute to higher positive outcome expectancies and higher self-efficacy, on the other hand risk perception that is not associated with positive outcome expectancies can initiate defensive processes leading to lower behavioral intentions. As defense mechanisms variables had not been included in our research design, testing this possible mechanism is a worthwhile goal for future research. Given that our findings are suggestive of two diverging processes that are initiated by increased risk severity, models that explicitly account for multiple processes such as the Extended Parallel Process Model (Witte, 1994) could be a valuable starting point for subsequent studies.

### ***Limitations and implications***

As a major limitation, it needs to be noted that we focused on variables specified as part of the early stages of the health behavior change process, and assess the influence of being more or less transported into a story only on these early stage variables. Behavioral intention was the variable most proximal to behavioral enactment. This is in line with an abundance of research in the field of narrative health communication (cf. De Graaf et al., 2016). The HAPA model, on which we based our research design, incorporates several subsequent stages of change. Following the development of an intention, individuals need to plan how to pursue their goals. This planning stage can, for example, involve implementation intentions, i.e., rather situation-specific plans regarding the “when”, “where”, and “how” a desired action will take place (Gollwitzer, 1999). Recent evidence suggests that stories could assist the planning stage by facilitating implementation intentions, which might be particularly beneficial for less motivated people (Oh & Larose, 2015).

In the HAPA model behavior or action is represented by a self-regulation phase that consists of initiating a behavior, maintaining the behavior, and recovery (in case of instances of failure). For this phase concrete plans from the earlier phase are pivotal. Moreover, initiation, maintenance, and recovery are a function of individuals’ self-efficacy. To date, little is known about the influence of efficacy information included in health narratives (de Graaf et al., 2016). Future research is encouraged to further examine self-efficacy as a dependent variable, including studies that point out how story impact can be increased in this regard. On a related note, we envisage more studies to connect recent theory and research on the influence of stories on the self to more classic narrative persuasion studies in the Green and Brock-tradition. Studies suggest that stories can not only change beliefs about the outside, but also beliefs about who we are (at least in the short run, e.g., Djikic, Oatley, Zoeterman, & Peterson, 2009; Gabriel & Young, 2011; Richter, Appel, & Calio, 2014) and stories can help maintaining a balanced personal identity (Slater, Jo. Cohen, Johnson, & Ewoldsen, 2014). Moreover, few studies to date have provided data on the influence of narratives on actual health behavior (for an exception see Lemal & Van den Bulck, 2010; Oh & Larose, 2015). Clearly more research

is needed, not only on initiating behavior, but on behavior maintenance and recovery as well. Stories could, for example, play a role in encouraging individuals to keep up with a health behavior despite a recent relapse or failure.

We believe that the topic of our study– drinking and driving – is of high relevance to health scholars. Like in the other prior study on drinking and driving that focused on the impact of narratives (Moyer-Guse et al., 2012) our findings are based on one persuasive stimulus only. Recent review articles emphasized the importance of generalizability of research in communications and media psychology (Reeves, Yeykelis, & Cummings, 2016; Slater, Peter, & Valkenburg, 2015). We acknowledge that our results need to be replicated with other stimuli and with other health topics. The stimulus we presented focused on the negative consequences of drunk driving whereas the positive consequences of driving with zero alcohol were somewhat more implicit. Thus, we wish to see more research on the links between transportation and the health related variables of risk severity, outcome expectancies, self-efficacy, and behavioral intentions.

## References

- Appel, M., & Mara, M. (2013). The persuasive influence of a fictional character's trustworthiness. *Journal of Communication, 63*, 912–932.  
doi:10.1111/jcom.12053
- Appel, M. & Richter, T. (2007). Persuasive effects of fictional narratives increase over time. *Media Psychology, 10*, 113–134. doi: 10.1080/15213260701301194
- Appel, M., & Richter, T. (2010). Transportation and need for affect in narrative persuasion. A mediated moderation model. *Media Psychology, 13*, 101–135.  
doi:10.1080/15213261003799847

- Appel, M., Gnambs, T., Richter, T., & Green, M. (2015). The Transportation Scale-Short Form (TS-SF). *Media Psychology, 18*, 243–266.  
doi:10.1080/15213269.2014.987400
- Abraham, C., & Sheeran, P. (2015). The health belief model. In M. Conner & P. Norman (Eds.), *Predicting and changing health behaviour: research and practice with social cognition models* (3<sup>rd</sup> ed.) (pp. 30–69). Maidenhead, UK: Open University Press.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211. doi:10.1016/0749-5978(91)90020-T
- Arbuckle, J. L. (2010). *IBM SPSS AMOS* (Version 19) [Computer Program]. Chicago: SPSS.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215. doi:10.1016/0146-6402(78)90002-4
- Banerjee, S. C., & Greene, K. (2013). Examining narrative transportation to anti-alcohol narratives. *Journal of Substance Use, 18*, 196–210.  
doi:10.3109/14659891.2012.661020
- Barg, C. J., Latimer, A. E., Pomery, E. A., Rivers, S. E., Rench, T. A., Prapavessis, H., & Salovey, P. (2012). Examining predictors of physical activity among inactive middle-aged women: an application of the health action process approach. *Psychology & Health, 27*, 829–845. doi:10.1080/08870446.2011.609595
- Bartholomew Eldredge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). *Planning health promotion programs: an intervention mapping approach* (4th ed.). San Francisco: Jossey-Bass.
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research, 16*, 78–117. doi:10.1177/0049124187016001004

- Benziger, C. P., Roth, G. A., & Moran, A. E. (2016). The global burden of disease study and the preventable burden of NCD. *Global Heart, 11*, 393–397. doi:10.1016/j.gheart.2016.10.024.
- Bentler, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238–246. doi:10.1037/0033-2909.107.2.238
- Bilandzic, H., & Busselle, R. W. (2008). Transportation and transportability in the cultivation of genre-consistent attitudes and estimates. *Journal of Communication, 58*, 508–529. doi:10.1111/j.1460-2466.2008.00397.x
- Bollen, K. A., & Stine, R. A. (1993). Bootstrapping goodness-of-fit measures in structural equation models. *Sociological Methods & Research, 205–229*. doi:10.1177/0049124192021002004
- Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*, 230–258. doi:10.1177/0049124192021002005
- Busselle, R., & Bilandzic, H. (2009). Measuring narrative engagement. *Media Psychology, 12*, 321–347. doi: 10.1080/15213260903287259
- Chiu, C., Lynch, R. T., Chan, F., & Berven, N. L. (2011). The Health Action Process Approach as a motivational model for physical activity self-management for people with Multiple Sclerosis. *Rehabilitation Psychology, 56*, 171–181. doi:10.1177/0034355212440888
- Cohen, E. L. (2010). The role of message frame, perceived risk, and ambivalence in individuals' decisions to become organ donors. *Health Communication, 25*, 758–769. doi:10.1080/10410236.2010.521923.

- Cohen, Ja. (1988). *Statistical power analysis for the behavioral sciences (2nd edition)*. Hillsdale, NJ: Erlbaum.
- Cohen, Jo. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication & Society*, 4, 245–264. doi:10.1207/S15327825MCS0403\_01
- Conner, M., & Norman, P. (2015). The theory of planned behaviour and the reasoned action approach. In M. Conner and P. Norman (Eds.), *Predicting and changing health behaviour: research and practice with social cognition models (3<sup>rd</sup> ed.)* (pp. 142–188). Maidenhead, England: Open University Press.
- Conner, M., & Sparks, P. (2015). Predicting and changing health behaviour: a social cognition approach. In M. Conner and P. Norman (Eds.), *Predicting and changing health behaviour: research and practice with social cognition models (3<sup>rd</sup> ed.)* (pp. 1–29). Maidenhead, UK: Open University Press.
- Dal Cin, S., Zanna, M. P., & Fong, G. T. (2004). Narrative persuasion and overcoming resistance. In E. S. Knowles & J. A. Linn (Eds.), *Resistance and persuasion* (pp. 175–191). Mahwah, NJ: Erlbaum.
- De Graaf, A., Sanders, J., & Hoeken, H. (2016). Characteristics of narrative interventions and health effects: A review of the content, form, and context of narratives in health-related narrative persuasion research. *Review of Communication Research*, 4, 88–131. doi:10.12840/issn.2255-4165.2016.04.01.011
- De Wit, J. B., Das, E., & Vet, R. (2008). What works best: objective statistics or a personal testimonial? An assessment of the persuasive effects of different types of message evidence on risk perception. *Health Psychology*, 27, 110–115. doi:10.1037/0278-6133.27.1.110
- Dixon, P., Bortolussi, M., & Sopčák, P. (2015). Extratextual effects on the evaluation of narrative texts. *Poetics*, 48, 42–54. doi:10.1016/j.poetic.2014.12.001

- Djikic, M., Oatley, K., Zoeterman, S., & Peterson, J. B. (2009). On being moved by art: How reading fiction transforms the self. *Creativity Research Journal*, *21*, 24–29. doi:10.1080/10400410802633392
- Dunlop, S. M., Wakefield, M., & Kashima, Y. (2010). Pathways to persuasion: Cognitive and experiential responses to health-promoting mass media messages. *Communication Research*, *37*, 133–164. doi:10.1177/0093650209351912
- Escalas, J. E. (2007). Self-Referencing and persuasion: Narrative transportation versus analytical elaboration. *Journal of Consumer Research*, *34*, 421–429. doi:10.1086/510216
- Falzon, C., Radel, R., Cantor, A., & d'Arripe-Longueville, F. (2015). Understanding narrative effects in physical activity promotion: The influence of breast cancer survivor testimony on exercise beliefs, self-efficacy, and intention in breast cancer patients. *Supportive Care in Cancer*, *23*, 761–768. doi:10.1007/s00520-014-2422-x
- Feeley, T. H., Marshall, H. M., & Reinhart, A. M. (2006). Reactions to narrative and statistical written messages promoting organ donation. *Communication Reports*, *19*, 89–100. doi:10.1080/08934210600918758
- Gabriel, S., & Young, A. F. (2011). Becoming a vampire without being bitten: The narrative collective-assimilation hypothesis. *Psychological Science*, *22*, 990–994. doi:10.1177/0956797611415541
- Gerrig, R. J. (1993). *Experiencing narrative worlds: On the psychological activities of reading*. New Haven, MA: Yale University Press.
- Gnambs, T., Appel, M., Schreiner, C., Richter, T., & Isberner, M.-B. (2014). Experiencing narrative worlds: A latent state-trait analysis. *Personality and Individual Differences*, *69*, 187–192. doi:10.1016/j.paid.2014.05.034

- Gollwitzer, P.M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, *54*, 493–503. doi:10.1037/0003-066X.54.7.493
- Gottschall, J. (2012). *The storytelling animal: How stories make us human*. New York: Houghton Mifflin Harcourt.
- Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes*, *38*, 247–266.  
doi:10.1207/s15326950dp3802\_5
- Green, M. C. & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*, 701–721.  
doi:10.1037/0022-3514.79.5.701
- Green, M. C. & Brock, T. C. (2002). In the mind’s eye: Transportation-imagery model of narrative persuasion. In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative impact. Social and cognitive foundations* (pp. 315–342). Mahwah, NJ: Lawrence Erlbaum.
- Green, M. C., & Donahue, J. K. (2009). Simulated worlds: Transportation into narratives. In K. Markman, W. M. Klein, & J. A. Suhr (Eds.), *Handbook of imagination and mental simulation* (pp. 241–256). New York, NY: Psychology Press.
- Igartua, J. J., & Vega Casanova, J. (2016). Identification with characters, elaboration, and counterarguing in entertainment-education interventions through audiovisual fiction. *Journal of Health Communication*, *21*, 293–300.  
doi:10.1080/10810730.2015.1064494
- Johnson, D. R. (2013). Transportation into literary fiction reduces prejudice against and increases empathy for Arab-Muslims. *Scientific Study of Literature*, *3*, 77–92.  
doi:10.1075/ssol.3.1.08joh

- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, *114*, 3–28. doi: 10.1037/0033-2909.114.1.3
- Jones, M. D. (2014). Cultural characters and climate change: How heroes shape our perception of climate science. *Social Science Quarterly*, *95*, 1–39. doi:10.1111/ssqu.12043
- Kim, E., Ratneshwar, S., & Thorson, E. (2017). Why narrative ads work: An integrated process explanation. *Journal of Advertising*, 1–14 (ahead of print). doi:10.1080/00913367.2016.1268984
- Kline, R.B. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Lemal, M., & Van den Bulck, J. (2010). Testing the effectiveness of a skin cancer narrative in promoting positive health behavior: A pilot study. *Preventive Medicine*, *51*, 178–181. doi:10.1016/j.ypmed.2010.04.019
- Mazzocco, P. J., Green, M. C., Sasota, J.A. & Jones, N.W. (2010). This story is not for everyone: Transportability and narrative persuasion. *Social Psychological and Personality Science*, *1*, 361–368. doi:10.1177/1948550610376600
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association*, *291*, 1238–1245. doi:10.1001/jama.291.10.1238
- Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory*, *18*, 407–425. doi:10.1111/j.1468-2885.2008.00328.x
- Moyer-Gusé, E., Chung, A., & Jain, P. (2011). Identification with characters and discussion of taboo topics after exposure to an entertainment narrative about

- sexual health. *Journal of Communication*, *61*, 387–406. doi:10.1111/j.1460-2466.2011.01551.x
- Moyer-Gusé, E., Jain, P., & Chung, A. H. (2012). Reinforcement or reactance? Examining the effect of an explicit persuasive appeal following an entertainment-education narrative. *Journal of Communication*, *62*, 1010–1027. doi:10.1111/j.1460-2466.2012.01680.x
- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research*, *36*, 26–52. doi:10.1111/j.1468-2958.2009.01367.x
- Murphy, S.T., Frank, L.B., Chatterjee, J.S., & Baezconde-Garbanati, L. (2013). Narrative versus non-narrative: The role of identification, transportation, and emotion in reducing health disparities. *Journal of Communication*, *63*, 116–137. doi:10.1111/jcom.12007
- Nabi, R. L., & Green, M. C. (2015). The role of a narrative's emotional flow in promoting persuasive outcomes. *Media Psychology*, *18*, 137–162. doi:10.1080/15213269.2014.912585
- Nan, X., Dahlstrom, M. F., Richards, A., & Rangarajan, S. (2015). Influence of evidence type and narrative type on HPV risk perception and intention to obtain the HPV vaccine. *Health Communication*, *30*, 301–308. doi:10.1080/10410236.2014.888629
- Oh, H. J., & Larose, R. (2015). Tell me a story about healthy snacking and I will follow: Comparing the effectiveness of self-generated versus message-aided implementation intentions on promoting healthy snacking habits among college students. *Health Communication*, *30*, 962–974. doi:10.1080/10410236.2014.910289

- Parschau, L., Barz, M., Richert, J., Knoll, N., Lippke, S., & Schwarzer, R. (2014). Physical activity among adults with obesity: testing the Health Action Process Approach. *Rehabilitation Psychology, 59*, 42–49. doi:10.1037/a0035290.
- Perrier, M.-J., Sweet, S. N., Strachan, S. M., & Latimer-Cheung, A. E. (2012). I act, therefore I am: athletic identity and the health action process approach predict sport participation among individuals with acquired physical disabilities. *Psychology of Sport and Exercise, 13*, 713–720. doi:10.1016/j.psychsport.2012.04.011
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion. Central and peripheral routes to attitude change*. New York, NY: Springer.
- Reeves, B., Yeykelis, L., & Cummings, J. J. (2016). The use of media in media psychology. *Media Psychology, 19*, 49–71. doi:10.1080/15213269.2015.1030083
- Richter, T., Appel, M., & Calio, F. (2014). Stories can influence the self-concept. *Social Influence, 9*, 172–188. doi:10.1080/15534510.2013.799099
- Rosenstock, I. M. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly, 44*, 94–127. doi:10.1111/j.1468-0009.2005.00425.x
- Santosa, A., Wall, S., Fottrell, E., Högberg, U., & Byass, P. (2014). The development and experience of epidemiological transition theory over four decades: a systematic review. *Global Health Action, 7*, 23574. doi:10.3402/gha.v7.23574
- Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology, 57*, 1–29. doi:10.1111/j.1464-0597.2007.00325.x
- Schwarzer, R. (2001). Social-cognitive factors in changing health-related behaviors. *Current Directions in Psychological Science, 10*, 47–51. doi:10.1111/1467-8721.00112

- Schwarzer, R. (1992). Self-efficacy in the adoption and maintenance of health behaviors: Theoretical approaches and a new model. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 217–243). Washington: Hemisphere.
- Schwarzer, R., Sniehotta, F. F., Liike, S., Luszczynska, A., Scholz, U., Schüz, B., . . . , & Ziegelmann, J. P. (2003). *On the assesment and analysis of variables in the Health Action Process Approach: Conducting an investigation*. Berlin, Germany: Freie Universität Berlin. Retrieved from [http://userpage.fu-berlin.de/gesund/hapa\\_web.pdf](http://userpage.fu-berlin.de/gesund/hapa_web.pdf).
- Shedlosky-Shoemaker, R., Costabile, K. A., DeLuca, H. K. & Arkin, R. M. (2011). The social experience of entertainment media. *Journal of Media Psychology*, 23, 111–121. doi:10.1027/1864-1105/a000042
- Slater, M. D., Buller, D. B., Waters, E., Archibeque, M., & LeBlanc, M. (2003). A test of conversational and testimonial messages versus didactic presentations of nutrition information. *Journal of Nutrition Education and Behavior*, 35, 255–259. doi:10.1016/S1499-4046(06)60056-0
- Slater, M. D., Johnson, B. K., Cohen, Jo., Comello, M. L. G., & Ewoldsen, D. R. (2014). Temporarily expanding the boundaries of the self: Motivations for entering the story world and implications for narrative effects. *Journal of Communication*, 64, 439–455. doi:10.1111/jcom.12100
- Slater, M. D., Peter, J., & Valkenburg, P. (2015). Message variability and heterogeneity: A core challenge for communication research. *Communication Yearbook*, 39, 4–31. doi:10.1080/23808985.2015.11679170
- So, J., & Nabi, R. (2013). Reduction of perceived social distance as an explanation for media's influence on personal risk perceptions: A test of the risk convergence model. *Human Communication Research*, 39, 317–338. doi:10.1111/hcre.12005

- Sutton, S. (2015). Stage theories. In M. Conner and P. Norman (Eds.), *Predicting and changing health behaviour: research and practice with social cognition models* (3<sup>rd</sup> ed.) (pp. 279–320). Maidenhead, UK: Open University Press.
- Tal-Or, N. (2016). How co-viewing affects attitudes: The mediating roles of transportation and identification. *Media Psychology, 19*, 381–405. doi:10.1080/15213269.2015.1082918
- Taylor, S. E., & Thompson, S. C. (1982). Stalking the elusive “vividness” effect. *Psychological Review, 89*, 155–181. doi:10.1037/0033-295X.89.2.155
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*, 207–232. doi:10.1016/0010-0285(73)90033-9
- Van Laer, T., De Ruyter, K., Visconti, L. M., & Wetzels, M. (2014). The extended transportation-imagery model: A meta-analysis of the antecedents and consequences of consumers’ narrative transportation. *Journal of Consumer Research, 40*, 797–817. doi:10.2139/ssrn.2033192
- Van Leeuwen, L., Renes, R. J., & Leeuwis, C. (2013). Televised entertainment-education to prevent adolescent alcohol use: Perceived realism, enjoyment, and impact. *Health Education & Behavior, 40*, 193–205. doi:10.1177/1090198112445906
- Van Leeuwen, L., Van Den Putte, B., Renes, R. J., & Leeuwis, C. (2017). Do narrative engagement and recipients’ thoughts explain the impact of an entertainment-education narrative on discouraging binge drinking? *Media Psychology, 20*, 194–220. doi:10.1080/15213269.2016.1142379
- Wang, J., & Calder, B. J. (2006). Media transportation and advertising. *Journal of Consumer Research, 33*, 151–162. doi:10.1016/j.jcps.2009.05.005

Witte, K. (1994). Fear control and danger control: A test of the extended parallel process model (EPPM). *Communications Monographs*, *61*, 113–134.  
doi:10.1080/03637759409376328