Threat, Efficacy and Message Framing in Consumer Healthcare

Abstract

Purpose - The purpose of this paper is to empirically examine the interactive effects of message framing, perceived threat and efficacy appeals on attitudes/intentions towards consumer healthcare communications, particularly, cataract surgery.

Design - This paper develops two conceptual models dealing with threat, efficacy and framing and tests them with data collected from two field experiments.

Findings - The results reveal that high efficacy messages in combination with high threat or loss-framed messages have a significant positive influence on consumer attitudes and intentions in the consumer healthcare arena.

Practical Implications - The findings have managerial value and public policy implications for healthcare officials in developing effective communications material. Specifically, this paper recommends that high threat, high efficacy and loss-framed efficacy messages be used.

Originality/Value - This research extends previous work by demonstrating the effectiveness of threat appeals and framing on consumer attitudes and intentions to undergo cataract surgery. It also demonstrates the use of communication models in the healthcare domain.

Keywords - Threat appeal, self-efficacy, treatment efficacy, message framing, healthcare, attitudes, intentions, field experiment.

Introduction and Motivation for the Research

Threat appeals and message framing (loss vs. gain) have been extensively used in healthcare research (LaTour and Pitts, 1989; Witte et al., 1998; Prentice-Dunn et al., 2001). Threat appeals have been effective in changing attitudes and influencing intentions in a variety of healthcare-related behaviors. For instance, Smerecnik and Ruiter (2010) investigated the effectiveness of threat appeals on HIV prevention by manipulating the levels of threat and coping appraisals of condom use (i.e. efficacy). They show that under conditions of high threat and high coping (high efficacy), consumers reported more positive intentions to use a condom in order to prevent HIV. Likewise, Krishen and Bui (2015) found that consumers reported more positive intentions to engage in healthier food choices under fear-frames as opposed to hope frames.

Similarly, in a cross-cultural study, Vincent and Dubinsky (2005) find that compared to lower levels of fear, higher levels of fear lead to higher purchase intentions for the advertised product. Along the same lines, Umphrey (2003) conducted a study to test the impact of message framing and level of message processing on consumer attitudes towards performing testicular self-examination. This study shows that consumers had the most encouraging attitudes towards self-examination under the loss-frame and higher message processing conditions. In a similar vein, threat appeals and message framing were used in studies such as skin cancer detection (Rothman et al., 1993), where gain frames significantly influenced consumers' intention to use sunscreen (to prevent cancer). Addressing alcoholism among Greek college students, Moscato et al. (2001) validate the use of high fear appeals along with efficacy.

Threat appeals also worked equally well in determining consumers' intentions to engage in pro-environment behavior (Chen, 2016). Fear/threat appeals have also been studied in the

context of hearing protection among farmers and landscape workers (Smith et al., 2008), the "Let's Move" health promotion campaign launched by US First Lady Michelle Obama (Batchelder and Matusitz, 2014) and texting while driving (Cismaru, 2014). While other kinds of appeals such as individual/social responsibility appeals (Kong and Shen, 2011), celebrity appeals (Bhutada et al., 2012) and cognitive appeals (Lemanski and Villegas, 2015) have been used in healthcare, fear/threat appeals are the most common (Witte and Allen, 2000). Most fear/threat appeals have been used in lab settings, in "contrived, artificial settings"; research is needed in "realistic, natural settings" (Witte and Allen, 2000). The setting of our research is a real one, where we use real would-be cataract patients in two field experiments.

While threat appeals and message framing have been regularly employed under health domains in developed nations, they have largely been underutilized among Indian consumers with only a few exceptions (Fernando et al., 2016). Specifically, their application and demonstrated effectiveness are yet to be examined among Indian consumers in the utilization of cataract surgery to prevent avoidable blindness. 90% of those visually impaired live in developing countries. 80% of all visual impairment can be avoided or cured (WHO, 2014). Cataract is the principal cause of preventable blindness and accounts for 51% of all the blindness in developing countries (WHO, 2014). The risk of developing cataract increases with age and India holds the dubious distinction of having the largest number of blind people (Frick and Foster, 2003). In India, cataract is the primary reason in every three out of four people becoming blind (Murthy et al., 2005). More than half of the Indian population would be greater than 50 years of age by 2050 (United Nations, 2015) and, if nothing else changes, these demographic changes alone would lead to a two-fold rise in cataract incidences and therefore cataract surgeries (Brian and Taylor, 2001). Murthy et al. (2008) point out that in 2020, the absolute

number of cataract blindness would increase to 8.25 million from 7.75 million (2001) due to an increase in population of people aged 50 and above.

The cure for cataract is surgery. Hence, most efforts, especially since WHO's commissioning of the 'Vision 2020' initiative, have tried to address the cataract problem from a medical standpoint (Foster, 2001). The focus has been on performing surgeries as swiftly as possible for effective outcomes. The number of cataract surgeries performed every year therefore has gone up, but more people are rendered blind each year. Tabin et al. (2008) mention that by the year 2020 [at the present cataract surgical rate (CSR)] the number of people becoming blind would increase dramatically as life expectancy increases.

Despite a lot of advancements in the field of ophthalmology, many people are unwilling to get their eyes tested (Tabin et al., 2008). Mostly, blindness is due to the onset of cataract and the failure among people to foresee this by undergoing a periodic eye checkup and undertaking the relatively inexpensive and painless cataract surgery (Thomas et al., 2005). Venkataswamy and Brilliant (1981) brought out the major barriers to cataract surgery; these include poverty, lack of transportation and "the need not felt to undergo cataract surgery". Vaidyanathan et al. (1999) and Aarthi et al. (2015) highlight the shift in the character of these barriers. Both these studies emphasize the significant shifts in this domain: from "poverty" being the main barrier to "attitude" (e.g. need for cataract not felt though it is actually present). Vaidyanathan et al. (1999) point out that the present-day Information, Education and Communication (IEC) campaigns and material have either become routine or less effective. In fact, it actually means that the communication strategies have failed to reduce the barriers that hinder people in undergoing surgery. Cini and Reena (2008) conducted a study in near 100% literate Kerala (a southern state in India) and stressed the urgent need for health education programs and more importantly,

proper communication to address the issues of awareness and timely eye checkups. While researchers have identified the barriers to uptake of cataract surgery, there has been little structured research in actually developing effective communications material to persuade consumers to get their eyes checked regularly and have timely surgery, if required.

Threat appeals have been used in a wide variety of health-related domains like AIDS prevention (LaTour and Pitts, 1989), promotion of self-protective behavior (Witte et al., 1998), addressing alcoholism (Moscato et al., 2001), breast cancer screening (Prentice-Dunn et al., 2001) and anti-smoking campaigns (Lee and Park, 2012). Conspicuous by its absence is the use of the threat appeals in persuading potential consumers to undergo cataract surgery. There is almost no research examining the use of threat appeals in encouraging people to undergo cataract surgery. Hence, this study is an attempt to bridge this gap by empirically assessing the usefulness of threat appeals and message framing in shaping consumer mindsets, where both the context and consumers are new. We add to extant literature and make recommendations that would particularly be helpful to health marketers and public policy makers.

We began with a content analysis of 30 pamphlets from Sankara Nethralaya (http://www.sankaranethralaya.org/), a leading eye-care organization in India, to understand the nature of the communication messages used on cataract and cataract surgery. We analyzed the use of variables such as severity, susceptibility, self-efficacy and response efficacy (treatment efficacy), which have been identified by persuasion research literature as important in the design of effective health communication messages. The coding categories for levels of severity, susceptibility, self and response efficacy were determined from extant research. Two independent judges coded the pamphlets on these categories. Cohen's Kappa (Cohen, 1960) was

used for computing inter-coder reliability. Inter-coder reliability for all units of analysis ranged between .79 - 1.00, indicating excellent agreement. The findings are delineated below.

The content analysis found that the number of pamphlets containing lower severity levels ($n = 29$) were higher than the number of high severity ones ($n = 1$, $\chi2\ (1) = 26.13$, $p < .01$). Next, the number of pamphlets containing low susceptibility levels ($n = 28$) was significantly more the number containing high levels ($n = 2$; $\chi2\ (1) = 22.53$, $p < .01$). The number of pamphlets containing low self-efficacy levels ($n = 28$) was significantly higher than those with high levels of self-efficacy ($n = 3$; $\chi2\ (1) = 19.20$, $p < .01$). Finally, the pamphlets that contained low levels of response efficacy ($n = 2$, $\chi2\ (1) = 22.53$, $p < .01$) were significantly higher than pamphlets with high levels of response efficacy.

Our analysis showed that most of the pamphlets analyzed lacked detailed information about cataract. Not even one pamphlet contained an effective threat appeal. All the pamphlets were merely informative, announcing just the date and the timing of the upcoming eye care camps. None of the pamphlets made any attempt to persuade; they were merely informative. Thus, not just in academic research, in practice too, there is very little use of threat appeals in persuading consumers to undergo cataract surgeries (please see Tables 1 and 2 for detailed results). We discuss below possible theoretical frameworks that we can apply to our problem.

< Insert Table 1 here >

< Insert Table 2 here >

The Extended Parallel Process Model (EPPM) combines threat (the appeal that engenders fear) with efficacy (the appeal that recommends corrective action) and has been used in areas of preventive healthcare like AIDS prevention (Witte, 1992), cancer communication (Stephenson

and Witte, 1998) anti-smoking (Wong and Capella, 2009) and road safety (Cismaru, 2014). Likewise, framing of messages (loss versus gain) has been found to affect persuasion in mammography screening (Finney and Iannotti, 2002) and anti-smoking (Jung and Vellagas, 2011). Therefore, the key research questions that we intend to answer through this research are:

1. Would threat and efficacy appeals work in persuading people to undergo cataract surgeries?
2. Would message framing (loss versus gain) affect persuasiveness of messages relating to cataract surgeries?

Most research in eye-care and related areas uses a medical (and not behavioral) perspective (for e.g., Desapriya et al., 2010). Specifically, the focus of research has been on "how does one medically improve the surgical procedure?" and not "why are people indifferent to eye-care issues?" and "What can we do to overcome this indifference?" With rare exceptions (Finger et al., 2007), there is little research that addresses the cataract problem from a psychological and persuasive communications standpoint. We aim to contribute to this sparse literature with this research.

Conceptual Framework and Hypotheses

Threat Appeal

Threat appeals can change consumer attitudes by appealing to the negative emotion of fear (Maddux and Rogers, 1983). Threat appeals attempt to scare people through fear and describe the negative consequences that would happen to them if they fail to comply with the message (Witte, 1992). For example, a doctor stating that the likelihood of death occurring if the person rides a motorcycle without a helmet constitutes a threat appeal. While our context is

cataract surgery (a public health issue), threat appeals have been used to address many pressing public health issues like anti-smoking (Rogers and Deckner, 1975), condom usage/AIDS prevention (Treise and Weigold, 2001), cancer screening (Prentice-Dunn et al., 2001), and anti-alcohol (Brown and Locker, 2009). In general, subject to certain caveats, extant research documents that threat appeals work (Ruiter et al., 2014). Ruiter et al. (2014) also argue that to stimulate change in one's behavior, individuals must perceive a serious threat that personally affects them. They must think that the benefits of engaging in a recommended behavior outweigh any barriers, and believe that they can make a change.

Threat appeals are used to evoke cognitive responses rather than emotional ones (Cauberghe et al., 2009). According to Protection Motivation Theory (PMT), threat produces reactions like perceived severity and perceived vulnerability (Cauberghe et al., 2009). Perceived severity refers to an individual's perception about the enormity of the threat ("cataract will lead to permanent blindness") and perceived vulnerability ("people above 50 are at a greater risk of getting cataract") refers to an individual's perception of the likelihood of actually experiencing the threat. Higher intensity of threat will lead to greater fear arousal (an emotional response) and have an impact on perceived severity and vulnerability. This has been documented in health domains such as cancer (McMath and Prentice-Dunn, 2005), and green marketing (Fernando et al., 2016). Hence, higher intensity of threat will produce heightened levels of perceived severity and perceived vulnerability. Fear arousal increases message elaboration (Keller and Block, 1996) and increases systemic processing of the message (De Hoog et al., 2005). Therefore,

H1a: High threat messages will lead to more favorable consumer attitudes towards undergoing cataract surgery, compared to low threat messages.

H1b: High threat messages will lead to greater consumer intentions to undergo a cataract surgery, compared to low threat messages.

Efficacy Appeal

Bandura (1977) explains self-efficacy as personal judgments of one's capabilities to organize and execute courses of action to attain the chosen goals (for e.g., a consumer believes that she can wake up early and go to a gym regularly). The role of self-efficacy in motivating changes in consumers' attitudes and intentions has been empirically studied in many health-related campaigns like contraceptive behavior (McKinney, 1982), alcoholism (Ilgen et al., 2006), weight control (Linde et al., 2005), and smoking-related research (Gwaltney et al., 2009). Apart from self-efficacy, other research studies (Lewis et al., 2010) have documented the effectiveness of response efficacy maximizing the effectiveness of anti-speeding messages. Response efficacy is "a person's belief that a recommended course of action would actually avoid the threat". For instance, a consumer who believes that a vaccine would prevent diseases like polio and measles would act on communication regarding the vaccine, i.e. response efficacy of this message would be high. In general, the Extended Parallel Process Model (EPPM) states that response efficacy and self-efficacy combine to form the construct efficacy (Witte, 1992; Witte et al., 1996). Therefore,

H1c: High efficacy messages will lead to more favorable consumer attitudes towards undergoing cataract surgery, compared to low efficacy messages.

H1d: High efficacy messages will lead to greater consumer intentions to undergo a cataract surgery, compared to low efficacy messages.

Interaction Effects of Threat and Efficacy

The EPPM posits that to motivate consumers to change their attitudes, intentions and behaviors, health communications must include two constructs: threat and efficacy. Level of severity (e.g. cataract is a dangerous condition) and susceptibility to the problem (e.g. I will definitely get cataract) in the message describe the degree of threat. If the message initiates perceptions of threat that reach a certain threshold level, then individuals next appraise the efficacy of the suggested recourse/response. The level of efficacy perceived from a recommended response shapes how the individual can react to the threat (Stephenson and Witte, 1998). Self-efficacy (for e.g., "I can do it") and response efficacy (the feeling of "this treatment really works") are the variables that would relate to the individual's reaction to the threat.

According to the EPPM, the evaluation of a threat appeal initiates two appraisals of the message, which result in one of the three outcomes (Stephenson and Witte, 1998). First, individuals appraise the threat of an issue from a message. The more individuals believe they are susceptible to a serious threat, the more motivated they are to begin the second appraisal, which is an evaluation of the efficacy of the recommended response. If the threat is perceived as irrelevant or insignificant (i.e. low perceived threat), then there is no motivation to process the message further. In contrast, when a threat is portrayed to be serious and relevant (for e.g., "I'm susceptible to contracting a threatening disease"), individuals become scared. Their fear motivates them to take some sort of an action that will reduce their fear. Perceived efficacy (consisting of self-efficacy and response efficacy) determines whether people get motivated to control the danger of the threat or control their fear about the threat. When people believe they are able to perform an effective recommended response against the threat (i.e. high perceived self-efficacy and response efficacy), they are motivated to control the danger and think about

ways to remove or reduce the threat. Usually, people think carefully about the recommended responses advocated in the persuasive message and adopt those as a means to reduce or avert the danger. EPPM has been used in developing and testing persuasive communication towards preventive healthcare and related domains like cardiovascular disease risk (Mckay et al., 2004), cancer information communication (Evans et al., 2011), hearing protection (Smith et al., 2008), driver safety (Jung and Brann, 2014) and childhood obesity (Batchelder and Matusitz, 2014). Hence,

H2a: The positive effect of threat appeals on consumer attitudes towards undergoing cataract surgery would be stronger for high (vs. low) efficacy appeals.

H2b: The positive effect of threat appeals on consumer intentions to undergo cataract surgery would be stronger for high (vs. low) efficacy appeals.

The Effect of Framing

Framing effects occur when transparently and objectively identical situations generate dramatically different decisions depending on whether the situations are presented or perceived as potential losses or gains (Kahneman and Tversky, 1981). Guided by prospect theory, framing has played a significant role in designing health communication material. For example, it has been used to promote breast self-examination (Meyerowitz and Chaiken, 1987), exercise (Robberson and Rogers, 1988), skin cancer detection (Rothman et al., 1993), and vaccination awareness (Abhyankar et al., 2008).

Health communication messages therefore can either highlight the benefits that would result by following the recommended behavior (gain-frame) or underline the consequences of failing to involve in the recommended behavior (loss-frame). For instance, a gain-framed

message could emphasize the benefits by adopting a recommended behavior "taking a cholesterol test allows assessment of one's heart disease"; while a loss-framed message will emphasize the loss of the same benefits if the recommended behavior is not followed "not taking a cholesterol test does not allow the assessment of one's risk of heart disease" (Maheswaran and Meyers-Levy, 1990).

Loss-frame messages have performed well in a number of studies that adopted goal framing. Examples include breast self-examination (Meyerowitz and Chaiken, 1987), blood cholesterol test (Maheswaran and Meyers-Levy, 1990), and STD (Block and Keller, 1995). When messages are negatively framed, they are thought to constitute higher risk when compared to positively framed messages (Meyers-Levy and Maheswaran, 2004). Negative frames invoke more cognitive processing when compared to positive frames and work like threat appeals (O'Keefe and Jensen, 2009). Therefore,

H3a: Loss-framed messages will lead to more favorable consumer attitudes towards undergoing cataract surgery, compared to gain-framed messages.

H3b: Loss-framed messages will lead to greater consumer intentions to undergo cataract surgery, compared to gain-framed messages.

Loss-frames and Efficacy

There are many empirical studies that have examined the relationship of efficacy with framing in developing persuasive health communication messages in areas like skin cancer (Rothman et al., 1993), STD (Block and Keller, 1995), mammography screening (Banks et al., 1995) and anti-smoking (Wong and Cappella, 2009). Block and Keller (1995) report that when efficacy was high, there was less effort in processing information and that both gain and loss

frames were equally persuasive. Abhyankar et al. (2008) in their vaccination study highlight how response efficacy when combined with loss framed messages significantly predicted variance in behavioral intentions to undergo vaccination. In the context of our study, it is essential that the consumers are made aware of the efficacious nature of the cataract surgery, which is the response efficacy. Response efficacy has been known to be a key persuasive component in reducing message rejection and increasing acceptance (Lewis et al., 2010) and loss frames invoke more cognitive processing than gain frames (O'Keefe and Jenson, 2009). Therefore,

H4a: The positive effect of efficacy appeals on consumer attitudes towards cataract surgery would be stronger for a loss- (vs. gain-) framed message.

H4b: The positive effect of efficacy appeals on consumer intentions to undergo cataract surgery would be stronger for a loss- (vs. gain-) framed message.

Methodology

Experiment 1

This study uses a 2 (High vs. Low threat) X 2 (High vs. Low efficacy) factorial, between-subjects field experiment with 295 subjects.

Procedure and Design

The subjects were between the ages 40 and 61 from rural areas near Jabalpur, Madhya Pradesh and Mahabalipuram, Tamil Nadu (in northern and southern India, respectively). We deliberately chose rural parts of India since the prevalence of preventable blindness due to the onset of cataract is greater in rural vis-à-vis urban India (Murthy et al., 2005). We chose Tamil

Nadu and Madhya Pradesh since both have rural populations but they differ in their overall development, with Tamil Nadu being more developed than Madhya Pradesh (Raghuram Rajan Committee, 2013). The vernacular languages of Tamil Nadu and Madhya Pradesh are Tamil and Hindi, respectively.

The sample's mean age is 46.81 years, which is in line with most studies related to cataract research (Murthy et al., 2012). We contacted and sought permission from four community health hospitals, two each in Tamil Nadu and Madhya Pradesh to intercept the subjects. Overall, over a course of seven days, 295 subjects (Males = 53%) were intercepted and randomly assigned to the four conditions. The respondents were first exposed to the stimuli and immediately afterward asked to fill in the questionnaire related to the print poster that followed.

Stimuli: The stimuli for the study consisted of four print posters that gave information on cataract and how to deal with it. We created the posters in English and using back-translation, translated the original to Tamil and Hindi. To increase the credibility of the message, on the top right corner of the poster, a logo of the State's Ophthalmic Association (OA) was displayed and the words 'issued in public interest' were written above the logo. Threat and efficacy were manipulated as follows: The high threat condition stressed on the risks of cataract to the individual and family, and the certainty of going blind permanently if left untreated. The low threat condition focused on how age brings about the onset of cataract and if left untreated for a prolonged period could gradually lead to deterioration of vision. The high efficacy condition stressed on the technological advancements in the field of ophthalmology and the short duration it takes to undergo a painless surgery. The low efficacy condition spoke about how it was difficult to predict the outcome of a surgery in terms of quality of vision restored. All the scales were adapted from extant literature (see Appendix A).

Manipulation checks: To check the effectiveness of the threat and efficacy manipulations, a one-way ANOVA was conducted. Results showed that the manipulations were successful. Participants reported higher level of threat in the high-threat condition (M = 3.95, SD = .88) as compared to the low threat condition (M = 3.48, SD = .56); F (1, 293) = 29.27, p < .01). Likewise, participants rated efficacy level as low in the low-efficacy condition (M = 3.89, SD = .58) as compared to the high efficacy condition (M = 4.47, SD = .42); F (1, 293) = 95.31, p < .01). We found statistically significant mean differences in fear evoked by the high threat message (M = 4.06, SD = .84) vis-à-vis the low threat message (M = 3.39, SD = .64) F (1, 293) = 48.92, p < .01).

Results

We used SEM using AMOS 22.0, since (in both experiments) we had multi-item measures, multiple constructs and inter-relationships between them for both models. We first assessed the measurement model before testing the structural one (Anderson and Gerbing, 1988).

Measurement Model

The measurement model shows a good fit (χ^2 = 276.69, df = 153; CFI = .96; TLI = .94; IFI = .95; GFI = .91; AGFI = .88; SRMR = .06 RMSEA = .05). The measures included in the analysis were reliable, with construct reliability (CR) estimates ranging from .75 to .92. Next, convergent validity was supported for three out of four items and loaded strongly and significantly on their respective factors, and the Average Variance Extracted (AVE) for each latent variable exceeded .50 (Fornell and Larcker, 1981). The correlations among all constructs are all below the .90 threshold, suggesting that all constructs are distinct from each other. Furthermore, the Average Variance Extracted for each latent factor exceeded the respective

squared correlation between factors, providing evidence of discriminant validity (Fornell and Larcker, 1981). Table 3 shows related statistics.

< Insert Table 3 >

Common Method Variance

This study uses the predictor and criterion variables from the same source in a single survey; hence, we tested for common method variance (CMV) using the "single common method factor" approach (Podsakoff et al., 2003). The model with the CMV factor showed a poor fit; therefore, CMV does not present a problem.

Structural Model

Results indicated a good fit for the structural model (χ^2 = 309.230, df = 170; CFI = .95; TLI = .93; IFI = .95; GFI = .91; AGFI = .88; SRMR = .06 RMSEA = .05) with all the indices better than the recommended threshold values (Hu and Bentler, 1999). The analysis revealed support for H1b, H1c, H2a, and H2b**.** The summary of the findings is given in Table 4:

< Insert Table 4 here >

The results indicated that threat had a significant positive effect on consumer intentions to uptake of cataract surgery (β = .61, p < .01) supporting H1b; however, threat had a significant negative effect (β = -.21, p < .01) on consumer attitudes, thus H1a was not supported. The main effect of efficacy on consumer attitudes was positive and statistically significant (β = .91, p < .01), supporting H1c. However, we find no effect of efficacy on consumer intentions; hence H1d was not supported. Efficacy significantly and positively moderated the relationship of threat on consumer attitudes to uptake of cataract surgery (β = .13, p < .01), lending support to H2a. Also,

efficacy significantly and positively moderated the relationship of threat on consumer intentions to undergo cataract surgery ($\beta = .18$, $p < .01$), thus supporting H2b. Figure 1 presents the model with the path coefficients.

< Insert Figure 1 here >

Experiment 2

Procedure and Design

We conducted a field experiment similar to the first one. 228 subjects (Males = 57%) from rural areas near Jabalpur, Madhya Pradesh, and Mahabalipuram, Tamil Nadu were randomly chosen to be part of the study. We intercepted the subjects the way we did in Experiment 1. Also, like in Experiment 1, we translated the English version to Tamil and Hindi.

Stimuli: The design was a 2 (Gain- vs. Loss-frames) * 2 (High vs. Low Efficacy) factorial design. The gains used in the frame highlighted the benefits that would accrue if they take up the surgery and the second frame highlighted the losses they are likely to suffer if they don't take up the surgery. The high and low levels of efficacy were retained from the stimuli used in Experiment 1. The scales were adapted from extant literature (see Appendix A).

Manipulation Checks: In line with our manipulations, greater gain (M = 4.57) and lower loss (M = 2.24) were perceived in the gain condition as compared to the loss condition (M_{gain} = 1.69; M_{loss} =4.13; F = 361; $p < .01$). Further, efficacy was significantly higher in the high (M = 4.50) as opposed to the low (M = 4.08; F = 43.92; $p < .01$) efficacy condition. Thus, our manipulations were successful.

Results

Measurement Model

Our measurement model showed a good fit ($\chi^2 = 414.04$, df = 258; CFI = .95; TLI = .94; IFI = .95; GFI = .88; AGFI = .85; SRMR = .04 RMSEA = .05). The measures included in the analysis were reliable, with construct reliability estimates that ranged from .70 to .96. Next, convergent validity was supported for three out of four items and loaded strongly and significantly on their respective factors, and the average variance extracted (AVE) for each latent variable exceeded .50 (Fornell and Larcker, 1981). The average variance extracted for each latent factor exceeded the respective squared correlation between factors, providing evidence of discriminant validity (Fornell and Larcker, 1981). Table 5 shows related statistics. Like in Experiment 1, we tested for common method variance (CMV). The model with the CMV factor showed a poor fit; therefore, CMV did not present a problem.

< Insert Table 5>

Structural Model

The structural model shows a good fit ($\chi^2 = 207.64$, df = 112; CFI = .95; TLI = .94; IFI = .95; GFI = .88; AGFI = .83; SRMR = .06; RMSEA = .05) with all the fit indices better than the recommended threshold values (Hu and Bentler, 1999). The analysis revealed support for H4a, H4b; however, H3a and H3b were not supported. The summary of the findings is given in Table 6.

< Insert Table 6 here >

The results indicate that loss-frames when combined with high efficacy had a significant positive effect on consumer attitudes to uptake of cataract surgery ($\beta = .16$, $p < .01$), thus supporting H4a. Again, under the same conditions we also found that it had a significant positive effect on consumers' intentions to uptake of cataract surgery ($\beta = .17$, $p < .01$), thus supporting H4b. We did not find any main effect of loss-frames on either consumer attitude or consumer intentions, therefore not supporting H3a ($\beta = .02$, $p > .05$) and H3b ($\beta = -.01$, $p > .05$). In gain frames, both the main effect and its interaction with efficacy were found to be insignificant as derived earlier under the conceptual framework section. Figure 2 shows the final structural model with the path coefficients.

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Discussion and Implications

Theoretical Implications

We found support for many of our hypotheses. While H1b (threat on intentions) was supported, H1a (threat on attitudes) was not. The plausible reason could be that attitudes may take some time to get formed, while intentions may be immediate particularly in the instance of cataract surgery (since eye care camps are organized frequently in villages such as the ones we collected data from). Likewise, H3a and H3b were not supported (these dealt with the main effects of loss- frames on attitudes and intentions, respectively. This could be because while some research has shown that loss-frames are better since they evoke more cognitive processing (Meyers, Levy and Maheswaran, 2004), it could be that our subjects did not indulge in such elaborate message processing, without which loss-frames would not be as effective. Further research is needed to throw more light on this issue.

This study takes a crucial step towards understanding and reducing the barriers to uptake of cataract surgery among people living in rural areas of India. Although there have been many studies on understanding the prevalence of visual impairment/cataract (Brilliant et al., 1985; Foster and Resnikoff, 2005; Neena et al., 2008) and barriers to uptake of cataract surgery (Lewallen and Courtright, 2000; Marmamula et al., 2014), there is little effort in tackling them from a communications strategy viewpoint. Vaidyanathan et al., (1999) and Malhotra et al., (2005) point out to the urgent need to develop persuasive communication messages. To the best of our knowledge, there is little structured research in tackling eye care issues in India from a psychological and attitudinal standpoint. We believe that this paper is the first research effort in addressing these important problems in a structured manner and thus, we answer the question "what can we do to overcome the indifference among consumers regarding eye care?" The two studies aim at solving these issues by bringing together the theory-based models of EPPM and message framing to help shape consumer attitudes and intentions towards cataract surgery. We demonstrate its effectiveness in an actual field setting. While EPPM and PMT based models have been used to tackle issues like AIDS, contraceptive use and cancer prevention, we are the first to test its efficacy in eye care management. This is in line with other studies in related fields. For instance, Fernando et al. (2016) extend the Protection Motivation Theory (PMT) to green marketing even while they do not contribute to the PMT/EPPM by extending it fundamentally. In a similar vein, we extend the PMT and EPPM to cataract surgery, where there is hardly any structured research from a marketing/communications standpoint.

In Study 1, consistent with our thesis, high efficacy messages positively moderated the relationship between threat and attitude. The use of high threat along with high efficacy messages yielded favorable attitudes towards uptake of cataract surgery, which is consistent with

the findings from several historical study results where EPPM was applied, like AIDS (Witte, 1991), breast cancer (Kline and Mattson, 2000), skin cancer (Stephenson and Witte, 1998), and self-protection (Witte et al., 1998). Furthermore, and importantly, the use of high threat and high efficacy messages resulted in positive intentions towards uptake of cataract surgery. Our findings from Study 2 indicated that loss-frames, compared to gain-frames led to more positive attitudes and intentions towards uptake of cataract surgery, when efficacy is high, rather than low. These findings are in line with similar studies like skin cancer (Rothman et al., 1993), STD (Block and Keller, 1995), mammography screening (Banks et al., 1995), anti-smoking (Kim, 2006) and HPV vaccination (Abhyankar et al., 2008). Therefore, our research contributes to extant literature by extending these theory-based models to a domain where it has never been tested before and in a setting that is culturally widely varied. This study makes an important contribution to consumer healthcare research in developing economies.

There have been studies that have exclusively studied the effects of message framing with efficacy (Abhyankar et al., 2008; Rothman et al., 1993) or without efficacy (Kim, 2006; Banks et al., 1995) and studies that have solely studied the effects of threat appeals. We combine both these theoretical frameworks in our research in an effort to arrive at an integrated template.

Public Policy Implications

With the World Health Organization's "Vision 2020: The Right to Sight" only a few years away, the findings from this study are useful in addressing eye care management in India. Our research findings have significant policy implications. Simply put, India accounts for one fourth of the blind population in the world, and hence is the largest blind country. Two-thirds of those blind in India is because of cataract. India can take pride in the fact that it was the first

country to set up a National program for control of blindness. Further, prominent eye care organizations like Sankara Nethralaya and Aravind Eye Care have revolutionized the service delivery and the quality of service delivery to the affected. However, there remains a huge backlog. This backlog is essentially due to attitudinal issues among the affected and can only be addressed through effective communications strategies.

The first step to a holistic and inclusive eye care public policy is for the policy makers, the private NGOs and social marketers to join hands to develop effective communication platforms and messages that would encourage consumers to become more aware and thus more involved. From a practical and managerial viewpoint, our studies will significantly benefit eye care organizations to help develop effective Information, Education and Communication (IECs) campaigns and spend their money efficiently. Thus far, efforts have been unidirectional with the concerned organizations having to *push* their services to the affected.

Examining the findings from our two field experiments side by side, it becomes clear that it is imperative that all health communications campaigns should include high efficacy messages regarding the recommended behavioral intervention. In the case of cataract, it should highlight the ease of getting operated upon, the time it takes to perform the surgery and the quick post-operation recovery. For instance, instead of bland announcements that a cataract camp is going to organized, pamphlets with threat appeals (for e.g., highlighting the threat of cataract in rendering eyes blind) and high efficacy appeals (for e.g., highlighting how cataract surgery can help avoid blindness) may be used. Additionally, loss-frames highlighting the loss of eyesight may be used in conjunction with high efficacy messages. Loss-frame alone did not seem to do the trick, while loss-frame combined with high efficacy was successful. Our research calls for a complete overhaul of message design from the current bland information dissemination (of cataract

surgery camps) to the use of fear and efficacy appeals; and loss-framing with high efficacy messages. These pamphlets may be distributed to the village councilor and (s)he in turn can widely distribute them to every household in the village. Also, blown-up posters of such appeals can be displayed in cinema theatres, village fairs, temples and public places in villages. While our research was conducted in rural India, displaying such posters can also be done in urban India. Such steps would go some distance in eradicating curable blindness.

The Government of India too would benefit because these people who would have otherwise been blind would now be able to see and would be more productive to society and contribute economically. For each US dollar spent on eye care and on the prevention of vision loss, there is a five-dollar return to the community (Taylor, 2007). In addition, it is estimated that VISION 2020, if successful, will provide a global saving of US $223 billion over 20 years (Frick and Foster, 2003). Moreover, the government would also be able to spend their communication and marketing money in a smarter way, thus being more effective and efficient.

Limitations and Future Research

Our study has a few limitations that future research may address. First, we used pictures to enhance the effect of threat appeal; however, we did not measure the degree of effectiveness or non-effectiveness of using visual content. Moreover, we used some text (copy) to provide a context to the pictures that accompanied the messages. We kept the same text in all our stimuli so that it does not confound the effect of the pictures but it does not help us separately assess the effects of the text and the pictures. Future research can therefore include different versions of the stimuli, one with only pictures that depict varying levels of vividness (Block and Keller, 1995), another with only text and one with a combination of pictures and text, to test the individual

impact of the pictures and the text. Other formats such as videos may also be studied apart from print. This would help understand message-processing abilities among the rural population, whose literacy rate is comparatively lower than her urban one.

Future studies can also manipulate variables such as source credibility and message involvement to test the use of threat appeals in rural India to address not only cataract-related issues but extend it to other major healthcare problems, such as diabetes, obesity and cancer. In India, companies like Cadbury's and Coke have benefited by using celebrities when confronted with dealing with crises and these appeals have worked for them. It could be possible that celebrity appeals could work in this issue as well. We also collected data only from India. Studies can be conducted on the same lines in Africa, other parts of south Asia and Latin America. While we used threat appeals following prior research, in future, researchers can consider the use of the other appeals like celebrity appeals (Bhutada et al. 2012), shame and guilt (Brennan and Binney, 2010) in cataract and related healthcare domains.

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Table 1

Total number of pamphlets = 30							
	Levels and Percentages						
Variables	Low, *n*	% of Total	High, *n*	% of Total	*N*	Cohen's Kappa (κ)	χ2
Severity level	29	.97		0	30	.96	26.13 **
Susceptibility level	30	1.00	0	0	30	1.00	22.53 **
Self-efficacy level	30	1.00	0	0	30	1.00	19.20 **
Response efficacy level	27	.90	2	.07	30	.79	22.53 **
* p < .05, **p < .01							

Table 2

Total number of pamphlets = 30			
Information About Cataract	*n*	% of Total	Cohen's Kappa (κ)
Severity			
Presence of the word "Cataract"	30	100%	1.00
Symptoms of cataract	7	23%	.96
How cataract is contracted	0	0%	1.00
Prevalence	0	100%	1.00
Risks			
Cataract causes vision deterioration	0	0%	1.00
Cataract causes blindness	0	0%	1.00
Susceptibility			
Are Age / Age range given to indicate susceptibility?	2	7%	.96
Are gender specific information on cataract susceptibility	0	0%	1.00
Efficacy			
Information on Self-Efficacy	3	10%	1.00
Information on Response Efficacy	2	7%	.79
Presence of the word "Cataract surgery"	30	100%	1.00
Surgery efficacy mentioned?	0	0%	1.00
Info on Recovery time of surgery	0	0%	1.00
Mention of IOL?	30	100%	1.00
Benefits of IOL	0	0%	1.00
Cost of surgery	30	100%	1.00
Tone of Message			
Positive	30	100%	1.00
Negative	0	0%	
WHO's Vision 2020			
Vision 2020 mentioned	0	0%	1.00
Information about Vision 2020?	0	0%	1.00
Source attribute			
Eye care organization	30	100%	1.00
NGOs	25	83%	.79
Political persons / Government	17	57%	.96

Table 3

Experiment 1								
Variables	Cronbach's α	CR	AVE	MaxR (H)	Attitude	Threat	Efficacy	Intention
Attitude	.92	.91	.62	.91	**.79**			
Threat	.77	.76	.51	.94	-*.09*	**.71**		
Efficacy	.79	.75	.35	.95	*.89* **	*.10* **	**.59**	
Intention	.82	.82	.61	.96	-*.05*	*.62* **	*.09* **	**.78**
* p < .05, **p < .01 *** p < .001								

Note: The values along the diagonals, appearing in bold, are the square roots of Average Variance Extracted (AVE), which is used to calculate discriminant validity. The values in italics are the correlations among the constructs. The values under CR are Composite Reliability. MaxR (H) is Maximal Reliability

Table 4

Experiment 1					
Hypotheses		Estimate	C.R.	p-value	Result
H1a	Threat → Attitude	-.21	-3.70	.01 ***	Not Supported
H1b	Threat → Intention	.61	5.89	.01 ***	Supported
H1c	Efficacy → Attitude	.91	7.62	.01 ***	Supported
H1d	Efficacy → Intentions	.01	.19	ns	Not Supported
H2a	Threat * Efficacy → Attitude	.14	2.90	.01 **	Supported
H2b	Threat * Efficacy → Intentions	.18	3.30	.01 ***	Supported
* p < .05; ** p < .01; *** p < .001, ns = not significant					

Table 5

Experiment 2									
Variables	Cronbach's α	CR	AVE	MaxR (H)	Attitude	Loss Frames	Gain Frames	Efficacy	Intention
Attitude	.92	.88	.54	.91	**.73**				
Loss Frames	.96	.96	.92	.91	*-.41* **	**.96**			
Gain frames	.93	.95	.89	.94	*.45* **	*-.95* **	**.94**		
Efficacy	.78	.79	.38	.95	*.79* **	*-.31*	*.35*	**.62**	
Intention	.84	.86	.62	.98	*.39*	*-.23* **	*.25* **	*.63* **	**.79**
* p < .05, **p < .01 *** p < .001									

Note: The values along the diagonals, appearing in bold, are the square roots of Average Variance Extracted (AVE), which is used to calculate discriminant validity. The values in italics are the correlations among the constructs. CR is Composite Reliability. MaxR (H) is Maximal Reliability

Table 6

Experiment 2					
Hypotheses		Estimate	C.R	p-value	Result
H3a	Loss Frames → Attitude	.02	.23	ns	Not supported
H3b	Loss Frames → Intentions	-.01	-.12	ns	Not supported
H4a	Loss Frames * Efficacy → Attitudes	.16	7.21	.01 ***	Supported
H4b	Loss Frames * Efficacy → Intentions	.17	5.55	.01 ***	Supported
* p < .05; ** p < .01; *** p < .001, ns = not significant					

Figure 1

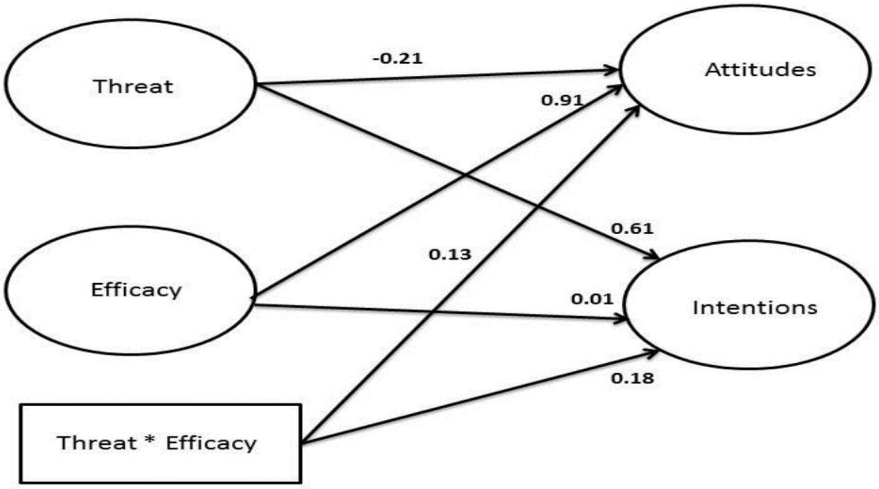
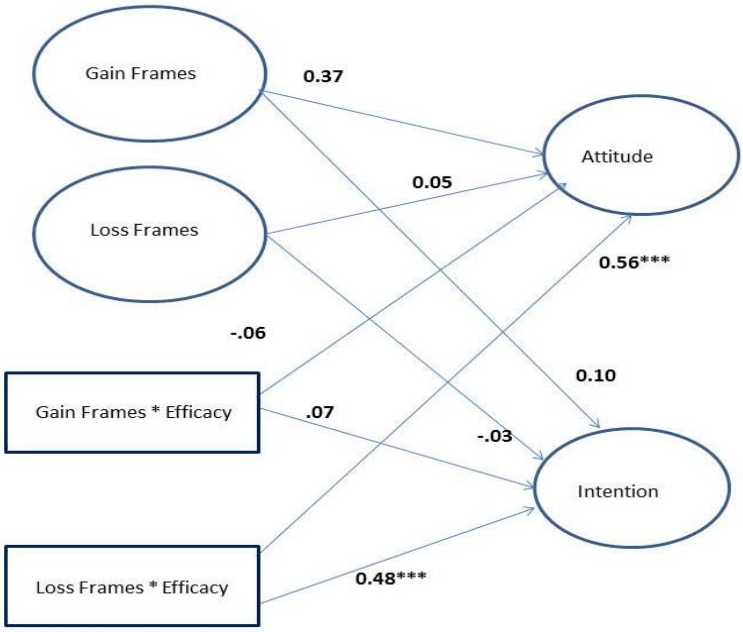


Figure 2



APPENDIX A

Scale	Items	Loadings
Fear (Witte et. al, 1996)	The message made me feel comfortable (-)	.53
	The message made me feel anxious	.72
	The message scared me	.78
	I felt skeptical after viewing the message (-)	.62
	I felt nervous viewing the message	.73
	Viewing the message I felt tensed	.73
Severity (Witte et. al, 1996)	Cataract is a dangerous condition	.67
	Cataract will cause permanent blindness	.94
	I am likely to get cataract sometime soon	.54
Susceptibility (Witte et. al, 1996)	I will definitely get cataract	.82
	I will not get cataract (-)	.72
Response Efficacy (Witte et. al, 1996)	Regular eye checkup is the easiest and best way to delay cataract	.70
	Regular checkup improves chances of early detection	.66
	Early detection of cataract increases chances restoring the eyesight	.74
	Regular eye checkups will not drastically improve my chances of detection (-)	.72
	Cataract surgery will successfully restore the vision	.72
	Cataract surgery is painless	.8
	Cataract surgery is easy to undergo and quick	.51
	Cataract surgery will not restore my eyesight (-)	.47
Self-efficacy (Witte et. al, 1996)	I can take an appointment with the eye clinic	.67
	Regular visits to the eye clinic is possible for me	.94
	I cannot visit the clinic regularly (-)	.53
Attitude (Witte et. al, 1996)	1. Regular eye checkup after age 45 is:	
	Important [ ] [ ] [ ] [ ] [ ] Not important	.68
	Good [ ] [ ] [ ] [ ] [ ] Bad	.61
	Sensible[ ] [ ] [ ] [ ] [ ] Foolish	.72
	Useful [ ] [ ] [ ] [ ] [ ] Useless	.74
	2. Undergoing cataract surgery is	.77
	Easy [ ] [ ] [ ] [ ] [ ] Not easy	.75
	Good [ ] [ ] [ ] [ ] [ ] Bad	.77
	Safe [ ] [ ] [ ] [ ] [ ] Unsafe	.84
	Useful [ ] [ ] [ ] [ ] [ ] Useless	.82
	Harmless [ ] [ ] [ ] [ ] [ ] Harmful	.75
Intention	I plan to get my eyes tested in the next 6 months	.74

(Witte et. al, 1996)	I want to consult the eye doctor to discuss options regarding cataract surgery	.84
	I am motivated to know more about cataract	.74
	I will undergo surgery to restore my vision	.74
	I will not check my eyes regularly (-)	.71
	I will not undergo cataract surgery (-)	.65
Gain Frames (De Dreu and McCusker, 1997)	The message given in the poster is positive	.95
	The poster message highlights the benefits of cataract surgery	.92
Loss Frames (De Dreu and McCusker, 1997)	The message given in the poster is negative	.93
	The poster message highlights dangers of not undergoing the cataract surgery.	.92

Note: (-) Reverse-worded items.