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Narrative versus Nonnarrative: The Role of Identification, Transportation, and Emotion in Reducing Health Disparities

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This research empirically tests whether using a fictional narrative produces greater impact on health-related knowledge, attitudes, and behavioral intention than presenting the identical information in a more traditional, nonfiction, nonnarrative format. European American, Mexican American, and African American women (N = 758) were surveyed before and after viewing either a narrative or nonnarrative cervical cancer-related film. The narrative was more effective in increasing cervical cancer-related knowledge and attitudes. Moreover, in response to the narrative featuring Latinas, Mexican Americans were most transported, identified most with the characters, and experienced the strongest emotions. Regressions revealed that transportation, identification with specific characters, and emotion contributed to shifts in knowledge, attitudes, and behavioral intentions. Thus, narrative formats may provide a valuable tool in reducing health disparities.

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Although cervical cancer is a highly preventable disease, worldwide there are over half a million new cases and a quarter million deaths reported annually (World Health Organization, 2010). Despite a dramatic decline in incidence (due mostly to increased rates of screening) in the United States, there remain significant disparities in the incidence of and mortality from cervical cancer (Centers for Disease Control and Prevention [CDC], 2011, 2012). Hispanics currently have the highest incidence of cervical cancer of any major racial/ethnic group, followed by African Americans, who have the second highest incidence (CDC, 2012). Compliance with screening guidelines is particularly low among Hispanics (National Cancer Institute, 2010). In fact, approximately 12% of Hispanic women living in the United States have *never* had a Pap smear (Downs, Smith, Scarinci, Flowers, & Parham, 2008). Moreover,

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when they are screened, both Hispanics and African Americans tend to have more advanced stages of cervical cancer, which limits treatment options and outcomes. African American women, for example, tend to have lower 5-year survival rates and die more often from cervical cancer than any other racial or ethnic group in the country, a rate twice that of their European American counterparts (CDC, 2012). In summary, although rates of cervical cancer screening have improved in the last 2 decades in the United States, screening of Hispanics and African American women have not increased at the same pace.

Nor are such health disparities limited to cervical cancer. As Kreuter *et al.* (2007) point out, because “current health communication tactics have not adequately addressed diverse populations or health disparities, many Americans do not understand health information well enough to make informed decisions or act on it . . .” (p. 222). Health promotion strategies that address the persistent gaps in health status among mainstream populations and racial/ethnic minority groups by taking into account complex interrelated psychological, sociocultural, and structural factors are therefore critical (Larkey & Hecht, 2010). In order to reduce current inequities in the prevalence of and mortality from disease, we need more culturally sensitive health information presented in a more accessible and appealing format. This research investigates the relative efficacy of changing health-related knowledge, attitudes, and behavioral intentions using a fictional narrative compared to a more traditional nonfictional nonnarrative format. Although this research focuses on cervical cancer, our results may have implications for a variety of health conditions.

Narratives and health communication

The power and perseverance of a narrative or story structure has been recognized and utilized for thousands of years (Fisher, 1985, 1987). Yet when it comes time to craft health messages designed to convey crucial, potentially life-saving health information, Western medicine typically presents this vital information as a list of risk factors, recommended prevention steps, symptoms, and treatment options (Kreuter *et al.*, 2007). This trend of using nonfictional, nonnarratives continues despite a burgeoning line of research demonstrating that the use of narrative can result in positive health outcomes (Dunlop, Wakefield, & Kashima, 2010; Green, 2006; Kim, Bigman, Leader, Lerman, & Cappella, 2012; Morgan, Movius, & Cody, 2009; Moyer-Gusé & Nabi, 2011; Murphy *et al.*, 2011). In the context of cancer communication, researchers have proposed that engaging, transporting stories may be especially valuable as they may reduce resistance, facilitate processing of new and/or difficult information, produce cognitive and emotional effects that create stronger attitudes and intentions, and provide social connections and role models for behavior change (Green, 2006; Kreuter *et al.*, 2007). Moreover, in recent years researchers have argued that narratives and storytelling may be particularly effective for minority populations and racial/ethnic groups with a rich tradition of storytelling (Houston *et al.*, 2011; Larkey & Hecht, 2010; McQueen, Kreuter, Kalesan, & Alcaraz, 2011; Robillard & Larkey, 2009; Unger, Cabassa, Molina, Contreras, & Baron, 2012).

However, when asked to explain the relative absence of narrative health messages being employed in the United States, the medical establishment often points to what they consider to be a lack of rigorous evidence that narrative could be a superior conduit (Francis Collins, Director of NIH, personal communication). Change at the national level is unlikely without the functional equivalent of randomized clinical trials that contrast the relative effectiveness of health information conveyed using a nonnarrative format against the same information conveyed in a fictional narrative that demonstrates that the narrative is superior. Thus, even while researchers acknowledge the growing role of narrative forms of communication in health promotion (Green, 2006; Hinyard & Kreuter, 2007; Kreuter et al., 2007), it is imperative to build a substantive body of research to establish the relative efficacy of narratives in health communication. In other words, we must first address scientifically the question of whether narratives are, “indeed more effective than nonnarrative communication for overcoming resistance, facilitating information processing, providing social connections, and representing emotional and existential issues” (Kreuter et al., 2007, p. 223). And second, if narratives are effective, we must establish which theoretical mechanisms underlie their persuasive influence in order to ensure their continued success.

The past 2 decades have seen an increase in research comparing narrative versus nonnarrative communication and the conceptual mechanisms underlying the variation in observed effects. In one recent study that focused on risky sexual behavior among undergraduates, Moyer-Gusé and Nabi (2011) found that the effects of the narrative (video clips from the fictional television show *OC*) varied depending on gender and prior experience, with narratives yielding the greatest effects for women who lacked direct sexual experience. Others have used exemplars or personal stories and compared them to factual or evidence-based nonnarrative messages to study the differential impact on health-related outcomes. For instance, Niederdeppe, Shapiro, and Porticella (2011) found that relative to a nonnarrative evidence condition, the narrative condition (print material containing the personal story of a patient) increased the belief that societal/environmental factors such as barriers to diet and exercise are, in part, responsible for obesity. Two additional recent studies also looked at narrative exemplars in news story formats. In the first, Oliver, Dillard, Bae, and Tamul (2012) randomly assigned 399 undergraduate students to a narrative (a news story that exemplified a health care issue using a specific person’s experiences) or nonnarrative condition (a news story on the same health care issue containing similar information). Overall, relative to the nonnarrative news, the news story with exemplars produced more empathy, a more favorable attitude, and greater behavioral intent and information-seeking behavior. Results from experiments by Kim et al. (2012) likewise demonstrated that smokers reading news articles with personal stories or exemplars experienced greater narrative engagement than those who read news articles without an exemplar.

The purpose of this study is to build on this ongoing research trajectory and help provide the sort of empirical evidence on the relative efficacy of narratives versus

nonnarratives required to propel narratives into mainstream health campaigns and messaging. To do so, we use the framework provided by Kreuter *et al.* (2007) to conceptually distinguish between narrative and nonnarrative forms of communication. Here narrative is defined as “a representation of connected events and characters that has an identifiable structure, is bounded in space and time, and contains implicit or explicit messages about the topic being addressed” (p. 222). It is important to note that although this study uses a fictional narrative, this does not preclude the possibility that nonfictional narratives such as documentaries, personal stories, or testimonials could also produce effects. In contrast, nonnarratives “include expository and didactic styles of communication that present propositions in the form of reasons and evidence supporting a claim” (p. 222).

In the past, researchers have noted the difficulty in producing or selecting appropriately engaging narrative and nonnarrative messages for comparison within studies. This concern is exacerbated when working with films for which audiences typically expect high production quality. Additionally, it is challenging “for experiments (and internal validity) . . . to achieve a balance between a strong manipulation and one that is still directly comparable with the nonnarrative version in terms of form, length and content” (Niederdeppe *et al.*, 2011, p. 317). To address this challenge, this study brought together an interdisciplinary team composed of communication scholars, filmmakers, and medical experts to produce two original films with high production value. Comparing cervical cancer-related knowledge, attitudes, and behavioral intent in a large group of randomly selected women from different racial/ethnic groups both before and after they viewed either the narrative or nonnarrative film allows us to assess whether narratives convey health-related information better than nonnarratives. Our first hypothesis was that compared to women who receive cancer-related information in a nonfiction, nonnarrative format, those women who receive the same information in a fictional narrative format will have (a) increased knowledge with respect to cervical cancer risk, screening, treatment, and prevention; (b) more positive attitudes toward screening behaviors; and (c) increased behavioral intent to be screened.

As noted previously, even if we demonstrate that narratives are superior to nonnarratives in conveying health-related content across race/ethnicities, our task is not complete. Below we describe the three theoretical mechanisms most often cited as underlying the persuasive influence of narratives—identification, transportation, and emotion.

Identification

According to Bandura’s social cognitive theory, people learn not only from direct experience but also by observing others and modeling the observed behaviors (Bandura, 2004). In essence, individuals are more likely to mimic behaviors that they have seen modeled than behaviors that have been recommended but not demonstrated (Bandura, 2004). Furthermore, individuals appear to more readily adopt behaviors demonstrated by models they consider similar to themselves (Bandura,

2002). Singhal and Rogers (1999), for instance, found young Latina viewers of telenovelas were most strongly influenced by young Latina characters in the programs. Similarly, in McQueen *et al.*'s (2011) study, African American women exposed to a narrative video featuring African American breast cancer patients' stories experienced higher identification, affect, and engagement, which led to lowered perceived barriers and cancer fatalism. As these examples suggest, perhaps the most obvious indicators of similarity involve readily observable physical characteristics such as race/ethnicity, gender, and age. The films produced for this study both purposely highlighted Latina characters, and female participants between the ages of 25 and 45 were recruited based on identification with one of three distinct racial/ethnic groups: European American, Mexican American, or African American.

In addition to the importance of perceived similarity, individuals also seem to learn more from characters whom they like, want to be like, or feel as if they know (Moyer-Gusé, 2008; Slater & Rouner, 2002). "When identifying with a character a person imagines him or herself to be that character, a process that involves feeling empathy and affinity towards that character (affective empathy component) and adopting the character's goals and point of view within the narrative (cognitive empathy component)" (Tal-Or & Cohen, 2010, p. 404). Previous research has found identification with narrative characters is positively related to change in cognition (Banerjee & Greene, 2012), attitudes (de Graaf, Hoken, Sanders, & Beentjes, 2011; Igartua & Barrios, 2012), and interpersonal discussion (Sood, 2002), as well as intentions and actual behavior (Moyer-Gusé, Chung, & Jain, 2011). Across various studies, identification has been conceptualized and operationalized in a variety of ways (see Moyer-Gusé, 2008 and Murphy, Frank, Moran, & Patnoe-Woodley, 2011 for a review). This research uses the term identification to refer to four related constructs: perceived similarity, liking, wishful identification, and parasocial interaction or feeling that one "knows" a character or person (Moyer-Gusé, 2008).

Transportation

There are also several theories that, although they use different terminology, all describe an individual's degree of involvement with a particular narrative. For instance, Busselle and Bilandzic (2009; Bilandzic & Busselle, 2011) distinguish among four dimensions of experiential engagement in narratives—narrative understanding, attentional focus, emotional engagement, and narrative presence—for measuring narrative engagement. However, perhaps the best-known theory of narrative engagement is Green and Brock's (2000) transportation theory, which refers to a cognitive state in which viewers become highly engaged and absorbed with a story. Green, Brock, and Kaufman (2004) describe how transportation into a narrative world is, "the process of temporarily leaving one's reality behind and emerging from the experience somehow different from the person one was before entering the milieu of the narrative" (p. 315).

Transportation is important not only in its relationship to enjoyment of a narrative (Green *et al.*, 2004) but also because it has proven to be an important mediator of

persuasive influence. For example, Green and Brock (2000) found that transportation into a written narrative was positively associated with accepting the beliefs portrayed in the narrative. Similarly, Murphy et al. (2011) found that transportation was the theoretical construct most strongly associated with changes in knowledge, attitudes, and behavior after viewing a cancer storyline in the popular primetime program *Desperate Housewives*. And among McQueen et al.'s (2011) sample of African American women, an individual's level of transportation was associated with both decreased counterarguing and increased interpersonal discussion about the narrative.

These findings are consistent with Slater and Rouner's (2002) extended elaboration likelihood model (EELM), which suggests that "in the context of narrative processing, absorption in the narrative may motivate deeper processing of a different kind" (p. 187), leading the viewers to endorse attitudes and behaviors in line with the information provided in the message. Further transportation or engagement with the narrative along with identification with specific characters should elicit responses consistent with the intent of the intervention (Slater & Rouner, 2002). In this research we will use Green and Brock's construct of transportation to both refer to and measure individuals' level of involvement in a narrative.

Emotion

Researchers also acknowledge the central role emotion plays in the processing of narratives. In their study of African American women, McQueen et al. (2011) found that for women watching a narrative video about breast cancer, message recall was negatively associated with negative affect, whereas positive affect was associated with perceiving fewer mammography barriers in subsequent follow-up. Indeed, Green and Brock (2000) suggest that a heightened emotional response may be a necessary component for transportation into a narrative. However, a recent study of a narrative cancer-related storyline revealed that viewers' positive and negative emotional responses to a lymphoma storyline predicted subsequent behavior change over and above that predicted by their level of transportation and identification with the central character (Murphy et al., 2011), suggesting that emotion and transportation, although related, are distinct constructs.

Much of the research on the effects of emotion on the processing of narratives looks at responses differentiated only at the level of hedonic valence as positive versus negative affect (e.g., Tal-Or & Cohen, 2010). But different discrete emotions could produce differential effects, with each preparing the organism for a distinct response (DeSteno, Petty, Rucker, Wegener & Braverman, 2004; Dillard & Nabi, 2006; Nabi, 2002). For example, as Nabi (2002) notes in her review of discrete emotions and persuasion, anger is often associated with heightened levels of attention, problem-solving, and/or retribution toward the anger source, whereas fear often reduces the level of cognitive processing. This research allows us to investigate whether specific emotions produce differential effects on knowledge, attitudes, and behavior by measuring the extent to which the films made participants feel each of six basic emotions: anger, sadness, disgust, happiness, surprise, and fear.

The potential role of narratives in reducing health disparities

The previous discussion of identification, transportation, and emotion includes several studies that specifically look at the efficacy of using narrative-based interventions for minority populations. However, these prior studies only include participants from the racial or ethnic target population for whom the narrative materials were designed. In light of the importance of perceived similarity for identification, our second hypothesis was that for women in the narrative condition there will be a difference by race/ethnicity when viewing the film such that Mexican American women will (a) be more transported, (b) identify more strongly with the primary characters, and (c) have a stronger emotional response.

Finally, previous research is inconsistent in demonstrating the relationship between these theoretical constructs and changes in knowledge, attitudes, and behavior. Thus, our research question asked which of these following theoretical constructs—transportation, identification with specific characters, or emotion—will be most likely to produce an increase in cervical cancer-related (a) knowledge, (b) attitudes, and (c) behavioral intent to be screened.

Methods

Materials

To empirically test whether using a narrative format produces a greater impact on knowledge, attitudes, and prevention behavior, we produced two 11-minute films, each conveying the same facts regarding the cause of cervical cancer (the human papillomavirus or HPV), as well as its prevention and detection (via Pap test). The fictional narrative film, *The Tamale Lesson*, revolves around the Romero family's preparation for their youngest daughter Rosita's Quinceañera (15th birthday). While preparing tamales for the celebration, the eldest daughter, Lupita, reveals to her middle sister, Connie, that she had an abnormal Pap test and has tested positive for HPV, which, if unchecked, can cause cervical cancer. Connie is a 21-year-old virgin who has never had a Pap test and never heard of HPV. During the ensuing conversation 10 key facts about cervical cancer are discussed. The sisters are then joined by their mother, Blanca, and her friend Petra. Viewers learn that Petra, who is in her 50s and experiencing worrisome bleeding, has also never had a Pap test. Lupita then describes and "demonstrates" the Pap test procedure on a chicken being prepared for the party, in order to assuage Connie and Petra's fears. The film ends at a local clinic where Connie, Petra, and Blanca are screened for cervical cancer.

The nonfiction nonnarrative, *It's Time*, uses a more traditional didactic approach featuring local doctors and health experts and evidence provided through charts and figures. Dr. Gutierrez discusses the need for cervical cancer screening and discreetly performs a Pap test on a patient. A second physician, Dr. Lopez, describes the HPV vaccine. The film then shows a laboratory where Pap tests are analyzed under a microscope, and viewers are shown the difference between normal and

abnormal cells. Interspersed throughout the nonnarrative are brief shots of women who express some of the main reasons women fail to be screened (e.g., lack of time and money), as well as counterarguments (e.g., many clinics offer Pap tests for free).

Manipulation check

Both films were extensively pretested with four focus groups before filming and an additional eight focus groups during the rough-cut stage. As a final manipulation check that the films were equal in terms of the clarity of the key facts they conveyed, we first had research assistants identify where each fact appeared in both films and for how long and what was the precise wording. They confirmed that 10 key facts were mentioned the same number of times in both films.

Experimental procedure

A random digit dial procedure that targeted ethnically diverse regions throughout Los Angeles County was used to randomly select and survey women to establish their pretest level of cervical cancer-related knowledge, attitudes, and behavior. All interviewing on this project was conducted by California Survey Research Services, Inc. Up to six call attempts were made to sample numbers to complete the pretest survey, and up to 35 call attempts were made to reach respondents for the posttest. Computer Assisted Telephone Interviewing was used to ensure that question skip patterns and quotas could be accurately implemented. Respondents were reimbursed with gifts cards for their participation. Those who completed the pretest were randomly assigned to receive a DVD of either the fictitious narrative or nonnarrative film. Participants were then recontacted for the posttest survey two weeks later. Before starting the posttest, respondents had to complete a manipulation check by answering several simple noncervical cancer-related questions about the film to ensure they had in fact viewed their DVD. Participants who were unable to answer these questions were asked to watch the film and then were recontacted to complete the posttest survey.

Participants

Eligible participants were females between the ages of 25–45, with no previous diagnosis of cervical cancer who self-identified as European American, African American, or Mexican American.¹ Because the films for the experimental manipulation were in English, participants also had to be fluent in English. A total of 758 women (268 European Americans, 254 Mexican Americans, and 236 African Americans) completed both surveys. Their median age was 39 years ($M = 38.4$, $SD = 5.7$). Seventeen percent of participants had a high school education or less, an additional 44% had some college or a bachelor's degree, and 39% had more than a college degree. The majority of the participants (88%) reported having some form of health insurance.

Measures

Knowledge

Both films included facts about cervical cancer and HPV, such as HPV causes most cervical cancers, women need Pap tests even if they are not sexually active, the HPV vaccine can prevent females from contracting HPV, and the HPV vaccine is recommended for girls as young as 9 years old. Knowledge of the 10 facts was assessed in an open-ended format at both pretest and posttest. Example questions include, "What is the test to detect cervical cancer caused?" and "How is HPV transmitted?" For each question, answers were coded into a predetermined list of response categories, and correct answers were scored 1 while incorrect answers were scored 0. For example, people who responded "Pap test" or "Papanicolaou" were coded as having given the correct answer to the question about the test to detect cervical cancer. Knowledge scores indicate the number of correct answers out of 10.

Attitudes

Attitudes toward Pap tests were assessed on both surveys using a series of six 10-point Likert-type scales anchored at 1 = *not at all* and 10 = *extremely*. Specifically, participants were asked how embarrassing, physically painful, important, expensive, time-consuming, and scary Pap tests are. All items except important were reverse-coded, so that higher numbers indicate attitudes more supportive of Pap tests. The mean of the six items served as the pretest (Cronbach's $\alpha = .66$) and posttest (Cronbach's $\alpha = .70$) attitudes toward Pap tests.

Behavioral intentions

At both pretest and posttest, participants were asked, "How likely is it that you will get a Pap test within the next 2 years, on a scale from 1 to 10 where 1 means not at all likely and 10 means extremely likely?"

Transportation

Transportation was measured in the posttest survey using 10 of 11 items from Green and Brock's (2000) scale.² Item wording was adapted for film viewing. For example, one item asked was, "I wanted to learn how the film ended." Response options were 10-point Likert-type scales anchored at 1 = *strongly disagree* and 10 = *strongly agree*. Principle components factor analysis using varimax rotation showed the three reverse-coded items did not load with the other items (Kim et al., 2012; Murphy et al., 2011). Additionally, the item "I found myself thinking of ways the film could have turned out differently" also did not load with the scale. The final scale used for analysis included six items that loaded on a single factor (eigenvalue = 2.8, variance explained = 47%) and had good reliability (Cronbach's $\alpha = .76$).

Identification with characters

Viewers of the narrative film were asked the extent to which they identified with each of the main characters. For each character, four components of identification were assessed on 10-point scales from 1 = *not at all* to 10 = *a great deal*: liking, similarity,

feeling like you know, and wanting to be like. In the questions, each character was identified by both name and role. For example, participants were asked, "How similar are you to Lupita, the eldest daughter who was on the phone with her boyfriend?" For each character, exploratory factor analysis showed that the four dimensions of identification loaded on a single item (eigenvalues ranging from 2.3 to 2.6 with 58% to 65% variance explained). The reliabilities of identification with Lupita, Connie, and Petra were Cronbach's α of .76, .78, and .71, respectively.

Emotion

Emotional response to the films was measured using 10-point scales asking the extent to which the films made the participants feel each of the six basic emotions: anger, sadness, disgust, happiness, surprise, and fear. The scales were anchored at 1 = *not at all* and 10 = *extremely*. Principle components factor analysis yielded two factors explaining 68% of the variance. On the basis of the results, two variables were used for subsequent analysis: one for negative emotions (anger, sadness, disgust, and fear; Cronbach's α = .71) and one for positive emotion (happiness).

Analysis

The hypotheses were tested using analysis of variance, and the research question was analyzed using multiple linear regression analysis. The alpha level was set at 0.05 a priori.

Results

The first hypothesis predicted film effects for knowledge, attitudes, and behavioral intentions. This hypothesis was tested using a 2 (film: narrative or nonnarrative) \times 3 (race/ethnicity: European American, Mexican American, or African American) analysis of variance. Means and standard deviations are shown in Table 1. There was a main effect of film on change in knowledge, $F(1, 752) = 5.79, p < .05, \eta^2 = 0.01$, such that viewers of the narrative ($M = 2.15$) learned significantly more facts than viewers of the nonnarrative ($M = 1.86$). Similarly, change in attitude toward Pap tests varied significantly by film condition, $F(1, 750) = 11.0, p < .01, \eta^2 = 0.01$. Whereas viewers of the narrative film were likely to become more supportive of Pap tests ($M = 0.26$), viewers of the nonnarrative film did not change their attitudes toward Pap tests ($M = 0.0$). There were no race/ethnicity or interaction effects for either knowledge or attitude change.

Change in behavioral intent to get a Pap test within the next 2 years was more difficult to assess. At the pretest, 677 women (89.3% of the sample) reported that their intention to get a Pap test in the next 2 years was 10 on a 10-point scale. This created a clear ceiling effect, as only 59 women could possibly increase in their intention to get a Pap test between the pretest and posttest surveys. Thus, rather than reporting on the change in intentions, we report on the posttest level of intention to get a Pap test. There was no main effect for either film or race/ethnicity.

Table 1 Means and Standard Deviations of Knowledge, Attitudes, and Behavioral Intentions by Race/Ethnicity and Experimental Condition (narrative or nonnarrative film)

	European American (<i>N</i> = 268)	Mexican American (<i>N</i> = 254)	African American (<i>N</i> = 236)
Change in knowledge			
Narrative	2.0 (1.8)	2.2 (1.6)	2.2 (1.7)
Nonnarrative	2.1 (1.4)	1.7 (1.7)	1.8 (1.6)
Change in attitudes			
Narrative	0.21 (0.09)	0.26 (0.10)	0.31 (0.10)
Nonnarrative	-0.08 (0.10)	-0.01 (0.10)	0.10 (0.10)
Behavioral intentions			
Narrative	9.6 (1.6)	9.8 (1.2)	9.9 (1.3)
Nonnarrative	9.9 (0.9)	9.7 (1.1)	9.6 (1.7)

Note: Change in knowledge and attitudes could range from -10 to 10. Behavioral intentions could range from 1 to 10. Standard deviations are in parentheses.

Table 2 Means and Standard Deviations of Transportation, Identification With Characters, and Emotional Response to the Narrative Film by Race/Ethnicity

	European American (<i>N</i> = 138)	Mexican American (<i>N</i> = 125)	African American (<i>N</i> = 112)
Transportation	5.7 (1.8) _a	7.3 (1.8) _b	7.2 (1.9) _b
Identification			
With Lupita	4.3 (1.7) _a	5.8 (2.2) _b	5.3 (1.9) _b
With Connie	5.1 (1.9) _a	6.2 (2.3) _b	5.9 (2.2) _b
With Petra	3.7 (1.4) _a	4.2 (1.8) _b	4.2 (2.0) _{ab}
Negative emotion	1.7 (1.2) _a	2.8 (1.9) _b	2.3 (1.8) _b
Positive emotion	3.6 (2.4) _a	5.3 (2.8) _b	5.4 (3.1) _b

Note: Scores could range from 1 to 10. Standard deviations are in parentheses. Means in the same row with no subscripts in common differ at $p < .05$ by the Bonferroni method.

However, there was a marginally significant interaction effect, $F(2, 752) = 2.46$, $p = .086$, $\eta^2 = 0.01$. Specifically, whereas Mexican American and African American participants had higher intentions to get a Pap test after viewing the narrative film than the nonnarrative film, European Americans showed the reverse pattern.

Hypothesis 2 predicted a racial/ethnic difference in transportation, identification with characters, and emotion in response to the narrative film. See Table 2 for the means and standard deviations of each of these variables by race. As the table shows, this hypothesis was supported for each of the theoretical constructs. Mexican Americans and African Americans were significantly more transported by the narrative film than European Americans, $F(2, 372) = 31.8$, $p < .001$, $\eta^2 = 0.15$. Mexican American and African Americans identified more with Lupita, $F(2, 372) = 18.6$, $p < .001$,

Table 3 Effects of Transportation, Identification With Characters, and Emotional Response on Knowledge, Attitude, and Behavioral Intentions ($N = 375$)

	Knowledge	Attitudes	Behavioral Intentions
Pretest level	0.40**	0.72**	0.65**
Race ^a			
Mexican American	-0.13*	0.02	0.00
African American	-0.18**	0.03	-0.02
Transportation	0.14*	0.01	0.09 ⁺
Identification			
With Lupita	-0.05	0.09*	-0.05
With Connie	0.01	-0.03	-0.02
With Petra	-0.12*	0.02	0.03
Negative emotion	0.02	-0.09*	0.01
Positive emotion	-0.13*	-0.10*	0.01
Adjusted R^2	0.25	0.56	0.42

Note: Standardized beta coefficients from regression models.

^aReference is European American.

⁺ $p < .10$. * $p < .05$. ** $p < .01$.

$\eta^2 = 0.09$, and Connie, $F(2, 372) = 10.2$, $p < .001$, $\eta^2 = 0.05$, than European Americans did. Mexican Americans also identified more strongly with Petra than European Americans did, $F(2, 371) = 4.38$, $p < .05$, $\eta^2 = 0.02$. Finally, although participants had far more happy emotional reactions than negative emotional reactions, Mexican Americans and African Americans had higher negative, $F(2, 372) = 13.7$, $p < .001$, $\eta^2 = 0.07$, and positive, $F(2, 372) = 18.1$, $p < .001$, $\eta^2 = 0.09$, emotional reactions to the film than European Americans did.

Finally, our research question explored how the three theoretical constructs of transportation, identification with specific characters, and emotion relate to the dependent variables of knowledge, attitudes, and behavioral intentions. A variety of demographic and health variables (including age, education, income, health insurance, and self-reported health status) were entered into the regression analyses as control variables because they might relate to health-related behavioral intentions. However, none had a significant relationship with any of the dependent variables, nor did they change the pattern of results. Thus, for the sake of parsimony, Table 3 reports the regression analyses without these variables included. Instead, the posttest levels of knowledge, attitudes, and behaviors were regressed on their pretest counterparts, race/ethnicity, transportation, identification with each character, and negative and positive emotion. This regression explained 25% of the variance in knowledge at posttest, $F(9, 364) = 14.5$, $p < .001$. European Americans had higher levels of posttest knowledge ($M = 8.2$, $SD = 1.2$) than either Mexican Americans ($M = 7.5$, $SD = 1.5$) or African Americans ($M = 7.2$, $SD = 1.5$). Women who were more transported by the film had greater levels of knowledge ($\beta = 0.14$, $p < .03$). However, identification

with Petra, the older woman who had her first Pap test at the end of the film, was negatively associated with knowledge ($\beta = -0.12, p < .03$). Positive emotion was similarly negatively associated with knowledge ($\beta = -0.13, p < .02$), showing that those who were happiest in response to the film had the lowest levels of knowledge.

The regression explains 56% of the variance in posttest attitudes, $F(9, 363) = 54.3, p < .001$. Both positive emotion ($\beta = -0.09, p < .03$) and negative emotion ($\beta = -0.10, p < .02$) were negatively associated with positive attitudes about Pap tests. However, the more women identified with Lupita, the more positive their attitudes toward Pap tests ($\beta = 0.09, p < .04$). Transportation was not related to Pap test attitudes ($p = .89$). Although the regression explains 42% of the variance in posttest intentions, none of the theoretical predictors were significantly associated with behavioral intentions at the alpha level of 0.05, $F(9, 364) = 30.9, p < .001$. However, the relationship between transportation and behavioral intentions trended positive ($\beta = 0.09, p = .08$).

Discussion

A primary goal of this research was to empirically test whether using a narrative or story format produces a greater impact on health-related knowledge, attitudes, and prevention behavioral intention than presenting the identical information conveyed in a more traditional nonfictional, nonnarrative format featuring doctors, patients, facts, and figures. As we were particularly interested in how these differences in message form would influence women of different races/ethnicities, 758 European American, Mexican American, and African American women participated in this study. Each woman was surveyed twice, once before and once after viewing a cervical cancer-related film—either the fictional narrative, *Tamale Lesson*, or nonfictional nonnarrative, *It's Time*.

A series of 2 (film: narrative vs. nonnarrative) \times 3 (race/ethnicity) analyses of variance revealed that the fictional narrative was more effective than the nonfictional nonnarrative. It should be noted that both films resulted in a significant increase at the individual level with respect to cervical cancer-related knowledge. However, compared to women who received cancer-related information in a traditional nonnarrative format, women who received the information in a narrative format showed a significantly greater increase in knowledge as predicted in H1a. Similarly, participants who received the information in a narrative format also reported significantly more positive attitudes toward cervical cancer screening as predicted in H1b. The results of H1c, which predicted that women in the narrative condition would have an increased behavioral intent to be screened, were less clear due to a ceiling effect. Only 59 respondents could increase in behavioral intent to be screened from pretest to posttest, leaving little room for improvement. Despite this, there was a marginally significant interaction such that Mexican American and African American women tended to have stronger intentions to get a Pap test if they viewed the narrative film, but European American tended to have stronger intentions to

get a Pap test if they viewed the nonnarrative film. Although these effect sizes are relatively small, they are nonetheless encouraging for the use of narrative in health communication. Even small effect sizes may have a substantive impact on public health when they reach a large number of people due to mass media interventions (Snyder *et al.*, 2004; Valente, 2002).

Understanding the power of narrative

Subsequent analyses attempted to determine the theoretical mechanisms that underlie the power of narrative. As a measure of how involved or engaged in the narrative viewers were, we used Green and Brock's (2000) transportation scale. As predicted in Hypothesis 2a, Mexican American women were significantly more transported by the narrative than European Americans. Level of transportation, in turn, was related to knowledge gain. Among viewers of the narrative film, after controlling for pretest levels of knowledge and race/ethnicity, transportation was the theoretical construct most predictive of increased knowledge. This makes sense given Green and Brock's (2000) and Kreuter *et al.* (2007) suggestion that transportation focuses viewers' attention and cognitive resources toward the narrative. As mentioned previously, only transportation was associated with behavioral intent after viewing the film, and this effect was only marginally significant. However, this pattern of results, in which behavioral intentions were related to viewers' self-reported level of being transported into the narrative, has been found in other studies (Kim *et al.*, 2012; Murphy *et al.*, 2011).

We measured identification with a specific character by assessing liking, perceived similarity, wishful identification, and parasocial interaction for each of three specific characters for whom Pap testing was an issue in the film: Lupita (the eldest, sexually active daughter who has contracted HPV), Connie (the second eldest daughter who is a virgin), and Petra (their mother's best friend who has never had a Pap test but is experiencing worrisome symptoms). Mexican American respondents were significantly more likely than their European American counterparts to identify with Petra. Interestingly, identifying with Petra was negatively related to knowledge gain from pretest to posttest. This makes sense, however, as Petra was the least well informed of all the characters with respect to cervical cancer. Both Mexican American and African American women identified more with Lupita than their European American counterparts. After we controlled for pretest attitudes toward having a Pap test, posttest attitudes were most closely associated with identifying with Lupita. This suggests that our respondents, the majority of whom were sexually active like Lupita, were more likely to see the need for regular cervical cancer screening as a result of the narrative.

The finding that Mexican Americans identified more strongly with the narrative film characters supports what Bandura (2004) and Moyer-Gusé *et al.* (2011) have argued, namely that individuals attend more closely to and model those who they perceive as being similar to them. What is somewhat surprising is that African American respondents had similarly strong identification with these characters. Prior

research has shown that while certain demographic similarities such as age, race, and sex may be easily observable, more subtle dimensions including socioeconomic status, employment status, education level, marital status, family structure, or place of residence have also been found to evoke a sense of similarity (Kreuter & McClure, 2004). The following quotes from African American focus group participants who had just watched the narrative film, *Tamale Lesson*, provide insight into their perceptions of the Latina characters:

“Clear, concise, relatable even though it was from the perspective of Latina women, I could see myself and my family, preparing . . . brought me back to Thanksgiving and having similar conversations.”

“Even as an African American, I live in Los Angeles. And that’s part of our culture, too (family getting together and talking), so I’m comfortable watching it.”

“It goes with my family culture too, at home with my mother [cooking in kitchen], my daughter, my sisters, it felt like home. It was very emotionally appealing.”

In contrast, European American women in our focus groups were less likely to relate to the Latina characters as revealed in the following quotes:

“They’re showing a very Hispanic family and the little girl’s Quinceañera. Anyone can relate to a warm family. That was well done but, quote/unquote it’s . . . ‘Hispanic.’ You’re not going to be showing it to a bunch of white women in Beverly Hills.”

“I kept thinking it’s not that big a deal, I didn’t understand all the buildup.”
[referring to Petra having her first Pap test]

As the above quotes suggest, the power of narratives may be either enabled or constrained by the extent to which audience members can “see themselves” in the characters.

Both Mexican American and African American respondents reported greater emotion as a result of viewing *Tamale Lesson* compared with the nonnarrative film. Experiencing happiness while watching the film was negatively correlated with increased knowledge from pretest to posttest. This finding may be related to the fact that positive emotions serve as an evolutionary signal that all is well and that vigilance can be relaxed (Fredrickson, 2003). Heightened levels of both positive and negative emotion were related to more negative attitudes toward having a Pap test. Thus, heightened emotion, both positive and negative, suppressed desired outcomes

in this study. This finding may serve as a cautionary tale to other researchers and future health interventions that employ narrative to carefully pilot whether or not the emotion evoked has the intended effect on the target population. Obviously more research that varies the level, the hedonic valence, and the specific emotion evoked is required (see Dillard & Nabi, 2006 for an extended discussion on emotion and persuasion related to cancer prevention and detection messages).

In summary, although all three theoretical mechanisms predicted increases in knowledge, only identification and emotion predicted attitudes toward screening, and transportation was most associated (although not significantly so due to a ceiling effect) with behavioral intent to have a Pap test in the next 2 years. This pattern of results underscores the point made by Murphy *et al.* (2011), that although transportation, identification with a specific character, and emotional response to a narrative are related constructs, they do not entirely overlap in their effects. Rather, these three theoretical constructs may produce different patterns of relationships with respect to knowledge, attitudes, and behavior.

Indeed, the extended elaboration likelihood model (Slater & Rouner, 2002) might serve as an overarching theoretical framework in which identification with specific characters, emotion evoked, and level of involvement in the narrative could all work as cues that could increase or attenuate the impact of a narrative depending on the individual audience member. Our findings should encourage further theoretical exploration of narratives as suggested by the extended elaboration likelihood model (Slater & Rouner, 2002), especially with regard to clarifying the relative importance of perceived similarity versus empathy with specific characters; the relationship between involvement with the narrative, identifying with specific characters and counterarguing; and most importantly, the factors influencing the durability of effects (Slater & Rouner, 2002).

Limitations

While this research suggests that narratives can convey information and motivate attitude change at least as well as, if not better than, the traditional nonnarrative format, there are a number of limitations that must be acknowledged. First, we strove to balance our goal of accurately measuring multiple theoretical constructs with an understanding that longer surveys can create problems with participant recruitment and survey fatigue. Thus, although we included Green and Brock's transportation scale, we did not have sufficient space to include other measures, such as narrative engagement (Busselle & Bilandzic, 2009). Moreover, we did not include lengthier measures of character identification such as those recommended by Tal-Or and Cohen (2010). It should also be noted that although they varied in terms of their racial or ethnic background, respondents in this study all lived in the greater Los Angeles County area. This area may be unusually multicultural, making some of this results, such as the high levels of identification among African American respondents with the Latina characters in our film, less generalizable. Despite being randomly selected, our respondents were also fairly acculturated as they needed to

speak English to participate in the study. Results could vary by level of acculturation, time an individual has lived in the United States, ability to speak English, and other variables that were not tested here.

Furthermore, although behavioral intent has been found to be highly predictive of future behavior (Ajzen, 1991; Armitage & Conner, 2001; Sutton & Barto, 1998), it is still an imperfect proxy. This shortcoming will be ameliorated when the final wave of data, the 6-month follow-up survey that measures actual behavior, has been collected. However, it should be noted that this study focused on the impact of a specific storyline about a specific health problem, namely cervical cancer. Obviously, we must use caution in extrapolation as these results may heavily depend on both the specific story and health topic, and thus the validity of the results may be threatened by case category confounding (Jackson, 1992).

Finally, we agree with Moyer-Gusé's (2008; see also Niederdeppe *et al.*, 2011) suggestion that further research is needed to fully evaluate the cognitive processes underlying these theoretical mechanisms of narrative persuasion. Such research might utilize technological advances in neural imaging to explicate the areas of the brain involved in processing narratives and nonnarratives.

Conclusions and recommendations

While this study provides additional evidence supporting the use of narratives in health communication, some caveats remain. First, we must acknowledge that effective narratives may not be as easy to construct and produce as nonnarratives. As Kreuter *et al.* (2007) note in their overview on the use of narrative in cancer prevention, success of a story hinges on its quality. In the immortal words of Mark Twain, "I like a story well told. That is the reason I am sometimes forced to tell them myself." Communication researchers must remember that few among us possess Mark Twain's narrative ability and reach out to professional storytellers, cinematographers, directors, and so forth, to create quality narratives into which audience members can be transported. Employing the services of professionals may raise the cost of an intervention, but if using professionals also raises the impact of an intervention it is money well spent. And professionals affiliated with universities or nonprofits may be willing to produce quality narratives for a fraction of their true cost as was the case here.

Moreover, the ability of narratives to elicit strong emotion is often cited as one of their advantages in communicating a message. However, in this study higher levels of both positive and negative emotion seemed to interfere with the narrative's ability to change relevant knowledge and attitudes. Obviously more research is needed that varies the level, the hedonic valence, and the specific emotion evoked before generalizing these findings, but in the interim researchers might proceed with caution with respect to their choice of emotions to evoke. Also the fact that we did not find evidence in this study that specific emotions such as fear and anger produce differential effects does not mean that important differences between discrete emotions do not exist (see Dillard & Nabi, 2006; Nabi, 2002).

Effective narratives should also feature characters with whom the target audience can identify. This may involve creating more than one version of a narrative, as perceived similarity, particularly with respect to physical cues such as race/ethnicity or gender, may be essential to capture a particular target audience's attention. But precisely how close the "match" must be between the characters portrayed and the target audience remains a question (Kreuter *et al.*, 2007) that can only be addressed through further research and careful pretesting of materials. With technological advances that allow health researchers to "tailor" or customize messages to the individual, there has been an increased focus on conceptual questions about what makes for effective tailored health interventions (Noar, Harrington, Van Stee, & Aldrich, 2011). For example, should interventions tailor messages using indicators of similarity that involve readily observable physical characteristics such as race/ethnicity, gender, and age, which have been shown to increase identification? Along this trajectory, more empirical work is also needed on the influence of different types of narratives (first person accounts, exemplars, fiction, *etc.*) and on the conditions and channels (film, print, radio, internet, *etc.*) that are most effective.

In light of these caveats, it is not surprising that health researchers and practitioners have largely avoided the use of narrative or have relied on what Niederdeppe *et al.* (2011) refer to as a "hybrid" message that integrates "personal stories" with statistical evidence. Indeed, research has shown that the addition of such exemplars can enhance attention, engagement, and behavioral intent (Kim *et al.*, 2012; Niederdeppe *et al.*, 2011), suggesting that nonfictional narratives may also increase impact.

But continued avoidance of the use of narratives in health communication would be shortsighted. As McQueen *et al.* (2011) note, the "limitations of health communication may be especially relevant for at-risk populations experiencing health disparities" (p. 680). While underserved populations often struggle with issues of language, literacy, and numeracy, they frequently come from cultures with rich oral traditions that may be particularly well suited to narrative forms of communication. Thus, in light of the unique property of narratives to overcome resistance, facilitate information processing, and address emotional topic (Kim *et al.* 2012), understanding the conditions under which different forms of narratives (*e.g.*, news stories, testimonials, fiction) are and are not effective may be critical in eliminating health disparities.

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Notes

- 1 This study is part of a larger project that also included Korean American women and a 6-month follow-up.
- 2 Rather than including “The narrative affected me emotionally,” emotional response was measured separately using the six basic emotions.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. doi: 10.1016/0749-5978(91)90020-T
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, *40*(Pt 4), 471–499. doi: 10.1348/014466601164939
- Bandura, A. (2002). Social cognitive theory of mass communication. In J. Bryant & D. Zillman (Eds.), *Media effects: Advances in theory and research* (2nd ed., pp. 121–153). Mahwah, NJ: Erlbaum.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, *31*(2), 143–164. doi: 10.1177/1090198104263660
- Banerjee, S. C., & Greene, K. (2012). Role of transportation in the persuasion process: Cognitive and affective responses to antidrug narratives. *Journal of Health Communication: International Perspectives*, *17*(5), 564–581. doi: 10.1080/10810730.2011.635779
- Bilandzic, H., & Busselle, R. (2011). Enjoyment of films as a function of narrative experience, perceived realism and transportability. *Communications*, *36*(1), 29–50. doi: 10.1515/comm.2011.002
- Busselle, R., & Bilandzic, H. (2009). Measuring narrative engagement. *Media Psychology*, *12*(4), 321–347. doi: 10.1080/15213260903287259
- Centers for Disease Control and Prevention. (2011). Cervical cancer screening rates. Retrieved from <http://www.cdc.gov/cancer/cervical/statistics/screening.htm>
- Centers for Disease Control and Prevention. (2012). Cervical cancer rates by race and ethnicity. Retrieved from <http://www.cdc.gov/cancer/cervical/statistics/race.htm>
- DeSteno, D., Petty, R. E., Rucker, D. D., Wegener, D. T., & Braverman, J. (2004). Operation of thought systems. In R. S. Wyer, Jr. & T. Srull (Eds.), *Advances in social cognition* (Vol. 4, pp. 1–78). Hillsdale, NJ: Erlbaum.
- Dillard, J. P., & Nabi, R. L. (2006). The persuasive influence of emotion in cancer prevention and detection messages. *Journal of Communication*, *56*, S123–S139. doi: 10.1111/j.1460-2466.2006.00286.x

- Downs, L., Smith, J., Scarinci, I., Flowers, L., & Parham, G. (2008). The disparity of cervical cancer in diverse populations. *Gynecologic Oncology*, **109**, S22–S30. doi: 10.1016/j.ygyno.2008.01.003
- Dunlop, S. M., Wakefield, M., & Kashima, Y. (2010). Pathways to persuasion: Cognitive and experiential responses to health-promoting mass media messages. *Communication Research*, **37**(1), 133–164. doi: 10.1177/0093650209351912
- Fisher, W. R. (1985). The narrative paradigm: In the beginning. *Journal of Communication*, **35**(4), 74–89. doi: 10.1111/j.1460-2466.1985.tb02974.x
- Fisher, W. R. (1987). *Human communication as narration: Toward a philosophy of reason, value, and action*. Columbia, SC: University of South Carolina Press.
- Fredrickson, B. L. (2003). The value of positive emotions: The emerging science of positive psychology is coming to understand why it's good to feel good. *American Scientist*, **91**(4), 330–335. <http://www.jstor.org/stable/27858244>
- de Graaf, A., Hoken, H., Sanders, J., & Beentjes, W. J. (2011). Identification as a mechanism of narrative persuasion. *Communication Research*, **20**(10), 1–22. doi: 10.1177/0093650211408594
- Green, M. C. (2006). Narratives and cancer communication. *Journal of Communication*, **56**(S1), S163–S183. doi: 10.1111/j.1460-2466.2006.00288.x
- 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., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory*, **14**(4), 311–327. doi: 10.1111/j.1468-2885.2004.tb00317.x
- Hinyard, L., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, **34**, 777–792. doi: 10.1177/1090198106291963
- Houston, T. K., Allison, J. J., Sussman, M., Horn, W., Holt, C. L., Trobaugh, J., & Hullett, S. (2011). Culturally appropriate storytelling to improve blood pressure: A randomized trial. *Annals of Internal Medicine*, **154**(2), 77–84.
- Igartua, J. J., & Barrios, I. (2012). Changing real-world beliefs with controversial movies: Processes and mechanisms of narrative persuasion. *Journal of Communication*, **62**(3), 514–531. doi: 10.1111/j.1460-2466.2012.01640.x
- Jackson, S. (1992). *Message effects research: Principles of design and analysis*. New York, NY: Guilford.
- Kim, H. S., Bigman, C. A., Leader, A. E., Lerman, C., & Cappella, J. N. (2012). Narrative health communication and behavior change: The influence of exemplars in the news on intention to quit smoking. *Journal of Communication*, **62**(3), 473–492. doi: 10.1111/j.1460-2466.2012.01644.x
- Kreuter, M., & McClure, S. M. (2004). The role of culture in health communication. *Annual Review of Public Health*, **25**, 439–455. doi: 10.1146/annurev.publhealth.25.101802.123000
- Kreuter, M. W., Green, M. C., Cappella, J. N., Slater, M. D., Wise, M. E., Storey, D., & Woolley, S. (2007). Narrative communication in cancer prevention and control: A framework to guide research and application. *Annals of Behavioral Medicine*, **33**(3), 221–235. doi: 10.1007/BF02879904

- Larkey, L. K., & Hecht, M. (2010). A model of effects of narrative as culture-centric health promotion. *Journal of Health Communication, 15*(2), 114–135. doi: 10.1080/10810730903528017
- McQueen, A., Kreuter, M. W., Kalesan, B., & Alcaraz, K. I. (2011). Understanding narrative effects: The impact of breast cancer survivor stories on message processing, attitudes, and beliefs among African American women. *Health Psychology, 30*(6), 674–682. doi: 10.1037/a0025395
- Morgan, S. E., Movius, L., & Cody, M. J. (2009). The power of narratives: The effect of entertainment television organ donation storylines on the attitudes, knowledge, and behaviors of donors and nondonors. *Journal of Communication, 59*(1), 135–151.
- Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment–education messages. *Communication Theory, 18*(3), 407–425. doi: 10.1111/j.1460-2466.2008.01408.x
- Moyer-Gusé, E., & Nabi, R. L. (2011). Comparing the effects of entertainment and educational television programming on risky sexual behavior. *Health Communication, 26*(5), 416–426. doi: 10.1080/10410236.2011.552481
- Moyer-Gusé, E., Chung, A. H., & Jain, P. (2011). Identification with characters and discussion of taboo topics after exposure to an entertainment narrative about sexual health. *Journal of Communication, 61*(3), 387–406. doi: 10.1111/j.1460-2466.2011.01551.x
- Murphy, S. T., Frank, L. B., Moran, M. B., & Patnoe-Woodley, P. (2011). Involved, transported, or emotional? Exploring the determinants of change in knowledge, attitudes, and behavior in entertainment-education. *Journal of Communication, 61*(3), 407–431. doi: 10.1111/j.1460-2466.2011.01554.x
- Nabi, R. L. (2002). Discrete emotions and persuasion. In J. Dillard & M. Pfau (Eds.), *The persuasion handbook* (pp. 289–308). Thousand Oaks, CA: Sage.
- National Cancer Institute (2010). 2009/2010 update: Cancer trends progress report. In *Cervical cancer screening*. Bethesda, MD: National Cancer Institute.
- Niederdeppe, J., Shapiro, M. A., & Porticella, N. (2011). Attributions of responsibility for obesity: Narrative communication reduces reactive counterarguing among Liberals. *Human Communication Research, 37*(3), 295–323. doi: 10.1111/j.1468-2958.2011.01409.x
- Noar, S. M., Harrington, N. G., Van Stee, S. K., & Aldrich, R. S. (2011). Tailored health communication to change lifestyle behavior. *American Journal of Lifestyle Medicine, 5*(2), 112–122. doi: 10.1177/1559827610387255
- Oliver, M. B., Dillard, J. P., Bae, K., & Tamul, D. J. (2012). The effect of narrative news format on empathy for stigmatized groups. *Journalism & Mass Communication Quarterly, 89*(2), 205–224. doi: 10.1177/1077699012439020
- Robillard, A. G., & Larkey, L. (2009). Health disadvantages in colorectal cancer screening among African Americans: Considering the cultural context of narrative health promotion. *Journal of Health Care for the Poor and the Underserved, 20*(2A), 102–119. doi: 10.1353/hpu.0.0161
- Singhal, A., & Rogers, E. M. (1999). *Entertainment education: A communication strategy for social change*. Mahwah, NJ: Erlbaum.
- Slater, M. D., & Rouner, D. (2002). Entertainment education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory, 12*, 173–191. doi: 10.1111/j.1468-2885.2002.tb00265.x

- Snyder, L. B., Hamilton, M. A., Mitchell, E. W., Kiwanuka-Tondo, J., Fleming-Milici, F., & Proctor, D. (2004). A meta-analysis of the effect of mediated health communication campaigns on behavior change in the United States. *Journal of Health Communication*, *9*, 71–96. doi: 10.1080/10810730490271548
- Sood, S. (2002). Audience involvement and entertainment education. *Communication Theory*, *12*, 153–172. doi: 10.1111/j.1468-2885.2002.tb00264.x
- Sutton, R. S., & Barto, A. G. (1998). *Reinforcement learning: An introduction*. Boston, MA: MIT Press.
- Tal-Or, N., & Cohen, J. (2010). Understanding audience involvement: Conceptualizing and manipulating identification and transportation. *Poetics*, *38*(4), 402–418. doi: 10.1016/j.poetic.2010.05.004
- Unger, J. B., Cabassa, L. J., Molina, G. B., Contreras, S., & Baron, M. (2012). Evaluation of a fotonovela to increase depression knowledge and reduce stigma among Hispanic adults. *Journal of Immigrant and Minority Health*. doi: 10.1007/s10903-012-9623-5
- Valente, T. W. (2002). *Evaluating health promotion programs*. New York, NY: Oxford University Press.
- World Health Organization. (2010). WHO/ICO Information centre on HPV and cervical cancer: *Human Papillomavirus and related cancers in world*. Retrieved from <http://www.who.int/hpvcentre/en/>