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Role of Transportation in the Persuasion Process: Cognitive and Affective Responses to Antidrug Narratives

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Role of Transportation in the Persuasion Process: Cognitive and Affective Responses to Antidrug Narratives

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This study examined transportation effects of first- and third-person narratives as well as the role of transportation in the persuasion process. In particular, the authors evaluated the role of transportation in affecting cognitive and affective responses. Last, they addressed the relation between (a) cognitive and affective responses and (b) antidrug expectancies. Participants were 500 undergraduate students at a large northern university in the United Kingdom who were randomly assigned to 1 of 2 conditions: first- or third-person narratives on cocaine use. The results demonstrated that there was no difference between first- and third-person narratives in terms of transportation. However, overall, greater transportation was associated with more favorable cognitive responses, and more favorable cognitive response was associated with stronger anticocaine expectancies. In terms of affective responses, results indicated the mediating role of sadness and contentment in the association between transportation and anticocaine expectancies. In particular, increased transportation was associated with greater sadness and lower contentment. Lower sadness and contentment were associated with stronger anticocaine expectancies. Important theoretical and empirical implications are discussed.

Antidrug campaigns have used varied behavior change theories to design messages and optimize effectiveness (e.g., Fishbein & Yzer, 2003; Stephenson et al., 2002; Yanovitzky, 2005). Creating websites for disseminating information about drugs, effects, and treatments is a useful way of reaching young adults and can be tapped for delivering antidrug messages across young adults (see Hornik et al., 2002). Besides carefully structured messages providing scientific evidence, personal testimonials are also posted on these websites. These testimonials are either framed as first-person accounts (e.g., “The first time I smoked weed, I didn’t feel anything. I tried it again. I couldn’t stop laughing”) or third-person accounts of drug use (e.g., “John, the

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svelte and muscular swimmer, water-polo player and surfer with an ebullient smile, was bruised, sallow, skin and bone, and his eyes were vacant black holes”). These testimonials are typically posted voluntarily, tend to be unscripted, and follow a “narrative structure-with a beginning, middle, and end-ties actions and implications together in a causal chain rather than relying on a set of propositions that may be more or less well integrated” (Green, 2006, p. S164).

Few studies have examined the effectiveness of personal testimonials. Most research on antidrug strategies has focused on nonnarrative communication (see Green, 2006) with few exceptions (e.g., Hersh, Barrett, Cappella, Appleyard, & Fishbein, 2004). When research has examined narrative preventive health messages, it has compared the effectiveness of narratives versus informational, statistical, or normative messages (e.g., Braverman, 2008; Dunlop, Wakefield, & Kashima, 2010; Greene & Brinn, 2003; Greene, Campo, & Banerjee, 2010) or different types of fictional messages such as messages with or without explicit conclusions (see meta-analysis by O’Keefe, 2002) or gain-loss framing (see meta-analysis by O’Keefe & Jensen, 2006). Whereas there is growing consensus that narratives may play an important role in health promotion (e.g., Green, 2006; Kreuter et al., 2007), and specifically in discouraging unhealthy behaviors (e.g., Braverman, 2008; Dunlop et al., 2010), there is a lack of understanding on how to frame these narratives.

Framing narratives by using different literary techniques such as variations in tense, perspective, and person has shown to affect readers’ perceptions of narratives (e.g., Booth, 1983; Casparis, 1975; Duchan, Meth, & Waltzman, 1992; Segal et al., 1997). One literary technique that has received some but limited attention is narrative person (also termed *narrative point-of-view* or *narrative voice*). Narrative person may have an important role to play in the persuasion process because changes in narrative structure can have implications on readers’ information processing and emotional reactions (Segal et al., 1997). Therefore, an objective of the present study was to examine the effectiveness of narrative person in the persuasion process as it relates to transportation.

The experience of transportation is highlighted in transportation theory (Green & Brock, 2000), which suggests that transportation may be the primary mechanism that underlies the effect of a narrative message (or stories). Transportation may further influence beliefs and attitudes in response to a short story (Green & Brock, 2000), affective and cognitive response to a narrative health message (e.g., Dunlop et al., 2010) and persuasion in response to health messages (Braverman, 2008). Our goal in this study was to examine the role of transportation in the persuasion process, with a focus on exploring the associations between transportation and cognitive and affective responses.

Transportation and Narratives

Transportation is the experience of being lost or absorbed in a story/narrative and has been defined as a distinct mental process that integrates attention, imagery, and feelings in response to narratives (Green & Brock, 2000). The experience of transportation is psychologically similar to flow (Csikszentmihalyi, 1990) or absorption and is characterized by actively generated thoughts in response to narratives (Prentice & Gerrig, 1999). Green (2004) explained that transportation can lead to persuasion in three ways: (a) the experience of transportation and greater absorption in a story may make the reader (reader is used as a proxy for the audience, who may well be a listener or a viewer) less likely to counterargue and therefore believe the story propositions; (b) transportation may make the story seem

more like an actual or real experience; and (c) transportation may lead to greater identification with characters, and therefore, characters' perspectives may have a greater influence on the beliefs of the reader. With increasing emphasis on the use of narratives in health contexts (e.g., Dunlop et al., 2010; Green, 2006; Kreuter et al., 2007), it becomes important to explicate the role that transportation might play in the persuasion process. However, before continuing to discuss the role of transportation in the persuasion process, it is critical to understand what kinds of narratives result in transportation.

Past research has demonstrated that whereas source and fact versus fiction labeling does not affect reported transportation (e.g., Green & Brock, 2000), message format may affect transportation. Dunlop and colleagues (2010) conducted two studies to examine the differential effects of an advocacy-based persuasive message and a narrative message. Transportation reported after message exposure was similar across both messages in Study 1; however, results demonstrated greater transportation in response to the narrative message as compared to the advocacy-based message in Study 2. Other recent research has also demonstrated that testimonial and expository health messages can elicit similar levels of transportation (Braverman, 2008). These findings suggest that the experience of transportation may not be solely limited to narrative messages. However, it is still not understood what structural features of narratives might increase transportation. Green and Brock (2000) experimented with fact versus fiction labeling for narratives and found similar levels of elicited transportation. We wanted to contribute to this line of research by examining narrative person and exploring its effect on transportation.

Narrative Person and Transportation

Narrative person (or narrative voice) is a term used to describe the author or person telling the story (Kluz, 2005). In first-person narratives, typically, the narrator's story revolves around himself or herself as the protagonist and this first-person narrative allows the protagonist's inner thoughts and personal experiences to be conveyed openly to the readers. In third-person narratives, typically, the narrator is merely an unspecified entity or uninvolved person that conveys the story, but he or she is not a character of any kind within the story being told (Segal et al., 1997).

To distinguish the influence of narrative person, Pourgiv, Sadhighi, and Kaloorazi (2003) exposed participants to first-person and third-person narratives. First-person narratives were perceived as more influential than third-person narratives in terms of reading comprehension and understanding. Similarly, Segal and colleagues (1997) found that participants in their study reported greater identification with the characters and were able to see the thought processes of characters in the first-person story condition as opposed to the third-person story condition. The readers may perceive first-person narratives as testimonials and third-person stories more as exemplars, thereby limiting personal relevance for the third-person narratives. It is evident from past research that first-person narratives may engage the readers more than the third-person narratives because of greater personified experiences and greater character identification. Therefore, we hypothesized:

Hypothesis 1: In comparison with a third-person narrative, exposure to a first-person narrative message will be associated with higher levels of transportation.

Role of Transportation in the Persuasion Process

Past research has indicated that transportation leads to more changes in story-related beliefs and evaluations (Green & Brock, 2000), more positive cognitive thoughts, self-referencing, and emotions (Dunlop et al., 2010), greater positive feelings and reduced negative critical thinking (Escalas, 2004), and increased persuasive outcomes (Braverman, 2008; Green & Brock, 2000). Green and Brock (2000) explained the role of transportation by stating that “the components of transportation include emotional reactions, mental imagery, and a loss of access to real-world information; the resulting transportation may be a mechanism for narrative-based belief change” (p. 703). Therefore, two parallel processes seem to be in effect when readers are transported: one, which is more cognitive in nature; and the other, more affective in nature. These findings suggest potential dual pathways of influence, as illustrated in Figure 1.

Cognitive Pathway

Transportation has been proposed to reduce counterarguing and increase mental stimulation and engagement (e.g., Dunlop et al., 2010; Escalas, 2004; Green & Brock, 2000). Consistent findings indicate that once-favorable cognitions about a health behavior are elicited, belief or attitude change is likely (e.g., Dunlop et al., 2010; Norton, Bogart, Cecil, & Pinkerton, 2005; Shen & Dillard, 2007; Stiff, 1986). These findings are also substantiated by the dual-process theories of persuasion, the elaboration likelihood model (Petty & Cacioppo, 1986) and the Heuristic-Systematic Model (Chaiken, Wood, & Eagly, 1996). These theories contend that cognitive responses are critical to attitude change and persuasion.

Although Green and Brock (2000) demonstrated that transportation led to reduced counterarguing and belief change, they did not demonstrate the pathway of effects. Dunlop and colleagues (2010) addressed these pathways of influence in greater detail. We aimed to extend research in this area by examining the role of transportation in eliciting favorable cognitive response to anticocaine narratives; further leading to anticocaine beliefs/expectancies.¹ We explored the proposed relations by forwarding the following hypotheses:

Hypothesis 2: Favorable cognitive response will mediate the relation between transportation and anticocaine expectancies.

Affective Pathway

Current empirical evidence posits that persuasion is the result of cognitive and affective processes, and there is growing evidence to support this dual-system of persuasion (e.g., Dillard & Shen, 2005; Nabi, 2002; Shen & Dillard, 2007; Stephenson, 2003). Besides associations with cognitive responses, transportation has also been associated

¹We used expectancies as our outcome variables because we were interested in examining the effects of narratives on consequences of performing the target behavior, as has been outlined in the integrative model of behavior change (Fishbein, 2000), a modified version of the theory of reasoned action (Fishbein & Ajzen, 1975). However, our study was not a test of the integrative model, and space limitations precluded a detailed explanation.

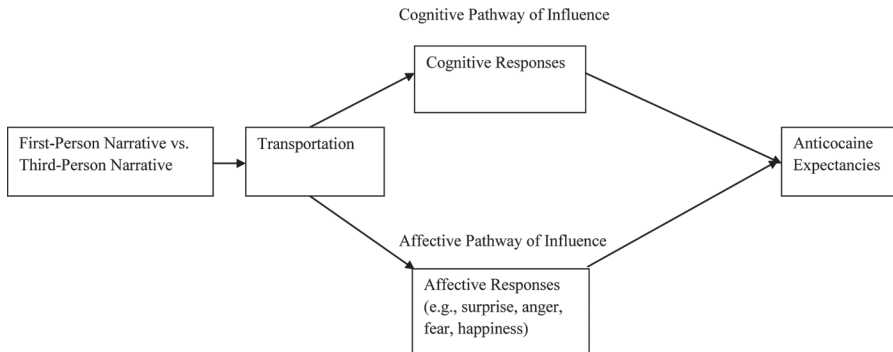


Figure 1. Proposed pathways of influence.

with increased emotional responses overall (Dunlop et al., 2010; Green & Brock, 2000, 2005), but this association has not been investigated with response to particular emotional states.

Dillard and Peck (2000) identified seven emotional states that may affect persuasion (surprise, anger, fear, sadness, guilt, happiness, and contentment), and this structure of discrete emotions has been tested in past research on persuasion (e.g., Shen, 2010; Shen & Dillard, 2007). Discrete emotions have four characterizing features: signal value, function, action tendency, and valence (Dillard & Peck, 2001). First, the signal value of emotions emphasizes the state of the person–environment relationship. For example, surprise follows from the perception of novelty (signal value) in the environment and creates conscious awareness (Frijda, 1986; Lazarus, 1991) or mobilization of psychological and physiological functioning in the person’s body (Buck, 1997). Second, the function of emotions refers to the shifting of person in a state of action, in order to address the new person–environment relationship signaled by the emotion (Lazarus, 1991). For example, fear motivates efforts at self-protection, whereas guilt instigates tendency to self-sanction (Dillard & Peck, 2001).

Third, emotions motivate action tendencies that correspond to the functions of that particular emotion. Two kinds of action tendencies have been examined in literature: engagement and withdrawal, with different emotions producing variations of these broad tendencies (Frijda, Kuipers, & ter Schure, 1989). In addition, the manifestation of action tendency may be contingent upon the social environment. For example, fear may produce tension (a kind of withdrawal action), which may manifest itself as freezing in some instances and flight in others. Dillard and Peck (2001) noted the following:

Thus, when researching the impact of various emotions on persuasion it is essential to remain cognizant of various contextual features such as setting, message topic, and response options. It is useful to distinguish emotions in terms of their action tendencies, but equally important to bear in mind that when context is taken into account tendencies may be translated into distinct forms of behavior (p. 42).

Finally, valence characterizes emotions on two distinct levels: positive (such as happiness and contentment) and negative (such as anger, fear, and guilt), with surprise being left out because it is nonvalenced. In this article, we acknowledge that despite

falling under the same valence, emotions may display different action tendencies and therefore, have diverse effects on persuasion (e.g., Dillard & Meijnders, 2002; Dillard & Peck, 2000, 2001; Shen, 2010; Shen & Dillard, 2007). Our goal in this article is to examine these aroused discrete emotions in response to anticocaine narratives and examine their differential effects on persuasion. Because there is no clear theoretical guidance regarding how transportation in antidrug narratives might affect discrete emotions, we asked the following:

Research Question 1: How might transportation affect anticocaine expectancies via discrete emotions?

Given the evidence of a strong association between beliefs/expectancies and intentions (e.g., Dillard & Peck, 2000; Dunlop et al., 2010), we hypothesized the following:

Hypothesis 3: Anticocaine expectancies will be negatively associated with intention to use cocaine.

Method

The study was a 2 (narrative person) \times 3 (message sequence) between-subjects factorial design. The participants were randomly assigned to one of the two narrative person conditions and read four testimonials each, which were presented in three different orders to assess order effects.

Participants and Procedure

Participants were 500 students who were enrolled in undergraduate and graduate courses at a large northern university in the United Kingdom after receiving approval from the research ethics clearance committee. Of the participants, 57% ($n = 281$) were female. The mean age of participants was 22.25 years ($SD = 4.85$ years, range = 19–59 years), and about 93% participants identified themselves as Caucasian, 3.5% Black, and 2.5% Asian (other groups <1% each). Data collection took place outside of class and was anonymous. Regarding cocaine use by self, 14% of the participants had previously used cocaine.

Participants were seated in rooms designed for experimental data collection. Given 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 drug use and that during the study they would be responding to real-life stories about cocaine use.

The experimental procedure consisted of three segments. In the first segment, the participants filled out a baseline questionnaire about past cocaine use. The second section included exposure to the four narratives. We chose four narratives instead of one to account for (a) effects caused by single-message exposure only, and (b) real-life testimonial reading experience because research informs us that individuals typically read numerous antidrug testimonials at one time (Hersh et al., 2004). After reading each narrative, participants completed the transportation scale and message perceptions measures. The third segment consisted of measures that tapped participants' overall reactions to the narratives (e.g., expectancies about cocaine use, intention to use cocaine) and demographic questions. The entire process was completed in about 30 minutes.

Stimulus Material

The four narratives used in the study were personal commentaries or personal testimonials collected from various antidrug websites that describe the negative consequences of cocaine use. We used a variety of search terms such as “drug stories,” “cocaine stories,” “antidrug personal stories,” “antidrug testimonials,” “drug use testimonials,” and “drug use narratives” on multiple search engines such as Google, Yahoo!, and MSN. We selected testimonials on the basis of length, appropriateness of use in an anticocaine context, and testimonials about young adults.

Testimonials that focused primarily on drug use other than cocaine (e.g., marijuana, amphetamines, inhalants), emphasized only the positive consequences of cocaine use, and those that were positively framed to emphasize alternatives to drug use were dropped from consideration. The selected testimonials focused on the negative consequences of cocaine use. The testimonials appeared almost exactly as they had on the original websites with minimum editing. The narrative person was changed in the testimonials to reflect first-person testimonials (e.g., “I am 18 years old and have been using cocaine every day for almost two years now”) and third-person testimonials (e.g., “Martin is 18 years old and has been using cocaine every day for almost two years now”). The testimonials are available from the first author.

Measurement Instruments

Variables included intention to use cocaine, cognitive responses, affective responses, transportation, and expectancies about cocaine use.

Intention to Use Cocaine

Intention to use cocaine was measured by using the common question stem, “How likely is it that you will use cocaine. . .” with three different items: “even once or twice, in the next 12 months (henceforth referred to as trial use intention),” “occasionally during the next 12 months (occasional use intention),” and “nearly every month for the next 12 months (regular use intention).” Responses were measured on 5-point Likert-type scales ranging from 1 (*I definitely will not*) to 5 (*I definitely will*). Mean intention for trial use was 1.42 ($SD = 0.95$, $n = 492$), occasional use was 1.24 ($SD = 0.73$, $n = 485$), and regular use was 1.10 ($SD = 0.46$, $n = 486$). Overall, these are very low intentions for any type of cocaine use and are consistent with past studies on drug use (e.g., Hersh et al., 2004).

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). Four items measured amount of cognitive processing. Using a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*a great deal*), participants were asked, “Overall, how much did these stories make you”: (a) think about arguments for not using cocaine, (b) “think” rather than “feel,” (c) think about the consequences of using cocaine described in the stories, and (d) think about how cocaine might affect my life. The four items were summed and averaged to create a composite score, with a higher score indicating greater cognitive processing ($\alpha = .79$, $M = 3.82$, $SD = 0.91$). Two items measured cognitive processing valence, with responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*): “In general, while

reading the stories, did you generally agree or disagree about the effects of cocaine” and “In general, while reading the stories, did you generally agree or disagree about what cocaine can do to people.” The two items were summed and averaged with a higher score indicating more favorable cognitive processing valence ($\alpha = .88$, $M = 4.07$, $SD = 0.97$). Last, to arrive at an index of cognitive responses, amount and valence were multiplied with a higher score indicating more favorable cognitive response to the anticocaine narratives ($M = 15.70$, $SD = 5.77$, range = 2.25 to 25.00).

Affective Responses

Participants' overall affective responses to the four stories 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; $\alpha = .69$; $M = 1.68$, $SD = 0.64$), *anger* (irritated, angry, annoyed, aggravated; $\alpha = .82$; $M = 1.87$, $SD = 0.75$), *fear* (fearful, afraid, scared; $\alpha = .82$; $M = 1.57$, $SD = 0.66$), *sadness* (sad, dreary, dismal; $\alpha = .72$; $M = 1.78$, $SD = 0.57$), *guilt* (guilty, ashamed; $\alpha = .60$; $M = 1.32$, $SD = 0.57$), *happiness* (happy, elated, cheerful, joyful; $\alpha = .74$; $M = 1.24$, $SD = 0.42$), and *contentment* (contented, peaceful, mellow, tranquil; $\alpha = .70$; $M = 1.42$, $SD = 0.51$). Although the narratives evoked many emotions, they rarely elicited any emotion very intensely (on a scale from 0 to 4); none of the reported emotions were 2 or greater. This pattern is, however, consistent with past research measuring affective responses (e.g., Dillard & Peck, 2000).

Transportation

Transportation was measured by adapting the transportation scale from Green and Brock (2000), and using 11 of the 15 items, with responses reported on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items were altered to reflect the content of the narratives that the participants read. 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.” We performed four factor analyses (principal component with varimax rotation) for each of the four stories and a single-factor solution emerged each time.² A composite transportation index was created by summing and averaging the four transportation scales ($M = 2.97$, $SD = 0.42$).

Expectancies About Cocaine Use

We conceptualized expectancies about cocaine use as the immediate outcome of anticocaine narratives and used a modified version of the expectancies about marijuana use measure created by Hersh and colleagues (2004). Likelihood of each belief was measured using the stem, “How likely is it that the following would happen

²Factor analyses for the stories: Story 1 (Natasha) eigenvalue = 3.95, 35.90% variance explained (var.), loadings above .4, Story 2 (Mike) eigenvalue = 3.89, 35.38% var., loadings above .4, Story 3 (Dawn) eigenvalue = 3.48, 34.84% var., loadings above .4, and Story 4 (Martin) eigenvalue = 3.57, 35.74% var., loadings above .4. The scores were summed and averaged with a higher score indicating higher transportation for each of the stories Story 1 (Natasha: $\alpha = .82$, $M = 3.01$, $SD = 0.57$), Story 2 (Mike: $\alpha = .81$, $M = 2.99$, $SD = 0.56$), Story 3 (Dawn: $\alpha = .79$, $M = 3.00$, $SD = 0.53$), and Story 4 (Martin: $\alpha = .80$, $M = 2.87$, $SD = 0.54$).

to you if you used cocaine nearly every month for the next 12 months?" on a 5-point Likert-type scale ranging from 1 (*very unlikely*) to 5 (*very likely*). Sample items were "damage my brain," "become depressed," and "destroy relationships." Exploratory factor analyses (principal component with varimax rotation) showed a single-factor solution, eigenvalue = 5.26, 58.42% variance explained, loadings above .6. The nine items were averaged with a higher score indicating greater anticocaine expectancies ($\alpha = .91$, $M = 4.46$, $SD = 0.70$).³

Data Analysis

For Hypothesis 1, we conducted a 2 (narrative person) \times 3 (message sequence) analysis of covariance on transportation controlling for past cocaine use. Pairwise comparisons were carried out using the Bonferroni method to adjust for possible Type I error. Also, the zero-order correlation matrix was used to address Hypothesis 3.

We examined the other study hypotheses (see Figure 1) for investigating multiple mediation by testing two parts (see Preacher & Hayes, 2008): (a) investigating the total indirect effect of transportation on anticocaine expectancies through multiple mediators, that is, cognitive responses, affective responses (surprise, anger, fear, sadness, guilt, happiness, and contentment); and (b) 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.⁴

Bootstrapping Procedure

We used bootstrapping procedures (Preacher & Hayes, 2008) to obtain estimates of total and specific indirect effects and to test their significance by using confidence intervals. We used an SPSS macro (downloaded from quantpsy.org) that accompanies the articles by Preacher and Hayes on testing multiple mediation models to conduct the main analyses.

³We had a three-item scale measuring positive cocaine expectancies. Likelihood of each belief was measured using the stem, "How likely is it that the following would happen to you if you used cocaine nearly every month for the next 12 months?" and a 5-point Likert-type scale ranging from 1 (*very unlikely*) to 5 (*very likely*). The items on the scale were as follows: "fit in with a group I like," "have a good time with friends," and "get away from my problems." Exploratory factor analyses (principal component with varimax rotation) showed a single-factor solution, eigenvalue = 1.97, 65.75% var., loadings above .7. The three items were averaged with a higher score indicating greater prococaine expectancies ($\alpha = .74$, $M = 2.39$, $SD = 1.09$).

Using bootstrapping procedures, we conducted mediation analysis to examine the mediating role of favorable cognitive and positive and negative affective responses in the relation between transportation and prococaine expectancies. The total indirect effect of transportation on pro-cocaine expectancies through favorable cognitions, surprise, anger, fear, sadness, guilt, happiness, and contentment was not statistically significant, as the confidence interval contained a zero. More details are available from the authors.

⁴We performed additional analyses to test for alternate models. Using bootstrapping procedures, we conducted mediation analysis to examine the following paths (and none of these models were significant): cognitions to transportation to anticocaine expectancies, surprise to transportation to anticocaine expectancies, anger to transportation to anticocaine expectancies, fear to transportation to anticocaine expectancies, sadness to transportation to anticocaine expectancies, guilt to transportation to anticocaine expectancies, happiness to transportation to anticocaine expectancies, and contentment to transportation to anticocaine expectancies. Details are available from the authors.

The total indirect effect associated with the eight proposed mediators was tested by summing the specific indirect effects, that is, by using the formula $a_1b_1 + a_2b_2 + a_3b_3 + a_4b_4 + a_5b_5 + a_6b_6 + a_7b_7 + a_8b_8$, where the eight terms represent the indirect effect of transportation through cognitions, surprise, anger, fear, sadness, guilt, happiness, and contentment, respectively.

Calculation of the specific indirect effects involved four steps (see Preacher & Hayes, 2008): (a) from our original dataset of 500 cases, a bootstrap sample of 437 cases was generated using random sampling with replacement; (b) the regression coefficients (a and b) and the indirect effect estimates (ab) were calculated on the basis of this bootstrap sample; (c) by repeating this process 5,000 times, 5,000 estimates of the total and specific indirect effects of transportation on anticocaine expectancies were obtained; and (d) the bootstrap confidence interval for the population-specific indirect effect was derived. If a zero was not included in the 95% confidence interval of the estimate, we concluded that the indirect effect was statistically significant (Preacher & Hayes, 2008). These bootstrapped indirect estimates were used in the multiple mediation model. The investigation of a multiple mediation model also allowed us to test the significance of the specific indirect effects associated with each mediator.

Results

Table 1 presents a zero-order correlation matrix. Narrative person was not associated with any of the study variables and was dropped from the bootstrapping analyses. Age was negatively correlated with the emotional responses of surprise and anger. Gender (female) was positively correlated with transportation, favorable cognitions, and anticocaine expectancies, and negatively correlated with contentment. In addition, past cocaine use was negatively correlated with favorable cognitions, surprise, and anticocaine expectancies, but it was positively correlated with guilt and cocaine use intentions. Therefore, given these significant associations, we controlled for age, gender, and past cocaine use in the subsequent bootstrapping analyses. Last, as expected, anticocaine expectancies were negative associated with cocaine use intentions (for trial, occasional, and regular use), providing support for Hypothesis 3.

Effects of Narrative Person on Transportation

It was hypothesized that transportation would be greater for the participants who were exposed to the first-person narrative stories (Hypothesis 1). However, the analysis of covariance revealed no significant difference by narrative person, $F(1, 485) = .01, p = .94, \eta^2 = .00$; message sequence, $F(2, 485) = .27, p = .76, \eta^2 = .00$; or the interaction between the narrative person and message sequence, $F(2, 485) = 3.23, p = .06, \eta^2 = .01$ failing to support this hypothesis.

Bootstrapping Results

Total Indirect Effect

The bootstrapped estimates for the total and specific indirect effects obtained from the main analysis are presented in Table 2. The total indirect effect of transportation on anticocaine expectancies through favorable cognitions, surprise, anger, fear, sadness, guilt, happiness, and contentment was statistically significant, as the confidence

Table 1. Zero-order correlation matrix for all variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Gender ^a	1.00															
2. Age	.12*	1.00														
3. Cocaine use ^b	-.10	-.02	1.00													
4. Narrative person ^c	-.10	-.03	-.04	1.00												
5. Transportation	.14*	.03	.01	-.00	1.00											
6. Cognitions	.17**	-.07	-.19**	-.08	.24**	1.00										
7. Surprise	.05	-.14*	-.13*	-.11	.24**	.22**	1.00									
8. Anger	.04	-.14*	.08	-.01	.05	.09	.17**	1.00								
9. Fear	.08	-.06	.01	-.08	.37**	.30**	.32**	.16*	1.00							
10. Sadness	.06	-.01	.07	-.08	.28**	.20**	.22**	.22**	.32**	1.00						
11. Guilt	-.08	-.09	.28**	-.01	.20**	.10	.10	.11	.40**	.22**	1.00					
12. Happiness	-.10	-.04	.03	-.00	-.07	-.03	.12*	.06	.03	-.02	.00	1.00				
13. Contentment	-.17**	-.08	.09	-.04	-.17**	-.13*	-.06	-.09	-.16**	.02	-.07	.48**	1.00			
14. Expectancy	.16**	-.06	-.42**	-.08	.10	.31**	.12*	.13*	.07	-.01	-.09	.01	-.08	1.00		
15. Trial use intention	-.10	-.07	.72**	.08	-.01	-.24**	-.14*	-.12*	.01	-.05	.24**	-.04	.02	-.50**	1.00	
16. Occasional use intention	-.07	-.04	.57**	.08	.02	-.16**	-.13*	-.09	.04	.02	.28**	-.06	-.02	-.47**	-.82**	1.00
17. Regular use intention	-.02	-.04	.39**	-.01	-.00	-.07	-.10	-.12*	.08	.03	.18**	-.01	-.02	-.43**	.56**	.74**

* $p < .01$. ** $p < .001$.^aMale = 0, female = 1.^bCocaine use was coded 0 = no, 1 = yes.^cNarrative person was coded 0 = first person, 1 = third person.

Table 2. Indirect effects of transportation on anticocaine expectancies through favorable cognitive responses, and affective responses controlling for effects of age, gender, and past cocaine use ($n = 437$)

Mediator	Bootstrap estimate	SE	Bias corrected and accelerated 95% CI	
			Lower limit	Upper limit
Cognitive response	.13	.03	.0724	.2084
Surprise	-.00	.02	-.0396	.0279
Anger	.01	.01	-.0079	.0362
Fear	-.02	.03	-.0752	.0461
Sadness	-.05	.03	-.1232	-.0110
Guilt	-.00	.02	-.0509	.0327
Happiness	-.00	.01	-.0286	.0063
Contentment	.02	.02	.0016	.0688
Total indirect effect	.08	.04	.0047	.1730

Note. Based on 5,000 bootstrap samples.

interval did not contain a zero. Therefore, we rejected the null hypothesis that the total indirect effect of transportation on anticocaine expectancies is zero.

Specific Indirect Effects

Given the possibility of having significant specific indirect effects in the presence of a nonsignificant total indirect effect (e.g., due to a suppression effect; see MacKinnon, Krull, & Lockwood, 2000), we proceeded to investigate the significance of the specific indirect effects associated with the mediators. We tested for the indirect effect of transportation on anticocaine expectancies through cognitive response (or through surprise, anger, fear, sadness, guilt, happiness, and contentment) controlling for the indirect effects of other variables in the model (i.e., surprise, anger, fear, sadness, guilt, happiness, and contentment). For all models, age, gender, and past cocaine use were entered as control variables.

The specific indirect effect of transportation on anticocaine expectancies through cognitive response was statistically significant, as its confidence interval did not contain a zero (see Table 2). That is, cognitive response was found to be a significant mediator. The direction of the association was as expected: The relation between transportation and favorable cognitive response was positive ($B = .72, p < .001$), and the relation between favorable cognitive response and anticocaine expectancies was positive ($B = .18, p < .001$; see Figure 2). Therefore, Hypothesis 2 was supported, and higher level of transportation was associated with more favorable cognitive response to the narrative, and favorable cognitive response in turn was associated with greater anticocaine expectancies.

Other significant mediators were sadness and contentment, addressing Research Question 1 (see Figure 2). Specifically, for sadness, higher level of transportation was associated with greater sadness ($B = .34, p < .001$), and higher sadness was associated with lower anticocaine expectancies ($B = -.15, p < .01$). For contentment, higher level of transportation was associated with lower contentment ($B = -.18, p < .01$), and lower contentment was associated with greater anticocaine expectancies ($B = -.14, p < .05$).

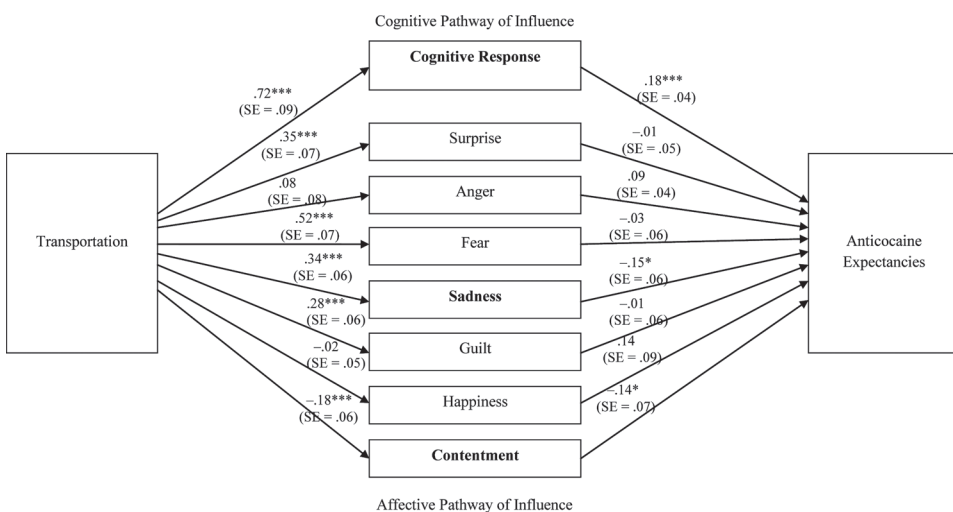


Figure 2. The estimated multiple mediation model (unstandardized B and SE). * $p < .05$. ** $p < .01$. *** $p < .001$. Variables in bold denote significant mediators.

Downloaded by [Memorial Sloan Kettering], [Smita C. Banerjee] at 06:55 19 April 2012

Discussion

In the present research, we examined two pathways from transportation to persuasion—cognitive and affective. The results suggest that readers of antidrug narratives can experience a level of transportation in response to the narrative and that transportation is a fundamental outcome of narrative involvement in the process of persuasion, and influences cognitive and affective responses. The pattern of results also suggests that changes in narrative structure (particularly, in the context of the present article, changes in narrative person) has no effect on the experience of transportation.

Framing Narratives Based on Narrative Person

We expected that the first-person narrative would be more transporting than third-person narrative, but this hypothesis was not supported in the present study. The reasons for this finding may be methodological in nature. It is possible that the manipulation of narrative person (as my story vs. Martin's story, for example) was not strong enough to influence outcomes because the story still carried the same message, that is, drug use is detrimental to self. Segal and colleagues (1997) explained that "how the text is read depends on many variables, including the quality of the text, the content of the text, the stance taken by the reader, and the order and the details of the sentences of the text" (p. 272). Manipulating the narrative structure with a more personalized source such as my story versus Martin's story as written by Martin's mother (or brother or another blood relation) may have affected the outcome differently. Such a manipulation may have changed the message of the story to: drug use is detrimental to self and those who love you. Therefore, future research could examine the comparative effectiveness of three different ways of narrative framing: (a) first-person testimonials from the individual with a drug problem; (b) first-person testimonial from a family member or friend about his or her experiences dealing with the person with drug problems; and (c) third person narrative or exemplar.

Transportation and Cognitive Responses

It was proposed that transportation would result in more favorable cognitive response to the anticocaine narratives. In addition, it was hypothesized that cognitive response would be positively associated with anticocaine expectancies, a new persuasive outcome associated with transportation. The present study demonstrated the significant mediation effect of cognitive response. This finding is consistent with past literature (e.g., Dunlop et al., 2010; Escalas, 2004; Green & Brock, 2000) that transportation reduces counterarguing and negative cognitive thinking and therefore increases overall positive direction of cognitive response. We also found that more favorable cognitive response was associated with stronger anticocaine expectancies. Again, these results were in the direction hypothesized and are concurrent with past research (e.g., Dunlop et al., 2010; Norton et al., 2005; Shen & Dillard, 2007), demonstrating the relation between cognitive response and persuasive outcome.

Transportation and Affective Responses

We examined the mediating role of discrete emotions in the relation between transportation and anticocaine expectancies. The present study indicated that although increased transportation was associated with greater surprise, fear, sadness,

and guilt, as well as with lower contentment, only lower sadness and contentment were associated with stronger anticocaine expectancies. Therefore, the only significant mediators in this study were sadness and contentment.

In the present study, higher levels of transportation from reading antidrug narratives were associated with higher levels of sadness, but higher levels of sadness were associated with lower anticocaine expectancies. This finding contradicts past research that has consistently indicated a positive association between sadness and persuasive outcome (e.g., Dillard & Peck, 2000, 2001; Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996). As an emotion, sadness is typically considered a withdrawal emotion, and its behavioral manifestation is characteristically lethargy (Dillard & Shen, 2005). The action tendency of sadness is either inaction or withdrawal into oneself to solicit comfort or dwell on that which was lost (Frijda, 1986; Lazarus, 1991). In the context of the present study, the antidrug narratives were all focused on physical and/or emotional loss, and therefore, higher level of transportation experienced after reading the narrative was logically associated with higher level of sadness. Because sadness typifies inaction, it is possible that higher levels of sadness resulted in lower anticocaine expectancies, but lower levels of sadness were associated with a stronger persuasive outcome, and adherence to stronger anticocaine expectancies.

Contentment was the other discrete emotion that mediated the relation between transportation and anticocaine expectancies. Higher level of transportation was related to lower level of contentment, and lower level of contentment was related to stronger anticocaine expectancies. This finding is in line with past research that documents contentment as a detractor of persuasive outcome (e.g., Dillard & Nabi, 2006; Dillard & Peck, 2001). As a discrete emotion, contentment is characterized as a withdrawal emotion, and its action tendency promotes passive behaviors (Dillard & Peck, 2001). The antidrug narratives used in the present study were neither comforting nor calming, which explains the association between higher level of transportation and lower contentment. This lower contentment must have acted as a motivator for participants to generate stronger anticocaine expectancies. It is interesting to note that although sadness is a negatively valenced emotion and contentment is a positively valenced emotion, both are characteristically withdrawal emotions with similar action tendencies. From the perspective of message design, therefore, it appears that narratives should be designed to arouse sadness, but not to a great extent, and reduce contentment, in order to motivate attitude or behavior change.

Following recent research in health communication (Biener & Taylor, 2002; Dillard & Nabi, 2006; Dillard & Shen, 2005), this study points to the importance of examining affective responses (particularly, discrete emotions) to health messages. Past work on transportation theory (e.g., Dunlop et al., 2010; Green & Brock, 2000, 2005) has demonstrated that transportation is associated with increased affective responses, no study to our knowledge examined effects of transportation on each of the seven discrete emotions, as outlined by Dillard and Peck (2000).

Implications of the Study

This study suggests that narratives designed to motivate young adults to refrain from cocaine use/experimentation have potential to affect expectancies, and framing of narratives need to be further examined. We used personal testimonials appearing on antidrug websites, and this study shows that instead of creating new narratives, people's own reported experiences could be tailored to affect persuasive outcomes.

Such narratives would also be judged to be more credible and believable (but not tested in present study), lead to increased transportation, thereby increasing the persuasiveness of personal stories. In addition, because the present study demonstrated the importance of examining discrete emotions in the persuasion process, narratives should be pretested for the kinds of emotions they elicit from the target audience.

Limitations and Future Research

The present study has several limitations. First, the sample used in this study was heavily populated with Caucasians, limiting the generalizability of our findings to other heterogenous populations of college students. Second, this study used manipulation of one linguistic technique only (narrative person), which limits the generalizability of the study to other literary narrative features (e.g., tense, perspective-taking). Future research should explore the effect of other literary features such as vividness, tense, and perspective to examine how they may influence message effectiveness and intentions (see Segal et al., 1997). Third, we used Stephenson and Palmgreen's (2001) closed-ended measure for tapping cognitions in order to increase response rates, whereas the more preferred method is the use of open-ended cognitive responding (see Dillard, Shen, & Vail, 2007). Fourth, this study measured participants' emotional responses to the message only after the exposure. Future research could examine participants' emotional states before and after the exposure to conclusively make an argument about the specific emotions that were changed or elicited by the experience of transportation. Future research on examining persuasiveness of narratives for drug prevention need to consider narrative features (such as variation in narrative person, gender of protagonist, or tense) and participant features (including emotional states) to understand how preventive health messages can be targeted more effectively. This continues to be an important area for research with implications for message design and public health.

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