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Understanding narrative effects: The role of discrete negative emotions on message processing and attitudes among low-income African American women

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Abstract

This study tests the processes through which breast cancer narrative messages are effective by taking a functional approach. We explore how discrete negative emotions (i.e., sadness, fear, and anger) induced by breast cancer survivor stories affect African American women's message processing, recall of message content, and attitudinal outcomes. Structural equation modeling was performed for narrative and informational versions of a breast cancer screening video shown to 409 low-income African American women ages 40 and older. The model was well fitted. Sadness enhanced the persuasive process, while fear inhibited it. Sadness also helped participants recall more message-relevant content, while fear inhibited recall. Anger was not related to the persuasive process. Implications of these findings for narrative research and application are discussed.

Keywords

mammography; persuasion; emotions; functional theory; narratives

In the United States, breast cancer is the most common cancer among women of all races (Baquet, Mishra, Commiskey, Ellison, & DeShields, 2008a). The good news is that rates for breast cancer diagnosis and mortality have been steadily dropping since 2000. The bad news, however, is that serious disparities in breast cancer mortality still exist between African American and Caucasian American women. It has been consistently reported that black women's breast cancer mortality rate is significantly higher than white women's, although the incidence of breast cancer is highest among white women. These disparities are mainly due to the fact that black women are far less likely to get regular mammograms than white women (DeLancey, Thun, Jemal, & Ward, 2008), which ultimately results in delayed diagnoses and treatment among them (Baquet, Mishra, Commiskey, Ellison, & DeShields, 2008b). Therefore, to eliminate breast cancer mortality disparities, and more generally, to motivate women to perform protective breast cancer behaviors (e.g., getting regular

mammograms), effective health promotion and prevention campaign strategies are often proposed and discussed (Earp et al., 2002; Freimuth & Quinn, 2004).

Recently, health communication has emerged as an important tool for eliminating health disparities (Freimuth & Quinn, 2004) as the National Cancer Institute (NCI) identifies “communications” as one of the crosscutting issues that can influence outcomes of cancer-related experiences. Great efforts have been made to design effective messages targeting various populations. Among many different forms of messages, narratives are emerging as a promising approach for communicating cancer-related information (Green, 2006). Various explanations have been proposed to understand the mechanisms of how narrative forms of communication influence one’s health-related decisions (for a review, see Green, 2006). The function of discrete emotions in narrative messages, however, has not yet been fully examined. Understanding the mechanisms through which discrete emotions influence message processing is essential for maximizing the effectiveness for designing cancer-related persuasive messages.

To investigate these mechanisms, the current study explicates the process through which narrative messages are effective by taking a functional approach. Specifically, we explore how discrete negative emotions induced by cancer-related messages help the audience to; (1) pay attention to messages, (2) recall message content, and (3) attain a positive attitudinal outcome. The following sections review the existing literature on narrative persuasion research in the context of cancer communication.

Understanding Narrative Effects

Narrativeⁱ 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, Kreuter et al., 2007). Narratives use storytelling and testimonials to portray events and consequences for characters, while informational messages are usually represented by statistical information or expository styles of communication by presenting reasons and evidence to support a claim (Kreuter et al., 2007).

Using narrative communication is known to be an effective means of promoting health-related behaviors especially for African American population, because of a number of unique communication characteristics of African American populations. First of all, African American population is believed to have a strong oral tradition, as Gates states, “Telling ourselves our own stories... has as much as any single factor been responsible for the survival of African Americans and their culture” (1989, p. 17). Building on this tradition, the Witness Project is believed to be one of the most prominent applications of cultural narratives for health communication. The Witness Project is designed to promote breast and cervical cancer screening through cancer survivors who talk about their experiences with other African American women (Erwin, Spatz, Stotts, & Hollenberg, 1999; Erwin, Spatz,

ⁱNarrative messages have been called base rate messages (Baesler & Burgoon, 1984) or example evidence (Allen & Preiss, 1997), while informational messages have also been called statistical evidence messages (Allen & Preiss, 1997) and logical argument messages (Kopfmien et al, 1998).

Stotts, Hollenberg, & Deloney, 1996; Erwin, Spatz, & Turturro, 1992). Perhaps, because of this close association between African American culture and narratives, African American working class women view their common sense as real intelligence rather than school-based knowledge (Luttrell, 1989). Kreuter and colleagues (2008) explain that those who value such experience-based knowledge are more likely to have positive responses to narrative messages than informational messages.

In general, storytelling is known as a primary means for humans sharing social information and experiences, thus it is a “comfortable and familiar” mode of receiving and processing information (p. 778, Hinyard & Kreuter, 2007). Hinyard and Kreuter argue that narrative approaches make health information more contextual and meaningful, so the audience is more likely to engage in the narrative messages. This line of reasoning suggests that use of narrative messages can increase attention to and facilitate information processing regarding cancer prevention and detection. Some studies argue that narrative messages can facilitate attention, comprehension, and recall of cancer-related information (Green, 2006; Green, Strange, & Brock, 2002).

In line with this notion, Green and Brock (2000) indicate when audience members become engaged in a narrative story, they are more likely to endorse the story-consistent beliefs. When they become both emotionally and cognitively involved in a narrative story, they are less likely to generate counterarguments against the persuasive message. Research on entertainment-education also suggests that narrative-based message is capable of absorbing an audience’s attention and cognitive efforts, however, it simultaneously reduces one’s desire to critically process information. For instance, Nabi, Moyer-Guse, and Bryne (2007) examined the effect of humor on information processing and persuasion, and found that the more participants involved with the persuasive message emotionally (e.g., the funnier respondents found a message), the deeper they processed the message (e.g., the more attention paid to the message), and the less they counterargued. Therefore, it can be speculated that deeper involvement with the health message generated by narrative message (as opposed to informational message) is associated with reduced counterarguments (Green & Brock, 2000; Slater & Rouner, 2002). In line with counterarguments, Kreuter and colleagues (2007) believe that one potential advantage of using narratives in a cancer prevention and control context is their ability to help audiences overcome resistance to cancer-related information. In the persuasion literature, resistance is broadly defined as a motivation to oppose persuasive appeals (Knowles & Linn, 2004). Resistance is a particular problem in the cancer communication context because people are generally optimistic about their own health and try to maintain this optimistic bias rather than to be challenged by the cancer-related messages. It has long been recognized that individuals become more resistant to a persuasive message if they detect the message’s persuasive attempt (Petty & Cacioppo, 1977). Some scholars argue that owing to a relatively unobtrusive form of persuasion, narrative messages can be an effective means of reducing resistance among audiences (Moyer Gusé, 2008; Slater & Rouner, 2002). Narrative messages can reduce counterarguing, one of the common ways in which people resist persuasive appeals. Counterarguing often involves generating thoughts that dispute or reject message recommendations or implications (McQueen, Kreuter, Kalesan, & Alcaraz, 2011). By engaging audiences in a

narrative, they are less likely to generate counterattitudinal thoughts; thus, using a narrative message can maximize the persuasive outcomes (Slater & Rouner, 2002).

Furthermore, it has been previously documented that medical mistrust among African Americans is relatively higher than among whites in the United States (LaVeist, Nickerson, & Bowie, 2000). Kreuter and colleagues (2007) argue narrative messages can be particularly useful for that people who mistrust medical authorities. In line with their argument, narrative messages can reduce resistance and counterattitudinal thoughts among African American audiences. Therefore, designing effective narrative messages to promote cancer screening behaviors can be a means of reducing cancer disparities in breast cancer between African American and Caucasian American women.

There are several explanations of potential reasons why narrative messages might be more effective than informational messages. Among these, one possible explanation is that narrative messages generate greater emotional responses from audiences than informational messages (McQueen et al., 2011), and these emotional responses are able to enhance information processing. Narrative messages have power to evoke people's emotional responses, to impact people's beliefs, and to model behaviors (Dunlop, Wakefield, & Kashima, 2008). Several studies have demonstrated that the story that elicited greater negative emotional responses had produced greater message elaboration and empathy or involvement with narrative messages through absorption into the messages than the story that did not elicit emotional responses (Green & Brock, 2000; Slater & Rouner, 2002).

McQueen and colleagues (2011) also found that negative emotion was positively associated with liking the breast cancer messenger, as well as engagement with the breast cancer message. McQueen et al.'s study is noteworthy because it is one of the few studies that examine emotional responses as a mediating state to better understand the mechanism of narrative effects. However, their study only observed how the valence of emotion (positive vs. negative) functions as a mediating factor, and did not test the functions of discrete emotions evoked by the persuasive messages. This approach is yet to be explored in the narrative literature, and has great potential to extend understanding whether and how discrete emotions mediate the persuasion process in unique ways. The following sections review existing persuasion research that focuses on the functional emotion approach and message processing.

Discrete Emotions in Breast Cancer Messages

Emotions are commonly defined as internal mental states that are caused by an evaluation of events, people, or objects (Ortony, Clore, & Collins, 1988). Emotions are generally believed to affect what people notice and remember (Dolan, 2002) because they evoke physiological responses that add a dimension of experience (Kensinger, 2009). It has been widely known that evoking emotional responses to persuasive messages can be an effective way of influencing people's attitudes, intentions, and behaviors (Dunlop et al., 2008). Especially in the field of health communication, persuasive messages that arouse more emotion tend to be recalled better, and perceived as more effective than persuasive messages that arouse less emotion (Biener et al., 2006; Dillard & Peck, 2000).

Functional emotion theories, which originated in Darwin's (1872/1965) seminal work, suggest that behaviors emitted in response to emotions serve adaptive functions developed through evolutionary processes (Izard, 1977; Izard & Ackerman, 2000). Psychologists have assumed that humans learn appropriate emotions in order to adapt to particular situations (Barr-Zisowitz, 2000) and that this adaptation ensures human welfare and survival (Berscheid, 1984). These theories posit that each emotion has a distinctive motivation to arouse, sustain, and direct cognitive and/or physical activity (for a review, see Nabi, 2002b). More specifically, emotions tend to motivate adaptive thoughts and actions in order to cope with that particular emotion depending on its nature and meaning for the individual experiencing it (Izard, 2002). Although it varies slightly, most functional emotion theorists propose a general conceptualization of the emotion process. In the first stage, an object or event (regardless of internal or situational conditions) is perceived to be an appraisal for personal well-being. These appraisals lead to subjective emotional responses, where one feels a certain state of action readiness. This action readiness is associated with adaptation and coping activities, since emotions function as motivators of behavior (Izard, 1977; Lazarus, 1991). The motivation is usually represented by its action tendency, which refers to the emotion's ability to promote some type of problem-solving activity in those who experience particular emotions (Lazarus, 1991).

Based on these premises conceptualized by functional theorists, Dillard and Nabi (2006) suggest that each discrete emotion has a unique action tendency, and thus has a different impact on the persuasion process regarding perceptions, cognitions, and even behaviors based on the goal set by the emotion's action tendency. Recently, using this functional approach, Dillard and Nabi (2006) presented a set of propositions that guides the effective use of discrete emotions in creating cancer prevention and detection messages. In their first proposition, they claim that cancer-related messages can usually arouse various negative emotions.ⁱⁱ These various discrete emotions induced by the persuasive message can have a unique influence on message processing and persuasive outcomes (Dillard & Nabi, 2006; Nabi, 2002b). This functional emotion approach is closely related to Dillard and Nabi's fourth proposition regarding cancer messages, "Emotions can enhance, inhibit, or be unrelated to the persuasive effectiveness of cancer-related messages" (p. 128, Dillard & Nabi, 2006). In this proposition, Dillard and Nabi claimed three arguments. First, some emotional states might enhance or impede message processing or persuasive outcomes. Their second argument, however, indicates that these discrete emotions function differently under different circumstances. For instance, a certain emotion functions as a facilitator of message processing in one persuasion setting, but the same emotion can also function as an inhibitor in another persuasion setting. Lastly, it is also possible that emotional arousal

ⁱⁱDillard and Nabi (2006) claimed that cancer-related messages have the potential to arouse various negative emotions as well as various positive emotions. In this paper, we will specifically focus only on negative emotions because of the following reasons. First, it is common that cancer-related messages predominantly elicit negative emotions, including fear, sadness, and anger in particular. Second, unlike consumer marketing campaigns where the primary goal is to elicit positive feeling to a product, public messages often elicit negative emotions because these messages are purported to highlight the negative consequences of risky behaviors and to promote healthy behaviors (Dunlop, et al., 2008). Negative emotions are generally known to be more capable of motivating individuals to perform desirable behavioral outcomes than positive outcomes (Bagozzi & Moore, 1994). We will also focus on unintentionally aroused negative emotions in this study that these messages were not designed to elicit specific emotions such as fear appeals or anger appeals.

might not be related to persuasive outcome at all, meaning that, although multiple emotions are aroused, not every emotion will lead to a persuasive outcome.

Breast cancer is an emotionally charged disease, thus, various negative emotions can be produced by cancer-related messages. Among these various emotions, three negative emotions, fear, sadness, and anger, are known as the most frequently experienced emotions in the context of breast cancer (Lieberman & Goldstein, 2006; Smith et al., 2010). For instance, after being exposed to breast cancer messages, it is natural for women to feel afraid of being diagnosed with breast cancer given the frightening and life-threatening nature of cancer. At the same time, the loss of a breast, of time, of money, of relationships, and of control over their lives is likely to evoke sadness among women. They also may feel angry to think about such an unpleasant topic, which closely related with reactance (Dillard & Nabi, 2006).

Fear is generally evoked when a circumstance is perceived as threatening to one's physical or psychological self (Lazarus, 1991). According to functional emotion theories, when individuals perceive high levels of fear, they are motivated to escape from the threatening agent (Izard, 1977), and avoidance behavior will follow (Frijda, 1986; Lazarus, 1991). However, a moderate level of fear actually motivates individuals to engage in problem-solving behaviors to prevent the feared event from happening (Lazarus, 1991). Meta-analyses of empirical findings illustrate that fear, in general, has a positive effect on both attitude and behavior change (Boster & Mongeau, 1984; Mongeau, 1998). Fear makes people perceive greater risk in the environment (Lerner & Keltner, 2001), and as a result, fear appears to facilitate systematic information processing (Tiedens & Linton, 2001), as reflected in listing larger numbers of issue-relevant thoughts or recalling the persuasive message contents (Meijnders, Midden, & Wilke, 2001; Slater, Karan, Rouner, & Walters, 2002). In the realm of cancer communication, Ruiter and colleagues (2001) found that fear facilitated more argument-based processing of a message promoting breast self-exam behavior. Furthermore, fear significantly predicted cancer-detection behaviors (e.g., mammogram), such that women recalling memorable messages that evoked fear were more likely to engage in detection behaviors (Smith et al., 2010).

Sadness is an emotion experienced from an event which results from (imagined or real) lost or unachieved goals (Barr-Zisowitz, 2000; Ellsworth & Smith, 1988). Sadness is known to facilitate problem-solving activity by increasing individual inward evaluation as an attempt to recover the loss (Nabi, 1999). Lazarus (1991) also explained that sad individuals are more likely to put forth effort "to remove any trace of sadness" (p. 251) to restore the baseline mood. Therefore, audiences who are exposed to a message that evokes sadness will be more likely to engage in issue-relevant thinking rather than emotion-relevant thinking. This is closely associated with how sadness is positively correlated with attitude change in various contexts (Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996; Nabi, 2002a). Numerous empirical findings also suggested that sadness motivates more systematic information processing (Bless, Bohner, Schwarz, & Strack, 1990; Bohner, Chaiken, & Hunyadi, 1994).

Anger is generally evoked when obstacles interfere with goal-oriented behavior or one experiences demeaning offenses against oneself or one's loved ones (Izard, 1977; Lazarus,

1991). A few studies found that when the persuasive message intentionally and properly induces anger, a positive relationship is found between anger and attitude change, because anger is often associated with highly focused attention and careful message processing (Butler, Koopman, & Zimbardo, 1995; Nabi, 2002a). However, unintentionally induced anger has been shown to have a negative correlation with attitude or persuasive outcomes (Dillard et al., 1996). Nabi (2002b) explains that the unintentionally induced anger could be directed against the message creators, perhaps as a form of reactance, which later undermines the persuasive influence of the message. Regarding the relationship between reactance and anger, it is plausible to argue that narrative messages can elicit relatively less anger among the audience members because of its subtle form of persuasive attempt.

Overall, it is reasonable to believe that fear and sadness are the emotions that facilitate systematic processing, whereas anger appears to impede persuasive processing. In this light, Dillard and Peck (2000) found that fear and sadness were positively related to perceived effectiveness of the persuasive message, while anger detracted from persuasive effectiveness. The perceived effectiveness of the persuasive message is an important antecedent of actual effectiveness, including attitudinal outcomes or behavioral intention (Dillard & Peck, 2000). To this end, this study will assess how three different negative emotions function uniquely as mediators to message processing and attitudinal outcomes in cancer communication.

Hypotheses and Research Questions

Based on the above empirical and theoretical rationales, the following hypotheses and research questions correspond to our proposed mediation model (see Figure 1). In our proposed model, we speculate that fear and sadness will help participants to pay more attention to the message contents, while anger will inhibit the process. Participants who pay more attention to the persuasive message will recall more of the message contents accurately at a 3-month follow-up, and thus, will ultimately develop fewer counterarguments against the cancer-related messages.

H1: Cancer messagesⁱⁱⁱ will be significantly related to three discrete negative emotions (a) fear, (b) sadness, and (c) anger.

H2: Discrete emotions produced by the messages will be directly related to attention. (a) Fear and (b) sadness will be directly and positively related to attention while (c) anger will be directly and negatively related to attention.

H3: Attention will be directly and negatively related to counterargument.

Additionally, we will explore how discrete emotions vary in terms of recalling message contents. As predicted by our proposed hypotheses, if certain emotions (fear and sadness, in this study) are able to enhance systematic processing, it will be also plausible to argue that these emotions will aid individuals to recall the contents in the persuasive messages, because

ⁱⁱⁱWe used message type as a dummy variable (narrative = 1).

message recall is often highly correlated with the amount of attention given to the persuasive message (Roser, 1990). Therefore, the following hypothesis is proposed.

H4: Message recall (i.e., closed-ended format) will be positively affected by (a) fear, and (b) sadness, but negatively affected by (c) anger.

In particular, the functional approach suggests that each emotion has a unique action tendency, and this action tendency can function as guiding selective information processing. This implies that based on these action tendencies, some information is more likely to be attended to and recalled while other information is more likely to be ignored (Lazarus, 1991). Regarding this issue, Nabi (2003) found that when anger was provoked, participants were more likely to focus on retributive information while when fear was provoked, participants were more inclined to focus on protection-related information. This line of reasoning can be extended to the current study that these discrete emotions have the capacity to help the audience to recall the key messages about the breast cancer, which include (1) breast cancer risk, (2) the importance of mammogram, and (3) the importance of breast cancer communication. It will be important to analyze how these discrete emotions help the audience recall the key messages.

RQ1: Which types of discrete negative emotion (fear, sadness, and anger) will be associated with recalling specific message contents (i.e., open-ended format)?

Methods

Participants

Study participants were recruited between October 2007 and March 2008 using neighborhood canvassing approaches in areas of St. Louis, MO where the rate of late-stage breast cancer diagnosis was two times higher than the statewide rate for Missouri (Lian, Jeffe, & Schootman, 2008). Neighborhoods in these areas were divided into block units, and 10 block units were randomly selected each week without replacement. A delivery van converted into a mobile research facility (i.e., “*Neighborhood Voice*”) was used for both recruitment and administering the research protocol (Alcaraz, Weaver, Andresen, Christopher, & Kreuter, 2011). Recruitment flyers were either distributed to all occupied residences in person, or placed in nearby public sites such as large apartment complexes or grocery stores. Each flyer contained information regarding the *Neighborhood Voice* mobile research unit, research trial, eligibility criteria, dates and times the *Neighborhood Voice* would be visiting their neighborhood, and how they could participate. Eligibility criteria included being an African American female, age 40 years or older, never diagnosed with breast cancer, and having at least the fifth-grade level of literacy skills. The study only included African American women because: (1) the residents in these blocks are predominantly black; (2) African American women’s breast cancer mortality rate is significantly higher than any other ethnicities in the United States.

A total of 409 African American women with an average age of 61.13 ($SD = 12.08$) were recruited into the study. Among these, 67% had a high school education or less, and 77% had an annual household income of \$20,000 or less. At 3-month follow-up, 403 women

(82.4%) were reached via telephone and completed a follow-up interview. Characteristics of the follow-up sample were similar to the full sample: average age was 60.44 ($SD = 11.45$), 65% had a high school education or less, and 75% had an annual household income less than \$20,000. Women received a \$20 grocery store gift card for each phase of the study in which they participated.

Message Stimuli

In order to test the effectiveness of narratives, we created two videos, *Living Proof* (i.e., narrative message) and *Facts for Life* (i.e., informational message). Both videos contained key messages about (1) breast cancer risk (i.e., “you can get breast cancer at any age”; “you could have breast cancer without knowing”), (2) the importance of breast cancer communication (i.e., “learn your family history”; “talk openly about breast cancer”), and (3) the importance of getting regular mammograms (i.e., “mammograms can find breast lumps before you can tell them”; “get a mammogram yearly or every 1–2 years”). The *Living Proof* video featured African American breast cancer survivors as they provide this information in the form of personal stories. The *Facts for Life* video featured an African American woman narrator who presented the same information in expository form. In order to assure content equivalence of the two videos, *Living Proof* was produced first, and later used as the basis for *Facts for Life*, so equivalent information was presented in both videos. Both videos were the same length (22:41 and 22:37), and produced by the same commercial video production company. Results of a large pilot study ($n=150$) indicated that the information presented in the two videos was equivalent in terms of production quality and ease of understanding (for more information on videos, see Kreuter et al., 2010).

Procedures

While onboard the *Neighborhood Voice*, participants provided informed consent and were randomly assigned to watch either the narrative or informational video. Immediately after watching the video, participants were asked to complete a survey (T1) on a 20" touch-screen computer monitor. The immediate outcomes measured at T1 included (1) negative emotions, (2) attention, and (3) demographic information. Telephone surveys were conducted at 3 months post-intervention (T2) which included (1) message recall and (2) counterargument measures.

Measures

Negative emotions—Cancer-relevant negative emotions were measured immediately after viewing the video (T1) using adjectives from the Positive and Negative Affect Scale (PANAS) (Watson, Clark, & Tellegen, 1988). The questionnaire asked participants to indicate how the video made them feel. They were presented with eight adjectives intended to measure negative emotions (e.g., “Watching this video made me feel sad,” “Watching this video made me feel afraid,” etc.). For each emotion, participants were asked to describe the strength of their emotional reactions on a 5-point Likert-type scale (e.g., 1 = very slightly or not at all, 5 = extremely).

After data collection, we conducted an exploratory factor analysis (EFA) of the eight emotions using Mplus version 5.21 and SAS 9.2. The scree plot was used to determine the

number of meaningful factors. We conducted the EFA with geomin (oblique) rotation for interpretation for emotion. According to chi-square model fit test, we selected a three-factor solution ($\chi^2=15.367$, $df=12$, $p=.22$) in which “worried”, “sad” and “concerned” loaded to a factor we called *sadness*^{iv}; “afraid”, “uncertain”, and “suspicious” loaded to a factor we termed *fear*; and “angry” and “frustrated” loaded to a factor we termed *anger*. These indicators were exclusively loaded to the factors with loadings of 0.4 or greater. The factor structure indicated that these discrete negative emotion factors emerged with no cross-loadings. The internal consistency reliability for the *sadness* factor is .63 ($M=2.83$, $SD=.98$) and for *fear* is .71 ($M=1.86$, $SD=.94$). We did not compute alpha for anger, because there are only two indicators; the correlation between these two indicators is .52 ($p<.001$, $M=1.28$, $SD=.65$).

To confirm the factor structures, a CFA was conducted on the eight emotion items included in the current study using the Mplus software (Muthen & Muthen, 2001). The inter-item covariance matrix was used as input to obtain ML estimates of parameters and model fits. Each item was constrained to load on one of three emotion factors. The CFA results indicate that overall model fit is good with $\chi^2(17)=17.76$, and the chi-squared to degree of freedom ratio = 1.04. Other indices also suggested a very good fit between the confirmatory factor model and the data, with comparative fit index (CFI) = .99, Tucker-Lewis index (TLI) = .99, and the root mean square error of approximation (RMSEA) = .01.

Attention—In determining how much attention participants paid to the video, a four-item measure was created using a 5-point response format (e.g., 1 = strongly disagree, 5 = strongly agree). The example items included, “This video held my attention,” and “It was hard for me to pay attention for the whole time the video was playing (reversed item).” EFA indicated a one factor solution for attention ($\chi^2=5.696$, $df=2$, $p=.06$). All of these indicators were loaded exclusively to the related factor with 0.4 or greater. Reliability for this composite measure was moderate ($\alpha=.73$, $M=4.34$, $SD=.86$).

Counterargument—A one-item measure using a 5-point response format (e.g., 1 = strongly disagree, 5 = strongly agree) assessed participants’ disagreement with the content of the video, which was measured at T2. The item was, “Since watching the video I had a lot of thoughts against the things said in the video.” The higher score indicated the more disagreement with the content of video ($M=1.99$, $SD=1.40$).

Message Recall—Message recall was assessed using both closed- and open-ended responses. The closed-ended questions consisted of five statements of breast cancer facts which were featured in the video, and participants were asked to identify whether these

^{iv}The potential reason why these indicators (i.e., sad, concerned, worried) clustered as one factor (i.e., sadness) is due to the high correlations among sadness, sympathy, and personal distress (Eisenberg et al., 1991). According to Eisenberg and colleagues (1991), the adjective “concerned” was used to measure one’s sympathy level while “worried” was used to measure one’s personal distress level. It should be noted that sympathy and personal distress are similar in that these both originate from sadness; however, if sympathy is other-oriented concern or sorrow, then personal distress is self-oriented discomfort. To elaborate, when a person feels sad for another person, it increases the likelihood of sympathy, which is known as an affective response of sorrow or concern for the troubled or needy person (Eisenberg, 2000; Eisenberg & Miller, 1987). In contrast to sympathy, when a person becomes sad for him- or herself after reading a sad message, it sometimes causes “personal distress” (Eisenberg, 2000). Personal distress also stems from empathy, but it refers to the unpleasant feelings of personal anxiety and worry regarding one’s own wellbeing (Eisenberg & Miller, 1987). For the analysis purpose, we will use all of three indicators as the factor “sadness”.

statements were discussed in the video or not (a “not sure” option was also provided) during the phone interview at T2. Participants’ scores were calculated as the total number of correctly identified responses (a “not sure” response was regarded as an incorrect response). The higher score indicated the more correctly participants recalled the contents of the video ($M = 3.38$, $SD = .71$).

During the phone interview at T2, participants were asked, “What is the one thing you remember most about the video you watched?” These open-ended responses were recorded, transcribed, and coded by trained research staff blinded to study condition. Coders first grouped each response into three categories of *topic* (mentioned “breast cancer,” or “mammogram”), *messenger* (mentioned the women talking in the video), and *content* (mentioned any key messages in the video such as “breast cancer risk,” “the importance of mammogram,” or “the importance of talking about breast cancer to others”). Inter-coder reliability was high (Kappa = .98, .92, and .84 respectively; for more information, see Kreuter et al., 2010).

Results

Model Testing

Because the indicators on the latent factors were non-normally distributed, the maximum likelihood method with adjusted chi-square test statistics (MLM) was used. The model fit the data very well, with $\chi^2(69) = 94.82$, and the chi-squared to degree of freedom ratio = 1.37. Other indices also suggested a very good fit between the model and the data, with comparative fit index (CFI) = .98, Tucker-Lewis index (TLI) = .97, and the root mean square error of approximation (RMSEA) = .03 (see Figure 2). Covariance among these emotions was high. The covariance between sadness and fear was .87 ($p < .001$), between sadness and anger was .42 ($p < .001$); and between fear and anger was .55 ($p < .001$).

Hypotheses testing

Hypothesis 1 predicted that cancer messages would be significantly related to fear (H1a), sadness (H1b), and anger (H1c). The model provided partial support for this hypothesis. As shown in Figure 2, the type of cancer communication significantly predicted fear ($\beta = .11$, $p = .044$) and sadness ($\beta = .30$, $p = .000$), but not anger ($\beta = -.02$, $p = 0.763$). This result indicated that the narrative video had a stronger impact on provoking fear and sadness than the informational video, but there was no difference in terms of provoking anger.

Hypothesis 2 predicted that discrete emotions provoked by the videos would be significantly related to attention paid to the video, more specifically that fear (H2a) and sadness (H2b) would positively predict attention while anger (H2c) would predict less attention. This hypothesis was partially supported. Path coefficients of sadness ($\beta = .82$, $p = 0.002$) and fear ($\beta = -.72$, $p = 0.014$) to attention were significant but only sadness was positively related to attention, while fear was negatively related. Anger was not significantly associated with attention ($\beta = -0.21$, $p = 0.103$). As predicted, the more sadness that was aroused in participants, the more attention that was paid to the video. Contrary to our prediction, the more fear participants felt, the less attention they paid to the video.

Hypothesis 3 predicted a significantly negative relationship between attention and counterargument. This hypothesis was supported. As participants paid more attention to the videos, they were less likely to report having thoughts against the video ($\beta = -0.22$, $p = 0.000$).

We proposed H4 and RQ1 to further understand the effect of discrete emotions, and its relation to general message recall and selective information processing.^v Two different methods were used to assess message recall. The closed-ended response format assessed the general recall of the video topics, and the open-ended response format assessed recall of specific messages in the video. H4 proposed that fear and sadness would positively affect message recall, while anger would negatively predict message recall. This hypothesis was partially supported. Sadness positively predicted message recall ($\beta = .13$, $p < .05$), and anger negatively predicted message recall ($\beta = -.14$, $p < .001$). These findings imply that sadness facilitates message recall, while anger impedes it. Contrary to our prediction, fear did not significantly predict message recall ($\beta = .04$, $n.s$).

A set of logistic regression analyses was used to identify how different types of negative emotions predict recall of the specific video features. Sadness was the only emotion that helped participants remember cancer risk messages ($\beta = .38$; OR, 1.46; 95% CI, 1.02–2.08, $p < .05$), and fear actually inhibited participants from remembering the risk messages ($\beta = .38$; OR, .64; 95% CI, .43–.98, $p < .05$).

Discussion

This study addressed the role of discrete emotions in order to further understand the mechanism of narrative messages by employing a functional emotion approach. The findings advance existing knowledge of three common negative emotions: fear, sadness, and anger. Narrative messages are proposed to have several unique advantages over traditional informational messages (McQueen et al., 2011). Among these advantages, we focused on narrative messages' ability to produce emotional responses, and extended past research by identifying discrete emotions that reinforced or inhibited the persuasive effectiveness of cancer-related messages. When participants felt sad watching the breast cancer video, they paid more attention to the message were less likely to generate thoughts and ideas rejecting its message.

This study advances existing knowledge in a few ways. It is the first study of narrative health communication to examine the role of discrete emotion as a mechanism of narrative effects. There have been a number of attempts to examine emotion as an antecedent condition for persuasive outcomes, but these studies did not consider the unique role of each discrete emotion, instead treating emotion as a single construct (e.g., emotional involvement, emotional response, etc.). For instance, Morgan and colleagues (2009) found that emotional

^vWe also examined which type of message would predict message recall by conducting univariate ANOVA. Participants who read the narrative message ($M = 3.84$, $SD = .56$) significantly had a higher score on message recall (i.e., closed-ended format) than participants who read the informational message ($M = 2.90$, $SD = .51$), $F(1, 408) = 317.33$, $p < .001$. For the specific contents of the message, the logistic regression analysis revealed that participants who read the narrative message recalled the breast cancer risk content ($\beta = .66$; OR, 1.94; 95% CI, 1.08–3.49; $p < .05$) significantly better than those of who read the informational message.

involvement in a narrative significantly predicted perceived motivation to become an organ donor. However, emotional involvement was assessed using a single item (i.e., “I felt emotionally involved in this storyline”) and the study did not distinguish the unique role each discrete emotion was playing.

Dillard and Peck (2001) argued that emotional impact should not be assessed by the simple function of affect intensity, because the emotional process is far more complex than that. In a similar fashion, Nabi (2003) criticized the general state of such research for its focus on valence rather than discrete emotions, most commonly just dividing emotional responses into positive and negative emotion. This trend oversimplifies the complex process of how discrete emotions uniquely influence the persuasion process. It is highly plausible that different emotions have different action tendencies, thus, various combinations of these emotions can have significantly different impact on direction or depth of information processing (Nabi, 2002b). It was evident from the current study that even though fear, sadness, and anger are all negative emotions, they were often associated with message processing variables in different ways. Focusing on emotional valence alone might lead to inaccurate conclusions and missed associations. In line with this notion, it is exceedingly important to comprehend accurately each discrete emotion’s function, and further to identify facilitating emotions and inhibiting emotions to design effective messages in the various persuasive contexts.

The current study provides considerable insight into how cancer survivor narratives, as opposed to an informational video, provoked discrete negative emotions (mediating emotional states), and in turn, how these mediating emotional states contributed to persuasive outcomes. However, O’Keefe also expresses concern that many persuasion studies overlook the intrinsic features of a message variation on persuasive outcomes. This is especially problematic considering how little guidance can be provided to message designers who create health campaign messages, such as cancer prevention and detection messages. Therefore, future research may need to examine what types of specific message features induces which types of discrete emotions.

The findings of the current study imply that sadness might be a valuable emotion to arouse in order to enhance message processing and persuasive outcomes of cancer communication. The results of the study confirmed that sadness provoked by cancer prevention and detection messages operated as a significant facilitator for message processing. When the messages evoked more sadness within participants, they were more likely to pay attention to the message, and as a result were less likely to have counterattitudinal thoughts. This finding is similar to Dillard and Peck’s (2000); sadness enhanced the perceived effectiveness of persuasive messages, and in turn, the perceived effectiveness functioned as a significant predictor of the persuasive outcome. In spite of having numerous studies indicating the persuasive function of sadness, sadness has not been receiving attention from the communication field (Dillard & Peck, 2001), therefore, more refined research on sadness is needed.

Fear was also significantly associated with participant attention to the videos, however, the direction of the relationship was contrary to our prediction. The more fear participants felt

viewing the video, the less likely they were to attentively process the message. Fear impeded participants' ability to recall information about breast cancer risk, while sadness enhanced participants' ability to recall the same information. This negative relationship between fear and message processing is not completely surprising because there are a few studies that contradict the effects of fear arousal on information processing in that chronic fear or message-induced acute fear might lead to less careful message processing if the audience cannot find reassurance within the message (Gleicher & Petty, 1992; Hale, Lemieux, & Mongeau, 1995). We expected that having information about the response efficacy of mammograms might generate such reassurance, however, the findings suggest otherwise. We can infer that if mammogram information generated reassurance in participants, fear should have been positively associated with attention, and fear should have been significantly helped participants to recall more mammogram information within the cancer message. Unfortunately, the current study did not directly test whether participants perceived mammogram information as a reassurance cue within the message. Future research might examine what types reassuring cue might improve the persuasive function of fear in cancer-related messages. If it is chronic fear of cancer, a study could also investigate whether certain participant predisposed characteristics like having a close friend with cancer or fatalistic beliefs about cancer might interact with certain messages to arouse specific types of discrete emotion.

Based on the study's findings, how do we judge the net effectiveness of narratives? On the one hand, they evoked more sadness than the informational video ($\beta = .30, p < .001$), which in turn enhanced several communication outcomes. On the other hand, they also evoked more fear ($\beta = .11, p < .05$) which inhibited these same outcomes. Nabi (2002b) suggests that although multiple emotions can be evoked by a persuasive message, it is common that one emotion will dominate information processing and other persuasive outcomes. In the current study, the cancer messages produced different levels of emotional arousal. For narrative and informational videos combined, the intensity of emotional arousal was strongest for sadness ($M = 2.83, SD = .98, \text{variance} = .95$), followed by fear ($M = 1.86, SD = .94, \text{variance} = .88$) and anger ($M = 1.28, SD = .65, \text{variance} = .42$). Comparing the narrative and informational videos, a simple ANOVA revealed that the participants who viewed the narrative video reported significantly higher level of sadness than participants who viewed the informational video ($F(407) = 21.90, p < .001$), while there were no significant group differences on the other two emotions. The evidence also suggests the greater influence of sadness on attention ($\beta = .82, p < .001$), as opposed to the fear on attention ($\beta = -.72, p < .05$). It seems possible that sadness acted as the dominant emotion in the current study, which ultimately functioned as a facilitating agent to increase persuasive outcomes of the narrative message. Understanding the implications of multiple emotional responses on information processing deserves more attention from the field of communication (Nabi, 2002a).

Findings from this study provide valuable insights into narratives scholarship that discrete emotion produced by cancer messages should be considered as an important factor in terms of maximizing persuasive outcomes. Cancer is an illness often related with substantial physical, emotional, and social ramification. Future study should focus on the higher order

persuasive outcomes, such as actual cancer screening behavior through effective message designs using effective discrete emotions. The current study offers a valuable step to better understand the function of discrete emotions in narrative communication. More future research is needed in this area, in order to prevent cancer as well as to eliminate cancer disparities among underserved population.

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Figure 1.
The proposed model.

Figure 2.

The final SEM model.

Statistical significance indicated by * $p < .05$; *** $P < 0.001$. Manifest variables, error terms, and association among discrete emotion variables are not shown. Model fit statistics: $\chi^2 (69) = 94.82$, CFI = .98, TLI = .97, RMSEA = .03, chi-squared to degree of freedom ratio = 1.37.