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Formative Research Regarding Kidney Disease Health Information in a Latino American Sample: Associations among Message Frame, Threat, Efficacy, Message Effectiveness, and Behavioral Intention

Katheryn C. Maguire, Jay Gardner, Pradeep Sopory, Guowei Jian, Marcia Roach, Joe Amschlinger, Marcia Moreno, Gary Pettey & Gianfranco Piccone

Using prospect theory and the extended parallel process model, this study examined the effect of gain/loss message framing on perceptions of severity, susceptibility, response efficacy, and self efficacy (derived from the extended parallel process model), as well as perception of message effectiveness and behavioral intention in a community based Latino American sample. Results indicated no significant differences between a gain- and loss-frame for any of the outcome variables. In addition, message effectiveness, susceptibility, and response efficacy were the best predictors of intention to engage in early testing behavior.

Keywords: Prospect Theory; Extended Parallel Process Model; Threat; Efficacy; Behavioral Intention; Gain/Loss Framing; Message Effectiveness; Kidney Disease

According to the National Kidney Foundation (2007), one in five Americans either has chronic kidney disease (CKD) or is at increased risk for the disease. The risk of

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CKD is particularly high for Latino Americans because the leading causes of CKD, diabetes, and hypertension (i.e., uncontrolled or poorly controlled blood pressure), are widespread in this community (National Diabetes Information Clearinghouse, 2007; Zsemblik & Fennell, 2004). Early detection can help slow down the progression of CKD (National Kidney Foundation, 2007), and as such education about the need to get tested for kidney disease is important. Although a minority group with the highest growth rate in the United States (Larkey, Hecht, Miller & Alatorre, 2001; Wilcher, Gilbert, Siano & Arredondo, 1999–2000), Latino Americans continue experiencing racial and ethnic disparities in health information and health care (DuBard, Garrett, & Gizlice, 2006; Laveist, 2005; Moreno et al., 1997; Seils & Schulman, 2004; Wilcher et al., 1999–2000). One approach to overcoming these disparities is through improved communication of health information about CKD.

Planning for health communication campaigns should begin with formative research to help "define the scope of the problem, gather data on possible intervention strategies, learn about the intended audience, and investigate possible factors that might limit program implementation" (Valente, 2001, p. 107). Furthermore, professional communicators who are designing culturally and ethnically appropriate health education messages must base their interventions on carefully chosen theoretical perspective(s), as a mismatch between the theoretical perspective(s) used to guide message construction, the desired outcomes (e.g., prevention or detection activities), and/or the target population could have implications for the effectiveness of a health education campaign (Slater, 2006). The best way to make a campaign successful is to involve the target community during formative research (Bracht, 2001) in order to tailor campaign messages in both appropriate and effective ways (Merzel & D'Afflitti, 2003). Given that Latinos have been shown to be particularly marginalized in the health care system in the United States (Bentancourt, Green, Carrillo, & Maina, 2004) and are among the high risk groups for kidney disease (National Kidney Disease Education Program, 2006), the present study employed both prospect theory (Tvesrky & Kahneman, 1981) and the extended parallel process model (EPPM) (Witte, 1992) to determine how to best craft a message to motivate Latino Americans to get tested for CKD, as behavioral intention is often considered a determinant of behavior (Webb & Sheeran, 2006). In addition, given that "few educational materials have been designed specifically for nonwhite populations" (Parra-Medina, Wilcox, Thompson-Robinson, Sargent, & Will, 2004, p. 580), formative research in the target population is needed to create more effective and appropriate messages. Two overarching questions guided the project: (a) Is there an effect of gain/loss framing of early detection messages on behavioral intention and perceptions of threat, efficacy, and message effectiveness?; and (b) Which of the perceptions are significant predictors of behavioral intention?

Review of Literature

Gain and Loss Framing

Prospect theory (Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1981) views the subjective values of a choice's possible outcomes as crucial to a person's decision making and describes how people actually make decisions, rather than how they ought to. In particular, the way a message is framed, in terms of a gain or a loss, could have significant influence on a person's judgment of the message and choice of action (Iyengar & McGrady, 2005). Whereas loss-framed messages state motivating outcomes in terms of the negative (e.g., "you could die"), gain-framed messages state them in the positive (e.g., "you could save your life"). Prospect theory proposes that people treat risks related to a potential gain differently than they treat risks of a potential loss, and experiments testing the theory (Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1981) show that the prospect of a loss consistently weighs heavier than the prospect of an equal gain. This same effect holds true in the context of early detection, where a loss-framed message would be more motivating than a gain-framed message.

Indeed, Kalichman, and Coley (1995) explain that a loss-frame should "increase the probability of an individual's seeking medical diagnostic testing because the threat of learning one has a life-threatening illness is contrasted with the potential losses of not knowing" (p. 248). In early detection, whereas the loss-frame presents a choice between (a) taking a small action to avert death and disease, or (b) taking no action and risking death and disease, the gain-frame presents a choice between (a) taking the same small action and maintaining the status quo (being healthy), or (b) doing nothing and getting nothing. Furthermore, whereas the loss-frame asks for a small change in behavior (e.g., a simple blood test) in exchange for averting disease or death, the gain-frame requires the same behavior but in exchange for nothing—just keeping what you have. In support of this reasoning, studies have yielded consistent support for the advantage of loss-framed messages over gain-framed messages for encouraging early detection behaviors (Edwards, Elwyn, Covey, Matthews, & Pill, 2001; Lee & Aaker, 2004; Perloff, 2003; Umphrey, 2003). Schneider's (2006) review of framing research conducted in minority populations (primarily the African American community) further concluded that "loss-framed messages appear to promote detection behaviors better than gain-framed messages" (p. 817), although other factors, such as certainty of beliefs about the diagnosis, level of personal involvement, and level of optimism could mitigate the effect. The present investigation seeks to replicate the results regarding the loss-frame superiority within the context of kidney disease prevention in the Latino community. Thus, the following hypothesis is proposed:

H1: A loss-frame will have a greater influence than a gain-frame on behavioral intention for Latinos.

The Extended Parallel Process Model, Gain–Loss Framing, and Behavioral Intention

Whereas prospect theory provides guidance on how to frame a message as a loss or a gain to motivate action, it does not address efficacy, which is also an important component of health campaign design (Atkin, 2001; Witte & Allen, 2000). The EPPM maintains that, to be successful, a persuasive health-related message must elicit a sense of threat sufficient to move the audience to action, and then provide a solution-oriented response that the audience perceives as efficacious (i.e., capable of producing the desired results) (Perloff, 2003; Witte, 1994, 1997; Witte, Cameron, McKeon, & Berkowitz, 1996). The feeling of threat should be of sufficient magnitude to motivate behavior without overwhelming the feeling of efficacy, which could lead audience members to engage in behaviors that manage the emotions, rather than the health threat.

The EPPM views threat as having two components: severity and susceptibility. Severity refers to how bad the audience perceives the potential outcome to be, whereas susceptibility refers to how likely the audience members perceive themselves to be affected by the threat. Audience members must perceive an issue to be both serious (severity) and likely to affect them (susceptibility) before they will respond to it. Furthermore, efficacy of the suggested response has two components: response efficacy, referring to how effective the recommended response is perceived to be; and self efficacy, referring to how capable the audience perceives itself to be in performing the recommendations. Audience members must perceive the recommended response capable of achieving the desired result (response efficacy), and they must perceive themselves as capable of carrying out the response (self efficacy). In a meta-analysis of fear appeal research, Witte and Allen (2000) showed overall support across fear appeal studies for EPPM's explanation of the roles of threat and efficacy, and for the model's components of threat (severity and susceptibility) as well as the components of efficacy (self efficacy and response efficacy).

Studies have shown the EPPM to be an effective model for health behavior messaging for detection behaviors such as breast self-examinations (Kline, 1995) and testicular self-examinations (Morman, 2000). Moreover, studies focusing on Latino Americans have successfully used the model as well. For example, Mexican American immigrant teens demonstrated a greater sense of threat and stronger intentions for AIDS protection behavior when exposed to a family-threatening message than they did from a self-threatening message, while African American teens receiving the same messages were more affected by a self-threatening message (Murray-Johnson, Witte, Liu, & Hubbel, 2001). In the context of CKD, Roberto, Raup-Krieger, and Beam (2009) found that high threat–high efficacy messages were associated with increased perceptions of susceptibility and behavioral intention to talk with a doctor about CKD in their sample of English-speaking Hispanics. Following these examples, this study also employs EPPM to determine the relationship among threat, efficacy, and behavioral intent in the context of CKD in a Latino American sample. Towards this end, the following research question is posed:

RQ1: Will the severity, susceptibility, response efficacy, and self efficacy components of the EPPM predict behavioral intention for Latinos?

The present study also extends the heath message design research that utilizes EPPM to examine how message frame influences perceptions of threat and efficacy in a Latino American sample. Given that EPPM is based on the premise that the emotion of fear motivates individuals to make threat appraisals and take action if necessary, it is likely that a message framed as a loss will elicit greater perceptions of threat in terms of susceptibility and severity than a gain-framed message. To test this assumption, the following hypothesis is offered:

H2: A loss-frame will have a greater impact than a gain-frame on perceptions of severity and susceptibility to CKD for Latinos.

The effect of message frame on perception of efficacy is less clear. On the one hand, given that a sense of efficacy has been shown to increase accessibility of attitudes toward danger control behaviors (Roskos-Ewoldsen, Yu, & Rhodes, 2004) and may motivate someone to take action when faced with a perceived threat (Witte & Allen, 2000), it is possible that a gain-framed message may present a more optimistic view of how a given action could prevent harm from happening in the face of a perceived threat. On the other hand, a loss-framed message may further heighten an individual's desire to take action and avoid harm, leading to higher appraisals of self efficacy than a gain-framed message. To explore this relationship, the following research question is posited:

RQ2: Will a loss-frame have greater influence than a gain-frame on the response efficacy and self efficacy components of the EPPM for Latinos?

Perception of Message Effectiveness, Gain–Loss Message Framing, and Behavioral Intention

An additional goal of this formative research was to assess how the target audience gauged the message itself. Due to the language barriers that non-native speakers may face, and that written health information may not take the target audience's cultural or ethnic heritage into account (Hebert, 2006; Moreno et al., 1997; Wilkin & Ball-Rokeach, 2006), it is important to assess the extent to which health messages are perceived as effective. Although the actual effectiveness of a message can be judged only when it is used in an actual campaign, campaign planners can measure perceived message effectiveness (e.g., the believability, memorableness, persuasiveness, and informativeness of the message), knowing that this measure can be a valid indicator of the message's likely impact when the actual effectiveness is observed (Fishbein et al., 2002; Dillard, Shen, & Vail, 2007; Dillard, Weber, & Vail, 2007). Based on this line of research, it is expected in the present study that message effectiveness will be associated with behavioral intention. Thus, the following hypothesis is proposed:

H3: Perception of message effectiveness will predict behavioral intention for Latinos.

Although the relationship between perceived and actual message effectiveness is robust, it is not clear how message framing might affect it. In a study of message framing in video presentations about cervical cancer and pap test utilization among low income women, Rivers, Salovey, Pizarro, Pizarro & Schneider (2005) found no significant differences between gain- and loss-framed messages in perceptions of either believability or interestingness. In addition, a meta-analysis of the relationship between perceived message effectiveness and actual message effectiveness (as indexed by attitude toward advocated behavior) from 40 studies showed that the group of health promotion-focused messages was homogenous, meaning that the data could not be further partitioned on the basis of any other variable (Dillard et al., 2007b). Although the present study contains a prevention-focused message, the above results suggest that a variable, such as type of message frame, may not influence perceived message effectiveness. Towards this end, we propose the following research question:

RQ3: Will a loss-frame have a greater impact than a gain-frame on the perception of message effectiveness for Latinos?

Method

Participants and Recruitment

Data were collected in a medium-sized urban Midwest city. The community-based sample ($N = 103$) was drawn from volunteer participants recruited at places of worship of various denominations, a city-sponsored Hispanic community services fair, and a Hispanic social service fair. The surveys that were distributed to volunteers were shuffled in advance of the event so that neither the researchers nor the participants were aware of which version of the survey they were getting. Existing studies have used a similar procedure to insure random assignment to a message frame (e.g., Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999). Participants were allowed to either complete the survey on sight, or could return it at a later date to drop boxes at six area locations at their community centers and churches ($n = 32$). Confidentiality was assured and a raffle of one $50 and two $25 gift certificates was used as an incentive to elicit participation. The mean age of the sample was 39.9 years ($SD = 13.85$; $Md = 39$). Twenty-nine percent were male ($n = 30$), 63% were female ($n = 65$), and eight did not report their gender.[1] The majority (82%, $n = 84$) were of Puerto Rican heritage and 74% noted they were born in the United States ($n = 76$). Seventy-five percent indicated household incomes of $50,000 or less ($n = 77$), with 31% at $20,000 or less ($n = 32$).

Study Materials

All participants received a study packet containing a one-page stimulus message conveying the risks of kidney disease via an information sheet, followed by questions

about threat and efficacy, message credibility, behavioral intention, and demographics. The stimulus message was adapted and condensed from the National Kidney Disease Education Program (2006). Message framing was achieved by taking the list of potential risks from kidney disease and the benefits of early testing and converting the statements into either gain-framed (e.g., "If you detect kidney disease early, there are things you can do to prevent kidney damage and to maintain your health much longer") or loss-framed (e.g., "Without early detection of kidney disease, your kidneys could suffer greater damage and you are more likely to need dialysis or a transplant") outcome statements.[2]

EPPM derived variables. The study used the risk behavior diagnosis scale developed by Witte et al. (1996) for assessing the different components of the EPPM. The scale uses three, 5-point items with anchors disagree–agree for each EPPM variable: severity (e.g., "Kidney disease is a severe threat") and susceptibility (e.g., "I am at risk of getting kidney disease") for the threat component, and response efficacy (e.g., "Early testing is effective in preventing kidney damage") and self efficacy (e.g., "I am able to get tested to prevent kidney damage") for the efficacy component. A factor analysis using a principal axis factoring and oblimin rotation to check the dimensionality showed that each variable was a single factor as expected. The Cronbach alpha reliability for each subscale was as follows: severity = .67, susceptibility = .81, self efficacy = .60, and response efficacy = .60.

Perception of message effectiveness. Measures of perceived message effectiveness typically utilize semantic differential scales (Fishbein et al., 2002; Dillard et al., 2007a, 2007b), but to have a better fit with the rest of the questionnaire we adapted the items to a Likert-style format. We chose three items that best fit our needs: believability, interestingness, and informativeness. Each item used a 5-point scale with anchor words disagree–agree. A factor analysis using a principal axis factoring and oblimin rotation showed a single factor as expected (Cronbach alpha = .83).

Behavioral intention. Three items were adapted from a previous study on skin cancer by Rothman et al. (1993) to measure behavioral intention regarding CKD: "I will get more information about kidney disease," "I will ask my doctor about my risk of kidney disease," and "It is likely I will get tested for kidney disease." A factor analysis using a principal axis factoring and oblimin rotation showed a single factor as expected (Cronbach alpha = .80).

Translation procedures. Two researchers created the English version of the survey with the stimulus material, one of whom was a fluent Spanish speaker. Next, a native Spanish speaker translated the English version of the complete survey, including the stimuli, into Spanish. That translation was then checked by another native Spanish speaker for accuracy. Although both English and Spanish language versions of the study packets were made available to participants, all of the individuals in this study used the Spanish language version of the packet[3].

Results

Effect of Gain–Loss Message Frame

H1 proposed that a loss-framed kidney information message would have a greater impact than a gain-framed message on behavioral intention for Latinos. Both an independent samples *t*-test with type of frame (gain, loss) as the independent variable and behavioral intention as the dependent variable and a GLM ANCOVA with type of frame as the independent variable, behavioral intention as the dependent variable, and severity, susceptibility, response efficacy, self efficacy, and message credibility as the covariates showed no significant effect of message frame on behavioral intention ($t[93] = .46$, $p = .46$; $F[1, 83] = .29$, $p = .59$, partial eta-squared $= .00$). Therefore, the hypothesis failed to receive support.

Hypothesis 2 (i.e., a loss-framed message would have a greater effect on perceptions of severity and susceptibility than a gain-framed message), RQ2 (i.e., would a loss-framed message have a greater effect on response efficacy and self efficacy relative to a gain-framed message?), and RQ3 (i.e., would a loss-framed message have a greater impact than a gain-framed message on the perception of message effectiveness) were tested using a single general linear model (GLM) multivariate analysis of variance (MANOVA) with the type of frame as the independent variable and severity, susceptibility, response efficacy, self efficacy, and message effectiveness as the dependent variables. We took this route as the dependent variables were significantly correlated with each other (see Table 1). The multivariate result indicated no effect of frame on any of the dependent variables (Wilks' lambda $= .95$, $F[5, 79] = .79$, $p = .56$, partial eta-squared $= .05$). However, the univariate results for response efficacy showed a significant effect ($F[1, 83] = 3.95$, $p = .05$, partial eta-squared $= .05$). A perusal of the means (see Table 2) showed that the gain-frame led to higher response efficacy ($M = 4.48$) than the loss-frame ($M = 4.33$). This finding should be interpreted with caution as the multivariate test was nonsignificant.[4]

Table 1 Zero-Order Correlations among Severity, Susceptibility, Response Efficacy, Self Efficacy, Message Effectiveness, and Behavioral Intention

	Susceptibility	Response efficacy	Self efficacy	Message effectiveness	Behavioral intention
Severity	.22*	.66**	.44**	.54**	.48**
Susceptibility		.29**	.34**	.28**	.47**
Response Efficacy			.38**	.48**	.58**
Self efficacy				.37**	.42**
Message Effectiveness					.51**

*$p < .05$; **$p < .01$.

Table 2 Means, Standard Deviations, and Cell Size for Severity, Susceptibility, Response Efficacy, Self Efficacy, Message Effectiveness, and Behavioral Intention by Message Gain- Loss-frame

Dependent variables	Gain *M (SD)* *n*	Loss *M (SD)* *n*	Total *M (SD)* *n*
Severity	4.42 (.71) 45	4.34 (.87) 50	4.38 (.79) 95
Susceptibility	3.33 (1.22) 45	3.28 (1.05) 52	3.29 (1.12) 97
Response efficacy	4.48 (.67) 46	4.33 (.83) 52	4.40 (.76) 98
Self efficacy	3.81 (.86) 45	3.64 (.93) 49	3.72 (.89) 94
Message effectiveness	4.17 (.88) 45	4.02 (.85) 49	4.09 (.86) 94
Behavioral intention	4.17 (.78) 44	4.03 (.97) 51	4.09 (.88) 95

Predictors of Behavioral Intention

To address H3 (i.e., message effectiveness would predict behavioral intention) and RQ1 (i.e., would the EPPM derived variables predict behavioral intention?), we conducted a linear regression with behavioral intention as the outcome variable, and severity, susceptibility, response efficacy, self efficacy, and message effectiveness as the five predictor variables which were all entered in the same step. The results of the regression showed significant effects [F (5, 78) = 20.08, $p < .01$] for three predictors: susceptibility ($\beta = .34$, $t = 4.16$, $p < .01$), response efficacy ($\beta = .29$, $t = 2.86$, $p = .01$), and message effectiveness ($\beta = .27$, $t = 2.80$, $p = .01$). As there was some collinearity present among the independent variables, we also conducted regressions for H3 and RQ1 separately. The pattern of results did not change, with the F value significant at the $p < .01$ level in both instances and the beta values as follows: message effectiveness ($\beta = .51$, $t = 5.65$, $p < .01$), susceptibility ($\beta = .36$, $t = 4.31$, $p < .01$), and response efficacy ($\beta = .34$, $t = 3.16$, $p < .01$).

Discussion

Message Effectiveness, EPPM, and Behavioral Intention

A primary goal of this study was to determine what factors would motivate members of the Latino American community to engage in early detection behavior in the context of CKD. Results of the study indicate that perceptions of message effectiveness, susceptibility, and response efficacy were the best predictors for behavioral intention; message frame did not appear to influence behavioral intention. More specifically, the results of this study for perceived message effectiveness

corroborates the findings of Dillard et al. (2007a, 2007b) and points to the importance of including a measure of perceived message effectiveness in formative research. In addition, the results of this formative research are also in line with predictions based on EPPM, in that a health communication message must not only elicit a sense of threat sufficient to move the audience to action, but it also must encourage the audience to believe something can be done to prevent harm from happening (Perloff, 2003; Witte, 1994, 1997; Witte et al., 1996). In essence, if individuals do not feel they are at risk of contracting CKD, or do not feel anything can be done to prevent the disease, they will be less likely to engage in early detection activities. Results of the present study support this assumption, and extend the applicability of EPPM into the context of a health communication campaign targeted to a Latino American population.

Furthermore, results of this study also suggest that message designers should continue stressing the perception of efficacy in a health campaign message (Atkin, 2001; Witte & Allen, 2000). At the same time, given the perceived and real barriers to health care that exist for Spanish-speaking Latino Americans, and the moderate level of self efficacy reported by the participants in our study, health campaign designers should take these barriers into account and identify affordable and effective options with Spanish-speaking healthcare providers so that community members can get tested for CKD. It should be noted, however, that, although still in the acceptable range, the relatively low reliabilities for the severity, self efficacy, and response efficacy measures that the results of the investigation be interpreted with caution, and suggests that future research determine whether a more culturally nuanced version of the EPPM measure is needed to capture threat and efficacy perceptions in a more reliable manner.

Effects of Gain and Loss Framing

Another goal of this study was to assess the applicability of prospect theory in a Latino American sample. The current study failed to support the assertion that loss-framed messages should be more effective in encouraging early detection behaviors such as early testing for kidney disease than a gain-framed message (Edwards et al., 2001; Lee & Aaker, 2004; Perloff, 2003; Umphrey, 2003). There are a number of reasons to explain this result. First, the data were comprised of only 103 respondents so we may have missed a positive relationship between loss framing and the likelihood of early detection behavior, given the low level of power found in the power analysis.[5] Second, recall that Schneider (2006) identified other variables, such as optimism and personal involvement (which could be determined by perceptions of susceptibility to CKD), that could influence the association between framing and detection behaviors; perhaps they affected the results in the present study. Future research is needed to assess this possibility.

Third, if Latinos in this study perceived the recommended behaviors as a type of health maintenance or promotion behavior rather than detection behavior, then it is possible that a loss-framed message would not be associated with greater behavioral

intent. Indeed, Rothman, Bartels, Wlaschin, and Salovey (2006) suggest that variability in how individuals think about health behavior will likely alter the impact of gain- or loss-framed appeals. It is possible, then, that individuals may see detection behaviors as a health-affirming act, rather than a "risky" act (i.e., they will not run the risk of finding something wrong). According to Roberto, Goodall, West, and Mahann (2010), the "... confounding of detection and prevention in many 'detection' messages may in part explain why there appears to be no difference in terms of effectiveness between gain-framed and loss-framed messages" (p. 8) in terms of behavior and behavioral intention. Additional research is needed to address this issue and continue examining prospect theory in the Latino American community.

Fourth, the way the stimulus message was written could also explain both the nonsignificant and significant results regarding gain–loss framing. For example, severe consequences such as death are clearly implied in both the loss-framed message (i.e., "you could lose your life") and the gain-framed message (i.e., "it could save your life") used in this study. In addition, both conditions listed the same risk factors for CKD and stated that "There are quick and easy tests for kidney disease," which might explain why there were no significant differences in perceptions of susceptibility and self efficacy. And, like the participants in the study by Rivers et al. (2005) study, participants who read both the gain- and loss-framed messages perceived them both to be interesting, believable, and informative.

Unlike the previously listed variables, there was a difference with response efficacy in terms of framing, which may also be explained by the wording of the two messages. Under the section entitled "Why get tested?" the gain-framed messaged stated that "It could save your life," where the "it" refers directly to the action of getting tested. In the loss-framed message, however, the first statement in that section reads "You could lose your life," which may redirect attention away from the action to be taken (an efficacy issue) to the consequence of inaction (a severity issue). This possibility suggests that health campaign designers should be careful in how they word the messages in order to more clearly trigger the relevant EPPM variables needed to motivate individuals to engage in a preferred behavior.

Limitations and Future Directions

Despite the strengths of this study (i.e., the focus on an understudied, at-risk population, the recruitment of participants in the field at locations where they might normally get health information), there are limitations that should be noted. First, although research has indicated a link between intent and behavior (Webb & Sheeran, 2006), future research should include both a behavioral measure as well as intent to determine how message frame and perceptions influence whether or not Latino Americans actually get tested for CKD. Second, while the participants were drawn from the community through several sources, they were not randomly assigned to a condition, nor were they a random sample of the target population. Finally, the study oversampled relatively young Puerto Rican Americans. This may have led to lower perceptions of susceptibility, as age is a risk factor for CKD.

Future research should address the differences in gain–loss framing effects in various cultures within the Latino community. A trans-cultural analysis of the framing effects on the components of EPPM (Witte et al., 1996) might shed light on the actual mechanisms at work in such cultural differences. On a deeper level, the foundational constructs of prospect theory might be tested on various cultural groups to better understand the universality or cultural dependence of their functioning. A trans-cultural replication of the early prospect theory research (Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1981) would either establish its principles for application in other cultures, or provide a foundation for the re-working of its conclusions.

Implications for Practice

Three recommendations can be offered to designers of a health education campaign regarding kidney disease to a Latino American audience. First, designers of a health communication campaign directed towards raising awareness of CKD should ensure that the message is culturally appropriate for the target audience. Such a carefully designed message will be perceived as believable, interesting, and informative, such that this perception of effectiveness of the message may drive behavioral intention which in turn is a key predictor of actual behavior. Second, message designers should ensure that their message details why Latino Americans are susceptible to CKD, and the effectiveness of early detection of CKD to mitigate the effects of the disease. Messages that discuss the impact of CKD on family members may be particularly motivating, as indicated by the results from Murray-Johnson et al. (2001), suggesting that family-threatening messages were more effective at motivating Mexican American immigrant teens to protect themselves from contracting HIV/AIDS than self-threatening messages. Third, perhaps the most practical implication may be the importance of testing messages on the target market prior to full-scale implementation. Various factors may impinge on the target population's perceptions that confound or intervene on theoretical principles. While theoretical foundations may produce more effective messaging, market testing may, as in this study, detect unexpectedly ineffective messages before undue energy and resources are invested in them. We advise that campaign designers not only utilize the information obtained in this study when crafting their messages, but also test the message with members of the target audience to ensure that the message is perceived as effective, appropriate, and culturally relevant.

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Notes

[1] A GLM ANCOVA with gender as the independent variable, behavioral intention as the dependent variable, and severity, susceptibility, response efficacy, self efficacy, and message

credibility as the covariates showed no significant effect (F [1, 71] = 1.29, $p = .26$, partial eta-squared = .02).

[2] The following is the English version of the loss-framed stimulus message:

> Kidney disease is a condition which results in damage to the structures in the kidneys that filter the blood. In the early stages, renal disease has no noticeable symptoms. The majority of people do not realize that something is wrong until the kidneys are so damaged that they are near failure. ***It's Easy to Test for It.*** There are quick and easy tests for kidney disease. And these tests are the only way to know if you have kidney disease. ***Why Get Tested?*** You could lose your life. If you don't detect kidney disease early, it's more likely that you will suffer worse kidney damage, and that you will get sicker faster. Without early detection of kidney disease, your kidneys could suffer greater damage and you are more likely to need dialysis or a transplant. ***Are you at risk for kidney disease?*** Certain groups of people are more affected by the renal disease. Do you have diabetes? Do you have high blood pressure? Do you have coronary disease (heart disease)? Has anyone in your family had kidney disease? Are you Latino, African American or Asian? If you said "yes" to any of these questions, you run the risk of having kidney disease. If you are at risk of kidney disease, ask your doctor about blood and urine tests to detect kidney disease.

[3] To assess readability, a Flesch Reading Ease score was calculated using the readability statistics in Microsoft Word for the English version ($m = 72.5$, $sd = 1.75$). In addition, based on the work of Perez and Couto (2002), a Flesch Reading Ease score was calculated for the Spanish version ($m = 78.0$, $sd = 8.31$) that took into account the increased number of syllables present in the Spanish language. The score for both the English and Spanish versions indicate that the stimulus material is "fairly easy to read" and thus written at a generally appropriate reading level for health information (Perez & Couto, 2002).

[4] Tabachnick and Fidell (2007, p. 269) recommend that because a multivariate F test has low power, in situations where the multivariate test is nonsignificant and the univariate is significant, it is best to report both as a guide to future research.

[5] A statistical power analysis (Cohen, 1987) based on a sample size of 100 and one-tailed Type I error rate $\alpha = .10$ resulted in a power of .55 and .80 to detect small-sized effects of $d = .20$, and $d = .30$ respectively. Thus, the power approached Cohen's recommended .80 level with the larger of the two effect sizes. Given the exploratory nature of the study, a small anticipated effect size, and a nonoptimum sample size, tests were conducted using a more liberal Type I error rate $\alpha = .10$ to reduce the likelihood of Type II error and to increase statistical power.

References

Atkin, C. K. (2001). Theory and principles of media health campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public Communication Campaigns* (3rd ed.) (pp. 49–68). Thousand Oaks, CA: Sage.

Bentancourt, J. R., Green, A. R., Carrillo, J. E., & Maina, A. (2004). Barriers to health promotion and disease prevention in the Latino population. *Clinical Cornerstone*, *6*, 16–29.

Bracht, N. (2001). Community partnership strategies in health campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public Communication Campaigns* (3rd ed.) (pp. 323–342). Thousand Oaks, CA: Sage Publications

Cohen, J. (1987). *Statistical power analysis for the behavioral sciences* (rev. ed.). Hillsdale, NJ: Lawrence Erlbaum.

Detweiler, J. B., Bedell, B. T., Salovey, P., Pronin, E., & Rothman, A. J. (1999). Message framing and sunscreen use: Gain-framed messages motivate beach goers. *Health Psychology*, *18*, 189–196.

Dillard, J. P., Shen, L., & Vail, R. G. (2007a). Does perceived message effectiveness cause persuasion or vice versa? 17 consistent answers. *Human Communication Research*, *33*, 467–488.

Dillard, J. P., Weber, K. M., & Vail, R. G. (2007b). The relationship between the perceived and actual effectiveness of persuasive messages: A meta-analysis with implications for formative campaign research. *Journal of Communication*, *57*, 613–631.

DuBard, C. A., Garrett, J., & Gizlice, Z. (2006). Effect of language on heart attack and stroke awareness among U.S. Hispanics. *American Journal of Preventative Medicine*, *30*, 189–196.

Edwards, A., Elwyn, E., Covey, J., & Pill, R. (2001). Presenting risk information: A review of the effects of framing and other manipulations on patient outcomes. *Journal of Health Communication*, *6*, 61–82.

Fishbein, M., Hall-Jamieson, K., Zimmer, E., von Haeften, I., & Nabi, R. (2002). Avoiding the boomerang: Testing the relative effectiveness of antidrug public service announcements before a national campaign. *American Journal of Public Health*, *92*, 238–245.

Hebert, B. (2006). Spanish health information resources for nurses. *Pediatric Nursing*, *32*, 350–353.

Iyengar, S., & McGrady, J. (2005). Mass media and political persuasion. In T. C. Brock & M. C. Green (Eds.), *Persuasion: Psychological insights and perspectives* (2nd ed.) (pp. 225–248). Thousand Oaks, CA: Sage.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*, 263–292.

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist*, *39*, 341–350.

Kalichman, S. C., & Coley, B. (1995). Context framing to enhance HIV-antibody-testing messages targeted to African American Women. *Health Psychology*, *14*, 247–254.

Kline, K. N. (1995, November). *Applying Witte's extended parallel process model to pamphlets urging women to engage in BSE: Where are the efficacy messages?* Paper presented at the annual meeting of the Speech Communication Association, San Antonio, TX.

Larkey, L. K., Hecht, M. L., Miller, K., & Alatorre, C. (2001). Hispanic cultural norms for health seeking behaviors in the face of symptoms. *Health Education & Behavior*, *28*, 65–80.

Laveist, T. A. (2005). *Minority populations and health, an introduction to health disparities in United States.* San Francisco, CA: Jossey-Bass.

Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality & Social Psychology*, *86*, 205–218.

Merzel, C., & D'Afflitti, J. (2003). Reconsidering community-based health promotion: Promise, performance, and potential. *American Journal of Public Health*, *93*, 557–574.

Moreno, C., Alvarado, M., Balcazar, H., Lane, C., Newman, E., Ortiz, G., et al. (1997). Heart disease education and prevention program targeting immigrant Latinos: using focus group responses to develop effective interventions. *Journal of Community Health*, *22*, 435–450.

Morman, M. T. (2000). The influence of fear appeals, message design, and masculinity on men's motivation to perform the testicular self-exam. *Journal of Applied Communication Research*, *28*, 91–116.

Murray-Johnson, L., Witte, K., Liu, W., & Hubbel, A. P. (2001). Addressing cultural orientations in fear appeals: Promoting AIDS-protective behaviors among Mexican immigrant and African American adolescents and American and Taiwanese college students. *Journal of Health Communication*, *4*, 335–358.

National Diabetes Information Clearinghouse. (2007). Race and ethnic differences in prevalence of diagnosed diabetes. Retrieved from http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm#race

National Kidney Disease Education Program. (2006). Patients and public. Retrieved from http://www.nkdep.nih.gov/patients/index.htm

National Kidney Foundation. (2007). Retrieved from http://www.kidney.org

Parra-Medina, D., Wilcox, S., Thompson-Robinson, M., Sargent, R., & Will, J. C. (2004). A replicable process for redesigning ethnically relevant educational materials. *Journal of Women's Health*, *13*, 579–588.

Perloff, R. M. (2003). *The dynamics of persuasion: Communication and attitudes in the 21st century* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.

Perez, A. B, & Couto, U. G. (2002). Readability of the health webpages for patients and readers among the general population. *Revista Española de Salud Pública*, *76*, 321–331.

Rivers, S. E., Salovey, P., Pizarro, D. A., Pizarro, J., & Schneider, T. R. (2005). Message framing and pap test utilization among women attending a community health clinic. *Journal of Health Psychology*, *10*, 65–77.

Roskos-Ewoldsen, D. R., Yu, H. J., & Rhodes, N. (2004). Fear appeal messages affect accessibility of attitudes toward the threat and adaptive behaviors. *Communication Monographs*, *71*, 49–69.

Roberto, A. J., Goodall, C. E., West, P. M., & Mahan, J. D. (2010). Persuading physicians to test their patients' level of kidney functioning: The effects of message frame and point of view. *Health Communication*, *25*, 107–118.

Roberto, A. J., Raup-Krieger, J. L., & Beam, M. A. (2009). Enhancing web-based prevention messages for Hispanics using targeting and tailoring. *Journal of Health Communication*, *14*, 525–540.

Rothman, A. J., Bartels, R. D., Wlaschin, J., & Salovey, P. (2006). The strategic use of gain- and loss-framed messages to promote health behavior: How theory can inform practice. *Journal of Communication*, *56*, 202–220.

Rothman, A. J., Salovey, P., Antonie, C., Keough, K., et al. (1993). The influence of message framing on intentions to perform health behaviors. *Journal of Experimental Psychology*, *29*, 408–433.

Schneider, T. R. (2006). Getting the biggest bang for your health education buck: Message framing and reducing health disparities. *American Behavioral Scientist*, *49*, 812–822.

Seils, D. M., & Schulman, K. A. (2004). Perceptions of racial and ethnic differences in access to healthcare. *North Carolina Medical Journal*, *65*, 350–352.

Slater, M. D. (2006). Specification and misspecification of theoretical foundations and logic models for health communication campaigns. *Health Communication*, *20*, 149–157.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed). Boston, MA: Pearson.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the rationality of choice. *Science*, *221*, 453–458.

Umphrey, L. R. (2003). The effects of message framing and message processing on testicular self-examination attitudes and perceived susceptibility. *Communication Research Reports*, *20*, 97–105.

Valente, T. W. (2001). Evaluating communication campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public Communication Campaigns* (3rd ed., pp. 105–124). Thousand Oaks, CA: Sage.

Webb., T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*, 249–268.

Wilcher, R., Gilbert, L. K., Siano, C. S., & Arredondo, E. M. (1999–2000). From focus groups to workshops: developing a culturally appropriate cervical cancer prevention intervention for rural Latinas. *International Quarterly of Community Health Education*, *19*, 83–102.

Wilkin, H. A., & Ball-Rokeach, S. J. (2006). Reaching at risk groups: the importance of health storytelling in Los Angeles Latino media. *Journalism*, *7*, 299–320.

Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, *59*, 329–349.

Witte, K. (1994). Fear control and danger control: A test of the extended parallel process model (EPPM). *Communication Monographs*, *61*, 113–132.

Witte, K. (1997). Preventing teen pregnancy through persuasive communications: Realities, myths, and the hard fact truths. *Journal of Community Health*, *22*, 137–154.

Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*, *27*, 591–615.

Witte, K., Cameron, K. A., McKeon, J., & Berkowitz, J. (1996). Predicting risk behaviors: Development and validation of a diagnostic scale. *Journal of Health Communication*, *4*, 317–341.

Zsemblik, B. A., & Fennell, D. (2004). Ethnic variation in health and the determinants of health among Latinos. *Social Science & Medicine*, *61*, 53–63.

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