

ORIGINAL ARTICLE

Examining narrative transportation to anti-alcohol narratives

SMITA C. BANERJEE¹ & KATHRYN GREENE²

¹Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, New York, NY, USA, ²Department of Communication, Rutgers University, New Brunswick, NJ, USA

Abstract

This study examined the transportation effects of alcohol consequence narratives varying in source (written by the narrative protagonist vs. protagonist's partner) and type of health consequence (physical or emotional). Additionally, this study examined the role of narrative transportation and cognitive and discrete affective responses in the persuasion process. In this study, 501 students of a large northern university in the United Kingdom participated and were randomly assigned to one of the four conditions of narratives about alcohol use. Transportation was operationalized as general and self-reflective transportation. Results demonstrated that for narratives written by protagonist, the emotional effect narrative resulted in greater general transportation than the physical effect narrative. However, for narratives written by the protagonist's partner, the physical effect narrative resulted in greater general transportation than the emotional effect narrative. These findings were not substantiated for self-reflective transportation. Finally, results suggest that transportation experienced by anti-alcohol narratives can influence both favourable cognitive response and guilt, which are significant mediators in alcohol-related expectancies. Important theoretical and empirical implications are discussed.

Keywords: *Alcohol use, cognitive responses, narrative source, transportation.*

Introduction

Despite increased government initiatives to reduce alcohol use among young adults, it remains widespread in the United Kingdom (The NHS Information Centre & Lifestyles Statistics, 2009). Recent available statistics on alcohol use for younger adults aged 16–24 in the United Kingdom document that younger adults report the maximum average weekly consumption of alcohol (17.5 units for males and 11 units for females) as compared to all other age groups. Additionally, young adults are most likely to have consumed more than the recommended daily benchmark (i.e. more than four units for men and more than three units for women) and most likely to have consumed alcohol heavily (i.e. more than eight units for men and more than six units for women) at least 1 day in the previous week

Correspondence: Smita C. Banerjee, Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, 641 Lexington Avenue, 7th Floor, New York, NY 10022, USA. E-mail: banerjes@mskcc.org

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(The Office for National Statistics (ONS), 2010). Given these alarming rates of alcohol use among young adults in the United Kingdom, successful health strategies that reduce alcohol consumption, particularly among youth, warrant increased attention.

One promising strategy that has received recent interest from researchers is the use of narratives for health behaviour change. Transportation theory (Green & Brock, 2000) provides the theoretical foundation to understand the effectiveness of narratives. Transportation has been conceptualized as a distinct mental process that integrates attention, imagery and feelings that occur in response to narratives. The theory postulates that people reading a narrative are transported into the narrative world and have a higher likelihood of being influenced by it (Green & Brock, 2000).

Recent research has examined the potential of narratives for belief change and persuasion (e.g. Green & Brock, 2000; Braverman, 2008; Dunlop et al., 2010). Most of this research has examined the efficacy of narratives in comparison with other kinds of health messages, such as statistical, informational or advocacy messages (e.g. Braverman, 2008; Dunlop et al., 2010; Greene et al., 2010). Very few studies have manipulated narrative framing (see Segal et al., 1997; Green & Brock, 2000) and even fewer have manipulated narrative framing to examine health behaviour change outcomes (Banerjee & Greene, in press).

Narratives can be framed in a number of different ways, and research examining the efficacy of narratives based on framing is still in its infancy. Kreuter et al. (2007) highlight the need for research examining variations in narrative characteristics and framing that will encourage more efficacious use of narratives for promoting healthy behaviours. This study was a modest step in that direction and was focused on examining transportation efficacy of narratives based on variations in source (written by the narrative protagonist vs. protagonist's partner) and type of health consequence (physical or emotional). Additionally, this study examined the role of narrative transportation and cognitive and discrete affective responses in the persuasion process.

Narrative health messages and transportation

Narrative (also called story, anecdotal, case or exemplar) messages typically present the history or experience of a particular person and usually focus on elaborating one compelling case that provides details and allows the message recipient to create a picture of the person and situation (see Larsson & Sjöblom (2010) for different definitions of narratives in literature). A narrative can also be understood as a story with a beginning, middle and an end, one that reveals an individual's experiences and can be expressed in different forms (Manning & Cullum-Swan, 1994).

Narratives have the potential for motivating belief and attitude change in individuals because the experience of transportation can increase identification with the narrative protagonist and circumstances, reduce counterarguments and increase self-efficacy about enacting health behaviours (Kreuter et al., 2007). Green and Brock (2000) suggest that transportation can be manipulated by varying story quality or by varying the instructions provided to readers prior to reading. They experimented with fact versus fiction labelling of narratives and found that labelling did not affect reported transportation. However, instructions to focus on the surface aspects of the story, such as grammar, produced lower transportation. Segal et al. (1997), on the other hand, manipulated narrative tense and narrative person to understand how a story was interpreted by readers, but did not measure transportation *per se*. More recently, Banerjee and Greene (in press) experimented with first-person and third-person narratives about cocaine use, but did not find significant effects

on transportation. With regard to narrative text manipulation and transportation, current research does not provide much evidence of manipulated narrative quality/framing to understand the most efficacious use of narratives for persuasion in a health behaviour context. We focus on two forms of framing manipulations (source and type of health consequence) to explore the effects on transportation.

Narrative framing based on source. In persuasion, source refers to the originator of communication (Sundar & Nass, 2001). In health messages also, prior studies that have framed messages based on “who” the message is coming from have shown evidence for belief change and persuasion (e.g. Invernizzi et al., 2003; Jones et al., 2003; Kelly et al., 2009). This research has, however, not been tested in case of narratives, with one exception. Green and Brock (2000) manipulated source so that the story source was either from a newspaper or from a fiction magazine; however, they found no difference of source manipulation on transportation.

The narrative used in this study was a story about the difficult consequences of alcohol addiction in an individual’s life. Such stories about alcohol and other drug addiction are prolific on the web, but research has not examined the persuasive impact of these stories. These stories are either framed as personal stories or story of a loved one indicating different sources. We wanted to examine the transportation effects of a narrative when the source information provided at the end of the story manipulated “who” was writing the story, the protagonist himself/herself or the protagonist’s partner. We manipulated source in this way because we wanted to examine if (keeping everything else the same) information provided about the source at the end of a story would change the experience of transportation. Prior research on source effects has shown that manipulating a few words to distinguish one source from another in health promotion messages demonstrates significant source effects (e.g. Invernizzi et al., 2003; Jones et al., 2003; Kelly et al., 2009). For example, Invernizzi et al. (2003) demonstrated source effects for an anti-smoking message that manipulated source as “World Public Health Institute” or a “Geneva Citizens Neighborhood Association”.

Although the commonsense understanding would be to judge a story written by the protagonist himself/herself to be more credible, and therefore possibly more transporting, lack of available literature in this area precluded us from making such suppositions. Therefore, we asked

RQ1: How will variations in source (my story versus my partner’s story) affect narrative transportation?

Narrative framing based on type of consequence. Prior research has examined the effectiveness of health messages varying the types of consequence portrayed, but results have been mixed (e.g. Pechmann et al., 2003; Murphy-Hoefler et al., 2010). For instance, whereas Pechmann et al. (2003) reported that the social effects message was more efficacious than health effects message in reducing non-smokers’ intentions to smoke, Murphy-Hoefler et al. (2010) found that health consequences anti-smoking messages were more efficacious than social norms or tobacco industry manipulation messages. However, most of the research in the area has been on public service advertisements (PSAs) or printed health messages, but research examining differential framing of health consequences in narratives is lacking and needs attention.

In this article, we compared the effectiveness of physical versus psychological effects of alcohol use described in a narrative about alcohol addiction and recovery. In prior studies,

health consequences of alcohol use have been summed up as physical or psychological effects (e.g. Schulenberg et al., 2003; Shim & Maggs, 2005). We wanted to extend the line of research on narrative framing and explore if differences in type of consequence will affect levels of transportation and engagement with the narrative:

RQ2: How will type of health consequence affect narrative transportation?

Additionally, we wanted to explore the interaction between source and type of health consequence, and so we asked

RQ3: How will source and type of health consequence interact to affect transportation?

Transportation and persuasion

Transported individuals are more likely to report greater story-consistent beliefs and reduced counterarguing (Green & Brock, 2000). Green (2006) has summarized the effects of transportation succinctly as

There are at least three possible means by which transportation can affect readers: creating connections with characters, reducing counterarguing, and making narrative events seem more like real experience (including providing concrete examples of events and vivid mental images of story events or characters). Transportation into a narrative world also helps individuals to engage in mental simulations of events or behaviors. (p. S165)

Current research has demonstrated that transportation can not only lead to changes in story-related beliefs and evaluations (Green & Brock, 2000) but also contribute to more positive cognitive thoughts, self-referencing and emotions (Dunlop et al., 2010); greater positive feelings and reduced negative critical thinking (Escalas, 2004); and increased overall persuasive outcomes (Braverman, 2008). Dunlop et al. (2010) suggested that the relation between transportation and attitude change may be mediated in two pathways, one cognitive and the other more affective in nature. We examined these two pathways in the present research.

Role of cognitive responses. When transportation leads to favourable cognitive responses and reduced counterarguments, belief or attitude change is likely, as has been demonstrated in prior research (e.g. Green & Brock, 2000; Dunlop et al., 2010). The experience of being lost (or being transported) in a narrative generates favourable cognitive responses because the narrative tells someone's personal experiences without being overtly persuasive (e.g. Green & Brock, 2000). We contribute to this line of research in order to provide additional evidence if indeed increased transportation is positively associated with generation of favourable cognitive responses, which further relate to negative attitude towards alcohol consumption. Based on prior evidence in this area, we hypothesized

H1: Cognitive responses will mediate the relationship between transportation and attitude towards alcohol such that higher transportation will be associated with more favourable cognitive responses, which will be further associated with greater negative attitude towards alcohol consumption.

Role of discrete negative affective responses. Along with cognitive responses, emotional reaction as a result of transportation has also been posited to be a mechanism for narrative-based belief change (Green & Brock, 2000). Dunlop et al. (2010) examined emotional responding as a result of transportation, but instead of examining the effects on individual affective states, they conceptualized emotional responding as a combination of fear, anxiety, disgust and guilt. In this study, we took the discrete emotional approach to examine the effects of narrative transportation.

Discrete emotional approach is based on the premise that health messages intended to evoke a particular emotional state may arouse not only that emotion but others as well (see Dillard & Nabi, 2006). Dillard and Peck (2000) identified seven emotional states that may have an impact on persuasion (i.e. surprise, anger, fear, sadness, guilt, happiness and contentment), and prior research has examined this structure of discrete emotions and persuasion (e.g. Dillard & Peck, 2000, 2001; Dillard & Meijnders, 2002; Shen & Dillard, 2007; Shen, 2010), but not for narrative messages. Our goal in this article was to examine these discrete emotions in response to an anti-alcohol narrative and examine their differential effects on persuasion. Transportation literature argues that the experience of transportation will facilitate emotional responding, which will lead to belief change (Green & Brock, 2000). However, the mediating effect of emotional responding may be different based on each discrete emotion because each emotion brings with itself four characterizing features: signal value, function, action tendency and valence (Dillard & Peck, 2001), which may manifest very differently in a health behaviour change context. Therefore, we asked

RQ4: How will discrete emotions mediate the relationship between transportation and attitude towards alcohol?

Method

The study was a 2 (source – protagonist vs. protagonist's partner) \times 2 (health consequence – emotional vs. physical) between-subjects factorial design. The participants were randomly assigned to one of the four conditions.

Participants and procedure

Five hundred and one students ($N = 501$) from undergraduate and graduate courses at a large northern university in the United Kingdom participated in the study after receiving approval from the research ethics clearance committee. Fifty four percent of the participants ($n = 270$) were female. The mean age of participants was 21.69 years ($SD = 4.02$, range = 19–59 years), and approximately 91% of participants identified themselves as Caucasian, 3% Black, 2% Asian and 1.5% mixed race (other groups <1% each). Data collection took place outside of class and was anonymous.

Participants were seated in rooms designed for experimental data collection. Due to the sensitive nature of the questions, it was ensured that no two individuals were seated next to each other or directly behind each other. Participants were informed that the study was about college students and alcohol use and that during the study they would be responding to a story about alcohol use.

The experimental procedure consisted of two segments. In the first segment, the participants filled out a baseline questionnaire with questions tapping into participants' alcohol

drinking behaviour. The second section included a short narrative (2550 words). After reading the narrative, participants completed the transportation scale and other measures that tapped participants' overall reactions to the narrative (see measures described below) and demographic questions. The entire process was completed in approximately 30 minutes.

Stimulus material

The four narratives used in the study were fictional narratives that describe the negative consequences of alcohol use. The narratives were similar on all grounds except source information and type of consequence of alcohol use. All the narratives were written in third person, and the source was revealed at the end of the narrative. The narrative source was changed to reflect if it was written by the protagonist himself (e.g. "I know so much . . . because I am Matthew . . . and still together with Vivienne") and or by the protagonist's partner (e.g. "I know so much . . . because I am Vivienne, and we are still together"). Additionally, the consequence of alcohol use was varied so that it reflected emotional/psychological (e.g. "The times he was sober, a leaden depression oppressed Matthew's soul. He could think of nothing but his next drink. He began to be withdrawn and moody most of the time, staring endlessly into empty space . . .) or physical consequence (e.g. "He had begun feeling more and more debilitated. On many mornings, his entire body ached, like every muscle had been put through some wringer. On some days, climbing stairs left him winded, like an old horse that has been made to haul too heavy a cart . . .). The word count for the consequence of alcohol use was kept the same for the two versions (138 words). The narratives are available from the first author.

Measurement instruments

Variables included intention to use alcohol, attitude towards alcohol consumption, cognitive responses, affective responses, transportation and prior alcohol use.

Intention to use alcohol. Intention to use alcohol was measured by using two Likert-type items adapted from Godbold and Pfau (2000): "In the next 2 weeks, I am likely to drink alcohol" and "In the next 2 weeks, I am likely to drink 5 or more alcoholic drinks in one setting". Responses were measured on 5-point Likert scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The correlations between the two items were significant ($r = 0.73$, $p < 0.001$). The two items were averaged to create a composite score with a higher score indicating higher intention to drink ($M = 3.77$, $SD = 1.19$).

Attitude towards alcohol consumption/drinking. Attitude towards drinking was measured by three Likert-type items developed by Campo and Cameron (2006). The instructions asked participants to indicate their agreement or disagreement with the statements about drinking. The following items were rated on a 5-point scale with responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*): "I don't have to get drunk to have a good time", "I think drinking to get drunk is a bad idea", "I feel better when I do not drink alcohol". Exploratory factor analysis (principal component) yielded a single-factor solution (eigenvalue = 1.69, 56.17% var.) with all items loading greater than 0.65. The three items were averaged to form a composite scale with a higher score indicating more negative attitude towards drinking ($\alpha = 0.61$, $M = 3.56$, $SD = 0.79$).

Cognitive response. Cognitive response measured both amount of cognitive processing that occurred while reading the narratives and valence related to the cognitive processing, adapted from Stephenson and Palmgreen (2001). Amount of cognitive processing was measured by five items. Using a 5-point Likert-type scale (with 1 = *not at all* and 5 = *a great deal*), participants were asked “Overall, how much did these stories make you” (1) think about arguments for not using alcohol, (2) “think” rather than “feel”, (3) think about the consequences of using alcohol described in the story, (4) think about how alcohol might affect my life and (5) think about how alcohol might affect other’s life (not just mine). The five items were summed and averaged to create a composite score, with a higher score indicating greater cognitive processing ($\alpha = 0.85$, $M = 3.67$, $SD = 0.84$). Cognitive processing valence was measured with two items using the stem “In general, while reading the stories . . .” and a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The two items were “I generally agreed about the effects of alcohol” and “I generally agreed about what alcohol can do to people”. The two items were summed and averaged with a higher score indicating more favourable cognitive processing valence ($\alpha = 0.93$, $M = 3.94$, $SD = 1.02$). Finally, to arrive at an index of cognitive responses, amount and valence were multiplied with a higher score indicating more favourable cognitive response to the anti-alcohol narrative ($M = 14.41$, $SD = 5.31$, range = 3.20–25.00).

Affective responses. Participants’ overall affective responses to the story were measured using the affective responses scale from Dillard and Peck (2001). This scale consists of a series of closed-ended items, with responses ranging from 0 (*none of this feeling*) to 4 (*a great deal of this feeling*). Responses were averaged to arrive at a composite score for *surprise* (surprised, startled, astonished; $\alpha = 0.65$), *anger* (irritated, angry, annoyed, aggravated; $\alpha = 0.70$), *fear* (fearful, afraid, scared; $\alpha = 0.75$), *sadness* (sad, dreary, dismal; $\alpha = 0.68$), *guilt* (guilty, ashamed; $\alpha = 0.73$), *happiness* (happy, elated, cheerful, joyful; $\alpha = 0.71$) and *contentment* (contented, peaceful, mellow, tranquil; $\alpha = 0.68$).

Transportation. Transportation was measured by adapting the transportation scale from Green and Brock (2000) and using 13 of the 15 items (11 general items + 2 character-specific items), with responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items were altered to reflect the content of the narratives that the participants read (the narratives chosen by Green and Brock (2000) were multi-character narratives, so they had four items to measure character-relevant transportation perceptions. All the four versions of our narrative were two-character narratives, so we had only two character-relevant transportation items). Sample items included “While I was reading the story, I could easily picture the events in it taking place” and “I was mentally involved in the story while reading it”. Exploratory factor analysis (principal component with varimax rotation) suggested a two-factor solution. Factor 1 was termed “general transportation” with eigenvalue = 3.50, 26.90% var., loadings above 0.45 and factor 2 was termed “self-reflective transportation” with eigenvalue = 1.61, 12.38% var., loadings above 0.45. The respective items on the two factors were averaged with a higher score indicating greater general transportation ($\alpha = 0.65$, $M = 3.48$, $SD = 0.58$) and greater self-reflective transportation ($\alpha = 0.60$, $M = 2.43$, $SD = 0.76$).¹

Prior alcohol use. Prior alcohol use was measured with three open-ended items created by the authors: “How many alcoholic drinks do you normally consume when you socialize in a setting with alcohol during the week?” “How many alcoholic drinks do you normally

consume when you socialize in a setting with alcohol during the weekend?” “In the last 2 weeks, how many times have you had 5 or more alcoholic drinks in one sitting?” The individual items were first converted to z -scores and then combined to get a measure of prior alcohol use (range = -3.21 to 12.70). Given the variability in scores, we converted the measure into tertiles with 1 (*low alcohol use*), 2 (*moderate alcohol use*) and 3 (*high alcohol use*).

Data analysis

For RQs 1–3, we conducted a multivariate 2 (source) \times 2 (health consequence) analysis of covariance (ANCOVA) on general and self-reflective transportation controlling for prior alcohol use. Pairwise comparisons were carried out via the Bonferroni method to adjust for possible type I error.

We examined the other study hypotheses for investigating multiple mediation by testing two parts (see Preacher & Hayes, 2008): (1) investigating the total indirect effect of transportation on attitude towards drinking through multiple mediators, that is, cognitive responses, discrete affective responses (surprise, anger, fear, sadness, guilt, happiness and contentment) and (2) testing hypotheses regarding individual mediators in the context of a multiple mediator model. In particular, the specific indirect effect associated with each putative mediator was examined.

Bootstrapping procedure. We used bootstrapping procedures to obtain estimates of total and specific indirect effects and to test their significance by using confidence intervals (CIs). We used an SPSS macro (downloaded from quantpsy.org) that accompanies the paper by Preacher and Hayes (2008) on testing multiple mediation models to conduct the main analyses. Bootstrapping is one of the most widely used re-sampling strategies for estimation and hypothesis testing. In bootstrapping, using computer-based methods, the sample is conceptualized as a pseudo-population that represents the broader population from which the sample was derived, and the sampling distribution of any statistic is generated by calculating the statistic of interest in multiple re-samples of the data set (Preacher et al., 2007).

Calculation of the indirect effects (or multiple mediation) involved four steps (see Preacher & Hayes, 2008): (a) from our original data set of 500 cases, a bootstrap sample of 409 cases was generated using random sampling with replacement; (b) the regression coefficients (a and b) and the indirect effect estimates (ab) were calculated based on this bootstrap sample; (c) by repeating this process 5000 times, 5000 estimates of the total and specific indirect effects of transportation on attitude towards drinking were obtained; and (d) the bootstrap CI for the population-specific indirect effect was derived. If a zero was not included in the 95% CI of the estimate (while analysing lower and upper CI levels), we concluded that the indirect effect was statistically significant (Preacher & Hayes, 2008). The investigation of a multiple mediation model also allowed us to test the significance of the specific indirect effects associated with each mediator. This bootstrapping procedure was used twice, first to estimate the effects of general transportation and second to estimate the effects of self-reflective transportation on attitude towards drinking.

Results

A zero-order correlation matrix is presented in Table I. The experimental manipulations on the narratives were not associated with any of the outcome variables and were dropped from bootstrapping analyses. Age was negatively correlated with the emotional responses of

Table I. Zero-order correlation matrix for all variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alcohol use	1.00														
intention															
Negative attitude	-0.53**	1.00													
towards drinking															
Favourable cognitions	-0.05	0.10	1.00												
Surprise	0.00	0.06	0.19**	1.00											
Anger	-0.05	0.12*	0.11	0.25**	1.00										
Fear	0.04	-0.00	0.23**	0.31**	0.26**	1.00									
Sadness	-0.01	0.03	0.11	0.30**	0.32**	0.34**	1.00								
Guilt	0.19**	-0.18**	0.17**	0.20**	0.21**	0.49**	0.23**	1.00							
Happiness	0.06	-0.01	-0.06	0.15**	0.09	0.07	0.03	0.16**	1.00						
Contentment	0.09	-0.05	-0.03	0.03	-0.02	-0.06	0.06	0.02	0.57**	1.00					
Alcohol use	0.61**	-0.46**	0.03	0.03	-0.02	0.05	0.03	0.23**	0.04	0.09	1.00				
Age	-0.13*	0.06	-0.08	-0.13*	-0.05	-0.11	0.03	-0.03	-0.07	0.04	-0.09	1.00			
Gender†	-0.13*	0.08	-0.05	-0.01	-0.05	0.10	0.12*	-0.00	-0.06	-0.16**	-0.23**	0.07	1.00		
Source‡	0.04	-0.02	-0.02	0.06	0.02	-0.05	-0.10	-0.08	0.04	0.01	-0.02	-0.03	0.00	1.00	
Health consequence¶	-0.04	0.04	-0.05	-0.04	-0.02	-0.04	-0.03	-0.06	0.00	0.00	-0.02	0.01	-0.01	0.01	1.00

† Gender: male = 0, female = 1.

‡ Source: 1 = protagonist, 2 = protagonist's partner.

¶ Health consequence: 1 = emotional, 2 = physical.

* $p < 0.01$, ** $p < 0.001$.

surprise. Gender (female) was positively correlated with sadness and negatively correlated with contentment, prior alcohol use and alcohol use intentions. Additionally, prior alcohol use was negatively correlated with negative attitudes about drinking, but positively correlated with guilt and alcohol use intentions. Therefore, given these significant associations, we controlled for age, gender and prior alcohol use in the subsequent bootstrapping analyses. Finally, as expected, negative attitudes about drinking were negatively associated with alcohol use intentions.

Effects of narrative variations on transportation

For general transportation, the ANCOVA revealed no significant difference by source, $F(1, 416) = 0.76, p = 0.38, \eta^2 = 0.00$, or health consequence, $F(1, 416) = 0.15, p = 0.70, \eta^2 = 0.00$, but the interaction between the source and health consequence was significant, $F(1, 416) = 6.66, p < 0.01, \eta^2 = 0.02$. For narratives written by protagonist himself, the emotional effect narrative resulted in greater general transportation than the physical effect narrative. However, for narratives written by the protagonist's partner, the physical effect narrative resulted in greater general transportation than the emotional effect narrative.

For self-reflective transportation, the ANCOVA revealed no significant difference by source, $F(1, 416) = 0.33, p = 0.44, \eta^2 = 0.00$, health consequence, $F(1, 416) = 0.08, p = 0.78, \eta^2 = 0.00$, or the interaction between the source and health consequence, $F(1, 416) = 0.42, p = 0.52, \eta^2 = 0.00$.

Therefore, results for RQ1 and RQ2 were inconclusive, but the results for RQ3 imply interaction effects between source and type of health consequence for general transportation but not self-reflective transportation.

Bootstrapping results

Total indirect effect. The bootstrapped estimates for the total and specific indirect effects obtained from the main analysis are presented in Tables II and III. The total indirect effects of both general and self-reflective transportation indices on negative attitude towards drinking through favourable cognitions, surprise, anger, fear, sadness, guilt, happiness and contentment were not statistically significant, as the CIs contained a zero. However, due to the possibility of having significant specific indirect effects in the presence of a non-significant total indirect effect (e.g. due to a suppression effect; see MacKinnon et al., 2000), we proceeded to investigate the significance of the specific indirect effects associated with the mediators. For all models, age, gender and prior alcohol use were entered as control variables.

Specific indirect effects. Based on the bootstrapping models for both general and self-reflective transportations, we found that the specific indirect effects of general and self-reflective transportation on attitude towards drinking through cognitive response and guilt (but not significant for surprise, anger, fear, sadness, happiness and contentment) were statistically significant, respectively (see Tables II and III), indicating partial mediation. That is, cognitive responses and guilt were significant mediators in the relationship between general transportation and attitude towards drinking and between self-reflective transportation and attitude towards drinking. For both the models, the direction of these associations was in the following direction: the relation between general (or self-reflective) transportation

Table II. Indirect effects of general transportation on attitude towards drinking through favourable cognitive and affective responses controlling for effects of age, gender, prior drinking behaviour and experimental conditions (*n* = 399)

Mediator	Bootstrap estimate	SE	BCa 95% CI (lower)	BCa 95% CI (upper)
Cognitive response	0.04	0.02	0.0025	0.0850
Surprise	0.02	0.02	-0.0083	0.0588
Anger	0.00	0.01	-0.0072	0.0238
Fear	0.02	0.02	-0.0199	0.0542
Sadness	-0.01	0.01	-0.0340	0.0116
Guilt	-0.04	0.02	-0.0721	-0.0109
Happiness	0.01	0.01	-0.0051	0.0303
Contentment	-0.00	0.01	-0.0204	0.0053
Total indirect effect	0.04	0.03	-0.0216	0.1054

Note: Based on 5000 bootstrap samples; BCa, bias corrected and accelerated; CI, confidence interval.

Table III. Indirect effects of self-reflective transportation on attitude towards drinking through favourable cognitive and affective responses controlling for effects of age, gender, prior drinking behaviour and experimental conditions (*n* = 399)

Mediator	Bootstrap estimate	SE	BCa 95% CI (lower)	BCa 95% CI (upper)
Cognitive response	0.02	0.01	0.0023	0.0497
Surprise	0.01	0.01	-0.0025	0.0380
Anger	0.01	0.01	-0.0033	0.0263
Fear	0.02	0.02	-0.0150	0.0487
Sadness	-0.01	0.01	-0.0335	0.0203
Guilt	-0.08	0.03	-0.1376	-0.0290
Happiness	0.00	0.01	-0.0033	0.0241
Contentment	0.00	0.00	-0.0050	0.0083
Total indirect effect	-0.03	0.03	-0.0904	0.0285

Note: Based on 5000 bootstrap samples; BCa, bias corrected and accelerated; CI, confidence interval.

and favourable cognitive response was positive, and the relation between favourable cognitive response and attitude towards alcohol (recollect that a higher value indicated more negative attitude towards alcohol) was positive. For guilt, the relation between general (or self-reflective) transportation and guilt was positive, but the relation between guilt and negative attitude towards alcohol was negative (which means that higher guilt was associated with lower negative attitude towards drinking).

Thus, the results indicate that H1 was supported and cognitive responses mediated the relationship between transportation and attitude towards alcohol consumption in such a way that higher transportation was associated with more favourable cognitive responses, further leading to greater negative attitude towards alcohol consumption. For RQ4, the results indicated that the only significant affective response that mediated the relationship between transportation and attitude towards alcohol consumption was guilt. These results are further discussed.

Discussion

Two pathways of mediation were examined in this research: (a) from transportation to attitude towards alcohol via cognitive responses and (b) from transportation to attitude towards alcohol via discrete affective responses. The results suggest that transportation experienced by anti-alcohol narratives can influence both cognitive and affective responses, which are significant mediators in alcohol-related expectancies. The pattern of results also suggests that changes in narrative structure (particularly, in the context of this article, changes in source and type of health consequence of alcohol use) can have some (albeit, limited) effect on the experience of transportation.

Narrative framing and transportation

Although we did not find the main effects for variations in source and type of health consequence of alcohol use in terms of general or self-reflective transportation, we did find that for narratives written by protagonist himself, the emotional effect narrative resulted in greater general transportation than the physical effect narrative. However, for narratives written by the protagonist's partner, the physical effect narrative resulted in greater general transportation than the emotional effect narrative. This interaction was not significant for self-reflective transportation.

Therefore, these findings suggest that for narratives written by the protagonist himself, the description of events in the emotional effect version may have seemed more credible and trustworthy and therefore led to greater general transportation. However, for the narratives written by the protagonist's partner, the perception of readers in trusting the narrator to report more accurately on physical (but not so much, emotional) manifestations of alcohol use must have resulted in greater general transportation. We did not, however, measure credibility, which makes it difficult to endorse such reasoning. But, we believe that participants must have questioned "how does she know?" for emotional effects narratives written by the protagonist's partner. Therefore, emotional effect narratives written by the protagonist's partner may have resulted in low credibility and believability of the story and lower general transportation than the physical effect narratives also written by the protagonist's partner. Also, the effect size of the interaction was not very large, suggesting that variations in narrative framing (particularly, source and type of health consequence) may not be key indicators of transportation.

Transportation and persuasion

This study demonstrated that the relationship between transportation and negative attitude towards alcohol was mediated by favourable cognitive responses to the narrative and the affective response of guilt. Findings for cognitive responses are similar to prior research (e.g. Green & Brock, 2000; Escalas, 2004; Dunlop et al., 2010), suggesting that health information presented in a narrative form may be more easily accepted because of the non-threatening way of presentation (as compared with a didactic or purely information form). Additionally, the experience of transportation is not only posited to reduce counterarguments but also to increase stronger connections with the narrative characters and acceptance of narrative experiences like real-life experiences (Green & Brock, 2000). Finally, generation of overall positive cognitive responses to a narrative influences persuasive outcomes, as has been evidenced in prior research (e.g. Shen & Dillard, 2007; Dunlop et al., 2010).

In terms of affective responses, guilt was the only significant mediator that emerged in the relationship between transportation and negative attitude towards drinking. However, we found that affective response of guilt was counterproductive for the desired persuasive outcome. Specifically, increased feelings of guilt were associated with lower negative attitude towards drinking. Guilt is an emotion that tends to be self-evaluated and can arise from one's violation of an internalized code either in moral, ethical or religious contexts (Izard, 1977; Lazarus, 1991). The emotion of guilt is associated with the feeling of having made a mistake, an urge to remedy the situation and a cognitive preoccupation with different options that may be used to make things right and decrease the emotion (Izard, 1977). Whereas guilt can be a motivating emotion, moving an individual to take action to atone for the mistake or seek punishment (Lazarus, 1991), research has shown mixed results. Some researches have demonstrated positive associations between guilt and persuasive outcomes (Dillard et al., 1996; Dillard & Peck, 2000); other studies have documented that too much of guilt may be counterproductive for attitude change (e.g. Pinto & Priest, 1991). In this study, guilt worked in counterproductive ways, and the transportation experienced after reading the narratives increased the feeling of guilt, which resulted in reduced negative attitude towards drinking. Therefore, this finding has two important implications: (a) narratives (to be used in a persuasive context) should be prescreened for the kinds of emotions they tend to elicit and (b) narratives that elicit the emotion of guilt must also suggest an efficacious response to take action to decrease the guilt (see also Dillard & Nabi, 2006).

Implications of the study

This study has both theoretical and practical implications. Theoretically, this study suggests that narratives about negative experiences with alcohol drinking may induce negative expectancies about alcohol drinking in young adults through cognitive and affective processes, and therefore, framing of such narratives needs to be further examined. We created a fictional narrative for this study, but people's personal stories about alcohol use available from anti-alcohol websites may be used to influence persuasive outcomes. It is clear that the transportive experience while reading a narrative can influence both elicitation of emotions and favourable cognitions, both of which can have effects on the persuasive outcome. Therefore, prior to use in a persuasive or health behaviour change context, narratives need to be screened for the kinds of emotions they elicit, as they may have implications for the persuasive outcome.

Practically, this study suggests that young adults may be a potential target group for narrative interventions about limiting or reducing alcohol use. Narratives about alcohol addiction and recovery may be regularly posted in college newsletters or college magazines facilitating greater thinking and (possibly) discussions about the harmful consequences of binge drinking and alcohol addiction.

Limitations and future research

This study is not without limitations. First, the sample used in this study was heavily populated with Caucasians, limiting the generalizability of our findings to other heterogeneous populations of college students. Second, this study manipulated source and type of consequence for alcohol use, thereby limiting the generalizability of the study to other narrative variations (such as variations in conclusion, narrative tense and readability). Additionally, future research should explore the effect of other communication features such as

source, message, channel and receiver in the context of narrative persuasion (see Hinyard & Kreuter, 2007). Third, we used Stephenson and Palmgreen's (2001) closed-ended measure for tapping cognitions in order to increase response rates, whereas the most preferred method is the use of open-ended cognitive responding, which could be used in future studies. Finally, research on examining persuasiveness of narratives for alcohol reduction and/or prevention needs to consider both narrative features (such as variation in source of narrative and type of consequence of alcohol use) and participant features (including emotional states) to understand how preventive health narratives can be targeted more effectively. Additional research in this area is needed to fully explore the potential of narratives for health promotion purposes.

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Note

1. General transportation included the following items: "While I was reading the story, I could easily picture the events in it taking place", "While I was reading the story, I found myself distracted", "After finishing the story, I found it easy to put it out of my mind", "I wanted to learn what is going on in Matthew's life now" and "I found my mind wandering while reading the story". Self-reflective transportation included the following items: "I could picture myself in the scene of the events described in the story", "The events in the story are relevant to my everyday life" and "The events in the story have changed my life".

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