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The Impact of Help-Self and Help-Others Appeals Upon Participation in Clinical Research Trials

Susan Lewis Casey
Old Dominion University, caseybeach@cox.net

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**THE IMPACT OF HELP-SELF AND HELP-OTHERS APPEALS UPON
PARTICIPATION IN CLINICAL RESEARCH TRIALS**

By:

Susan Lewis Casey
B.B.A. May 1977, The College of William and Mary
M.B.A. May 1979, The College of William and Mary

A Dissertation Submitted to the Faculty of
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Approved by:

Anusorn Singhapakdi (Chair)

John B. Ford (Member)

G. Steven Rhiel (Member)

Chuanyi Tang (Member)

ABSTRACT

The need for participants in medical research trials continues to grow yet the successful recruitment of volunteers remains a challenge. Much of the research regarding patient recruitment activities has been conducted in the social sciences. As such, the specific impact of advertising strategy to help recruit volunteers remains unclear. The proposed research is designed to help to fill this gap in the literature, generating insight for continuing academic research and helping practitioners gain efficiencies in developing new pharmaceuticals.

This research uses an experimental design to assess the impact of two variables upon clinical trial participation. These two variables were selected given that they have not been examined together in the context of clinical trial recruitment. The first manipulated variable is advertising appeal. A help-self appeal, a help-other appeal, or a control appeal are independently featured in advertising copy. The second manipulated variable is message framing. A loss frame or a gain frame is featured in the advertising copy. This resulted in six print advertising scenarios that were randomly assigned to respondents. A third variable, involvement, was measured using three scale items adapted from past research. The research trial was described in each advertisement as a screening/detection trial for melanoma skin cancer.

The attitude variable was measured using a six item scale, subjective norm was measured using a three item scale and intention was measured using a two item scale. The scale items used were adapted from prior research. A questionnaire was developed and pretested and the data was collected by Qualtrics of Provo, Utah. Three hundred seventy eight responses were used to test twelve hypotheses. Regression analysis was used to examine moderation and mediation. Moderated mediation was also tested using the SPSS macro PROCESS (Hayes 2013). The full model also included six covariates. A significant relationship was found between the help-others

appeal (when compared to the control appeal) and the attitude toward participation in a clinical research trial for melanoma skin cancer. Furthermore, attitude was found to mediate the relationship between a help-others appeal (when compared to the control appeal) and the intention to participate in a clinical research trial for melanoma skin cancer. The moderating variable message frame was found to be a significant moderator of the relationship between both the help-self appeal and the help-others appeal and the attitude toward participation in a clinical research trial for melanoma skin cancer. A loss frame led to a greater attitude toward participation in a clinical trial for either of the two appeals. There was no significant relationship between the gain frame and attitude. Involvement was not a significant moderator of the relationship between either of the two appeals and attitude toward clinical trial participation. The direction of the relationship between involvement and attitude was however positive. Moderated mediation results were different for the help-self and the help-others appeal. Independent of any moderation by message frame (gain or loss), the indirect effect of the help-self appeal on intention through attitude is moderated by involvement. As involvement with melanoma increases, the indirect effect of the help-self appeal through attitude upon intention to participate in a clinical research trial for melanoma skin cancer also increases, regardless of frame type. Independent of any moderation by involvement, the indirect effect of the help-others appeal upon intention through attitude is moderated by frame type. At each level of involvement, there is a greater indirect effect of the help-others appeal through attitude upon intention to participate in a clinical research trial for melanoma skin cancer for a loss frame than a gain frame.

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CHAPTER I

INTRODUCTION

Background and Significance of the Problem

Simple clinical research trials predate Christ. In the Bible (Book of Daniel), King Nebuchadnezzar ordered that his subjects adopt a diet of only red meat and wine. Several young men of royal lineage objected and were allowed to follow a diet of legumes and water for ten days. At the conclusion of ten days, the vegetarians appeared to be better nourished than the meat-eating group so the legume eaters were allowed to continue their diet (Bhatt 2010). In 1747 James Lind, an English physician, designed a novel controlled clinical trial for scurvy, a common affliction of sailors at sea. When oranges and lemons were added to the diet of one group, their condition markedly improved over the group that followed the standard pre-existing diet. During the nineteenth century smallpox research was conducted in England and the United States. Thomas Jefferson was an early clinical trial participant, traveling from Virginia to Philadelphia in 1776 to undergo a novel procedure designed to protect against smallpox (www.monticello.org). This procedure, now known as vaccination, developed from a crude but effective clinical research trial performed by Edward Jenner in 1796. In an experiment he was able to successfully protect a young boy from smallpox by inoculating him with the fluid drawn from a person infected with cowpox. He was later able to replicate the experiment and reach the same result. In the nineteenth century the word “vaccine” (from the Latin “vacca” for cow) was coined by Louis Pasteur to describe products capable of providing immunization. The results of Jenner’s work were so impressive that they had an international impact. The King of Spain conducted an extensive distribution of vaccine to his dominions in North and South America and

Asia in an attempt to reverse depopulation and maintain tax revenue. Napoleon insisted that uninfected troops and French citizens be vaccinated (Barquet and Domingo 1997).

The effects of vaccination on society have been profound. The elimination of disease has had a direct impact on population growth rates and the development of advanced standards of living. Thus, a single clinical research trial that leads to the development of an effective new health intervention can have far reaching effects. Reasons for participation in early studies are not documented and our understanding of today's participants is incomplete. Only in the recent past have subjects in clinical research trials become targets of study. Much of this investigation has occurred in the fields of psychology, social psychology and medicine. Motivation and participation have been widely researched (Ellis 2000; Cunny and Miller 1994). Other research topics include patient's perspectives on clinical trials (Mattson et al. 1983), the ethics of human volunteers and clinical trials (Markman 1986; Baum et al. 1989), demographic issues involving clinical trials (Mouton et al. 1993; Lewis 1998), and physician's concerns regarding trials (Spiro 1986). Levenkron and Farquhar (1982) offer that newspaper advertisements and media can be effectively used to promote awareness and a positive impression of a clinical study yet specific investigations based on marketing theory and insight are lacking. In many studies, a "wide net" must be cast to generate the required number of eligible research participants. Hondras et al. (2008) in a lower back pain investigation performed 3789 telephone screenings and enrolled 432 (11 percent) at a cost in excess of \$156,000. In an obesity prevention trial for young children, Robinson et al. (2007) screened 675 recruited families before enrolling the 70 required (total cost of almost \$26,000). Cambron et al. (2010) received 1211 telephone responses to promotional efforts for a lumbar spinal stenosis study and were able to enroll 60 subjects (total cost of almost \$41,000). Of particular relevance is their description of a key study limitation: a lack of

knowledge as to “what aspect of each advertisement was intriguing to each patient” (p. 60). This dissertation is an attempt to begin to fill this void.

Statement of the Problem

There is a continual worldwide need for individuals to serve as participants in research investigations. This is true for all academic disciplines as well as in government and industry settings. However, nowhere is this need greater than in the field of medical research. For a new drug to receive approval from the U.S. Food and Drug Administration a strict regimen of testing must be followed. These tests, specifically known as clinical trials, rely on human volunteers. The dearth of such volunteers can lead to a time lapse of five to ten years between inception and FDA approval, a dismally long time for those in need of new approaches to treatment. The situation has become so acute that a novel industry – patient recruitment - has emerged as an interface between pharmaceutical, government and academic researchers and the need for clinical trial enrollees (Brescia 1999). Any reduction in the amount of time necessary to bring a new pharmaceutical product to market would provide multiple benefits. Consumers could benefit by receiving state of the art medical treatment sooner, allowing for a range of possible outcomes. For some, a new drug could provide an improved standard of living while for others quicker access to a new drug could be a matter of life and death. Advances from new drug therapies have increased the five-year survival rate from all cancers by 30 percentage points from 1950-1954 to 1996-2004 (Pfizer 2014). Pharmaceutical firms and their business partners could benefit from a more rapid recovery of sunk costs and a quicker return on investment. Figures cited for the *daily* income lost due to delays in development vary widely, yet are staggering (\$600,000 to \$8,000,000, Caulfield 2005). A 2014 study by the Tufts Center for the Study of

Drug Development found that the cost to develop and gain marketing approval has increased by 145 percent (compound annual rate of 8.5 percent) from 2003 to 2013. Time is truly of the essence.

Although a 2001 BB/Harris Interactive survey found that 83 percent of Americans are willing to participate in clinical studies, only 13 percent actually did (Brescia 2003). Domestically, only about five percent of adult cancer patients participate in cancer clinical trials (ACS 2014). Figures for the enrollment of healthy volunteers are also low, ranging from five to twelve percent (Comis et al. 2003). One of the major obstacles to the enrollment of participants in clinical research trials is a lack of knowledge on the part of those who fit the profile for inclusion. The findings from a 2002 survey conducted by a coalition of national cancer groups lends insight: eighty percent of cancer patients were unaware that participation was even an option. Thus, proven methods of informing, persuading and engaging potential participants are sorely lacking. Understanding how effective advertising appeals could raise awareness and in turn participation is a goal of this research.

Patient recruitment by physicians has long been a valuable technique for encouraging some types of potential participants, particularly for trials involving individuals already afflicted with a disease. This approach assumes however that a physician is knowledgeable about the myriad of trials that are available, has the time and motivation to discuss them with patients, and is perceived as trustworthy. Ross (1999) describes barriers to ethnic minority participation in clinical trials and offers that fear and mistrust along with stereotypes and cultural myths are factors. Hussain-Gambles et al. (2004) suggest that healthcare professionals should be educated and trained to specifically overcome patients' fear and mistrust.

General interest publications often feature articles in hardcopy or in online editions that describe ongoing or upcoming trials (Businessweek 2015). Complete information about all available clinical trials is provided online by the National Institutes of Health (ClinicalTrials.gov). Although the availability of information via the internet and social media has grown tremendously this may not translate directly into a more knowledgeable pool of participants as usage patterns vary along many demographic dimensions. Sood et al. (2009) examined patients' attitudes about clinical trials and found that while sixty-eight percent of individuals were interested in participating in a clinical trial, eighty-two percent did not know about readily available online information pertaining to trials for their respective afflictions. Thus, the widespread availability of online information did not translate into increased patient knowledge of trial availability. Patient recruitment for clinical research trials has a long history of being researched in the medical sciences literature (Agras and Bradford 1982; Agras et al. 1982; Neill and Chessa 1998; King et al. 1994). Research regarding participant motivation is also historically well documented (Cunney and Miller 1994; Bevan et al. 1993; Cassileth et al. 1982) in the social science literature. The use of media vehicles such as print, television and radio, is noted as an outreach technique in many studies (King-Fai et al. 2007; Anastasi et al. 2005; Garrett et al. 2000). However, their respective impacts have typically been examined only in a general manner such as in terms of "responses generated", sometimes on a cost basis. Determining the impact of experimentally manipulated advertising messages is essential to be able to effectively reach potential participants and in turn generate participation. In their literature summary and annotated bibliography of 91 data supported articles Lovato et al. (1997) describe only 2 studies that involved message manipulations. The situation has not changed as it remains difficult to find publications that detail message content or manipulations. Brown et al.

(2008) describe the importance of pretesting messages to be used in mammography recruitment yet research describing such efforts is non-existent. Tate et al. (2014) describe more thoroughly the development of recruitment methods and messages for a trial on young adult weight gain, as do Partridge et al. (2015) yet this type of research specificity is largely absent from the literature. Recently, Friedman et al. (2014) examined the content and readability of recruitment resources and concluded that future studies need to examine the association between participation intentions and recruitment messages.

Seventeen years ago the situation regarding the process of recruitment was described as a “marketing challenge within the chronological and regulatory parameters of the pharmaceutical product development process” (Brescia 1999, p.79). This description is still appropriate. The stages of pharmaceutical development are well documented by the FDA, yet specific marketing aspects of the process lack empirical investigation. Butt et al. (2010) describe the success of using newspaper advertising as a recruitment vehicle but make no mention of the specific message used. Hapca et al. (2013) used newspaper advertising as a recruitment vehicle but did not describe message development. The effectiveness of newspapers was criticized even though preliminary benchmarks were not established and lack of potential respondent affiliation with a participating general practitioner greatly diminished enrollment (and increased per person recruitment expense). In other words, the media vehicle was unable to deliver given other limitations of the recruitment plan.

In order to understand how patients are successfully recruited requires an understanding of more than simply how they became aware of available programs. There is an urgent need to bring analytical rigor to the task of recruitment. Public service advertising has been shown to positively influence the general perception of clinical trials (Eli Lilly 2006). A public awareness

campaign in Scotland (Mackenzie et al. 2010) found that although public understanding of clinical trials can be improved through a media campaign the campaign did not lead to an increased likelihood of participation. Hennick-Kaminski et al. (2014) propose a social marketing campaign to increase general public awareness and in turn participation in clinical research trails in North Carolina. The development of this campaign is based on focus group research, concept and message testing. Its results are yet unknown. Mapstone et al. (2007) offer that there is limited data regarding strategies that successfully recruit participants, and suggest continued investigation. Krusche et al. (2014) describe the effectiveness of various recruiting methods, and call on future researchers to fully report strategies used and results generated. To summarize, it is important to more specifically determine which advertising components are effective in generating a positive message evaluation and in turn an enhanced likelihood of participation in clinical trials. Comprehensive research that simultaneously examines the impact of appeals and other contributing factors is needed. The lack of empirical research devoted to this topic provides an opportunity – a gap – that this dissertation will attempt to fill.

Purpose and Scope of this Study

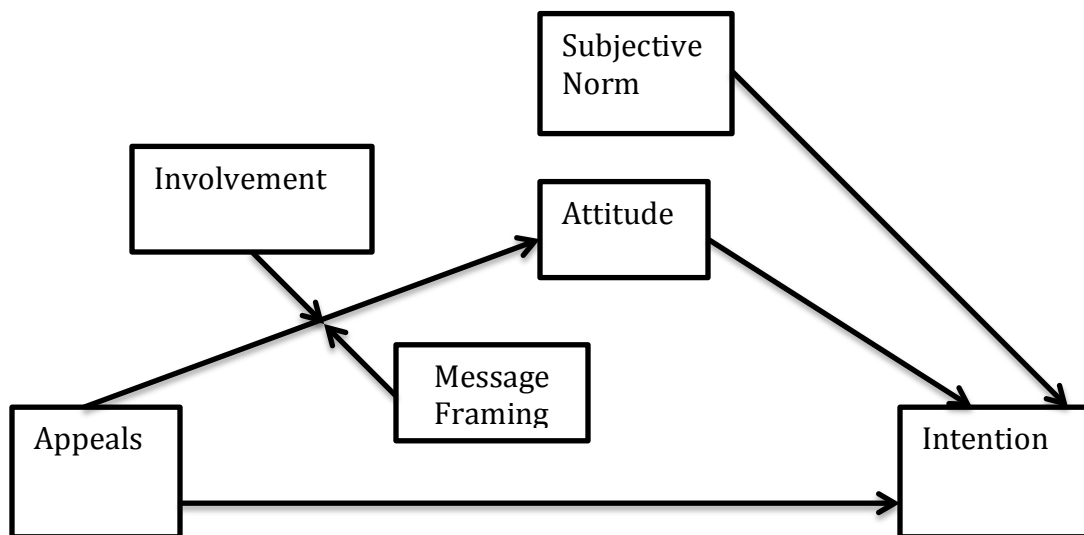
Understanding the impact of advertising on participation in clinical research trials is a broad topic. To operationalize this investigative area requires a refinement in purpose.

The specific objectives of this study are to: (1) determine if either a help self or help others advertising appeal is related to attitude and intention to participate in a clinical research trial, and (2) assess main effects and interaction between and among the independent, dependent and moderating variables. The conceptual foundation of this investigation is illustrated in Figure 1.

Components of this model include: (1) the independent variable of advertising appeal (help-self or help-others or a control featuring neither); (2) a moderating variable, involvement (3) a moderating variable, message frame (gain or loss); (4) subjective norm; (5) the mediating variable attitude and (6) the dependent variable intention. The model examines the direct relationship between appeal and intention, as well as the indirect effect of appeal through attitude upon intention (mediation by attitude). The model also examines the moderation of appeal upon attitude by two moderators – an individual's involvement with the disease as well as by the message framing. The inclusion of subjective norm is suggested by the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980) as an input to the development of intentions. The rationale for the model and the choice of these model components will be explained in detail in chapter two (Literature Review).

Figure 1

A Model of the effect of Help-self and Help-others advertising messages upon Participation in a Clinical Research Trial



Control Variables: age, gender, ethnicity, education, familiarity, perceived behavioral control

There are different categories of clinical trials, and intention to participate may vary given the nature of the trial. The setting in this research is a print advertisement encouraging participation in a clinical research trial for the screening/detection of melanoma skin cancer. Specifically, a potentially life threatening illness, melanoma skin cancer, is identified in the advertisements as the affliction that improved screening will be able to better identify. The advertising copy will vary given the use of three different message appeals, help-self, help-others or no recipient of help (control) and two different message frames, gain or loss. The end result will be six

advertising treatments that will be randomly included in a questionnaire designed to assess the hypothesized relationships.

Contributions to Marketing Theory and Practice

The application of marketing knowledge outside the traditional realm of products and services continues to be a worthy endeavor. Philip Kotler began arguing for broadening the concept of marketing in the late 1960s (Kotler and Levy 1969). Kotler's vision of expanding marketing theory to philanthropic organizations in a post-industrial society has still not fully materialized. Johar et al. (2006) continue to bring attention to this need in their call for a broader look at consumers, including their actions in different roles such as that as a patient.

Although participation in clinical research trials is an example of consumer behavior, the focus of past research has not fallen within the field of marketing. A precedent for investigating promotional appeals in the realm of helping behavior has been set and includes blood donation (Burnkrant and Page 1982), organ donation (Horton 1991) and charity ad appeals (Brunel and Nelson 2000). Bendapudi et al. (1996) provide an excellent overview of helping behavior and research propositions regarding promotional strategies that could assist charitable organizations.

This dissertation attempts to contribute to marketing theory by expanding the investigation of helping behavior and promotional appeals to a novel area – clinical research trials. Specific contributions include:

- 1) extending prior work on social marketing campaigns (Shao 2012) to clinical research trials,

- 2) clarifying the “framing debate” by examining a specific setting with unique message and moderator components (as called for by Cox and Cox 2001),
- 3) extending the application of help-self and help-others appeals from the pro-social realm to a novel setting, clinical research trials,
- 4) expanding the investigation of the predictors of attitude formation in health behavior using a clinical research trial setting, and
- 5) specifically providing empirical evidence for (or against) the hypothesized relationships between the advertising appeals and intention to participate in a clinical research trial using a sample that will allow generalizability.

This dissertation will also provide important practical marketing implications. Although pharmaceutical manufacturers have closely examined the impact of specific promotional techniques on the sales of their products, the same rigor has not been applied with regard to the advertising messages designed to increase participation in clinical research trials. The inability of many clinical trials to fill their protocols in a timely fashion contributes to the time delay between inception and market delivery of new pharmaceuticals. Practitioners have begun to appreciate the help that the application of marketing techniques bring, and are calling for its application (Francis et al. 2007). Findings will help to improve:

- 1) recruitment efforts allowing trial results to be generated in a more cost efficient and timely manner and
- 2) general public health by lowering the cost of newly discovered drugs and drug applications.

CHAPTER II

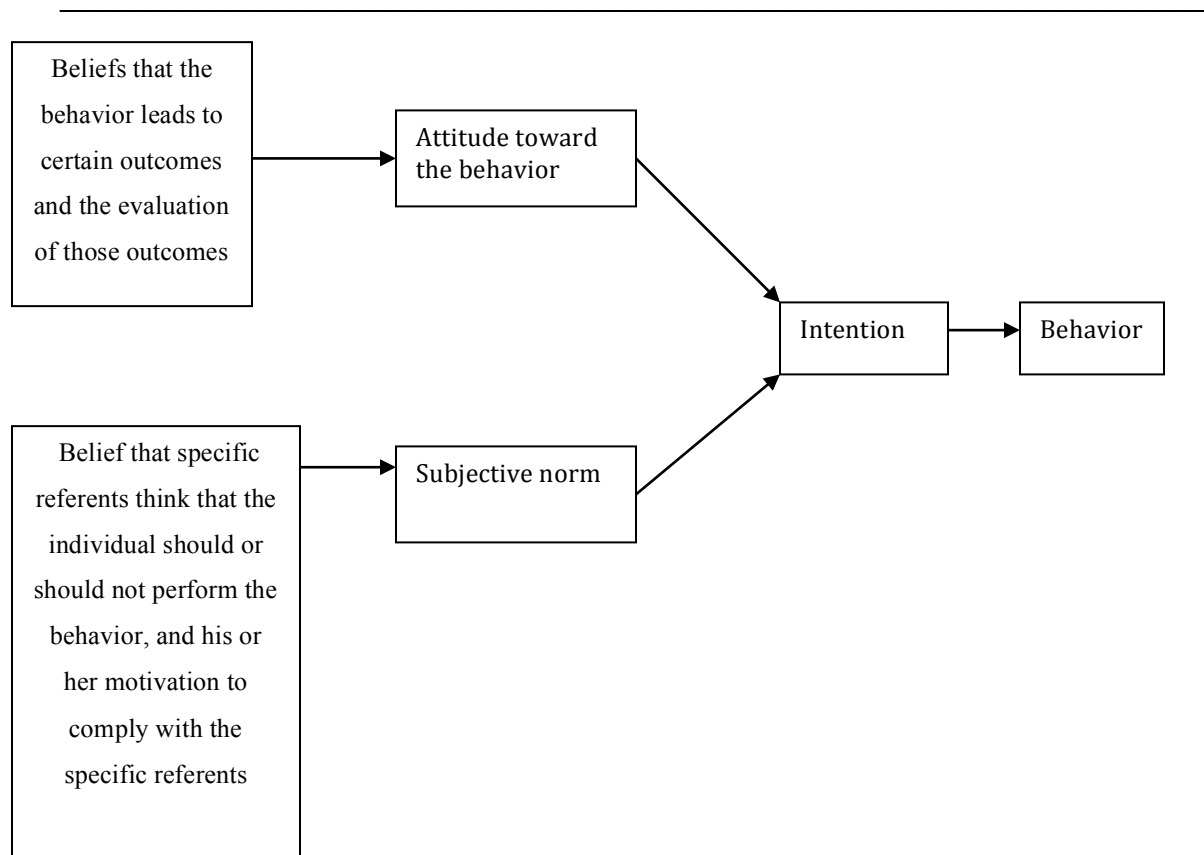
LITERATURE REVIEW

Review of the Theoretical Literature

The use of theory to derive health behavior interventions has been found to be effective in numerous studies. (Glanz and Bishop 2010; Roncancio et al. 2015). Two predominant theories that have been used are the Health Belief Model (Hochbaum 1958; Rosenstock 1960, 1966, 1974) and Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980). Both are expectancy value models that describe the components and processes that lead to outcomes. The Health Belief model focuses more narrowly on the specific components and process that leads to a health related outcome. The Theory of Reasoned Action (TRA) is a more general theory of attitude prediction that describes a continuum that moves from a set of held beliefs to a behavior, either in the realm of health or non-health situations. Although Noar and Zimmerman (2005) lament the lack of consensus among the various explanatory theories they determined that the TRA and its later extension, the Theory of Planned Behavior (Ajzen 1985) was widely cited in more health behavior studies (30 percent) than any other theory. The TRA provides the foundation for the development of a model that links the components of this research (see figure 2).

Figure 2

The Theory of Reasoned Action



The Theory of Reasoned Action

The understanding and prediction of human behavior is the primary focus of consumer research. In an early content analysis, Helgeson et al. (1984, p.450) found that one of the major streams of consumer research was "internal influences on consumer behavior" and furthermore that the primary focus of this category of investigation is attitude research. As defined by Fishbein and Ajzen (1975) an attitude can be described as

a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object or behavior. Since attitudes are covert, much early work involved investigations of attitude theory and measurement. This led to more specific investigations and to the development of theories that describe the relationship of attitudes to eventual behavior. Paramount amongst them is the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980). It is recognized as the predominant explanatory mechanism of the attitude-behavior link, and is lauded for placing “a compelling and coherent structure on the field of attitudes, which was in relative disarray before their work” (Sheppard et al. 1988, p.340).

The theory itself is based upon an assumption of human rationality and volitional control, thus the term “reasoned action”. It follows the basic causal chain of classic attitude theory, specifically a progression from belief to attitude to intention to behavior. It is important to emphasize that the focus of the theory is on the formation of an attitude toward a behavior rather than the formation of an attitude toward an object. The specific formation of an attitude requires the development of a series of belief statements and evaluative judgments about an outcome. A multiplicative function combines these elements, and a summation is developed across all belief/evaluative pairs, thus its description as an expectancy value model. The classic attitude linkage model is expanded by the inclusion of “subjective norm” as an input to the formation of intentions. The subjective norm is formed in the same way. Individual belief statements about what various significant others think and the motivation to comply with these individual referents are combined multiplicatively. The result is developed by summation across all pairs. The relative importance of attitudes and subjective norm to intention formation will

vary across individuals and behavior and thus their contributions are weighted. Assuming that intention and behavior are operationally defined such that there is correspondence in terms of their target, action, context and time-frame elements, the theory proposes that intentions are the best indicator of the likelihood of performing a voluntary act (behavior) given that intent does not change prior to the performance of the act. Intervening variables can negatively affect the relationship between intention and behavior (Jaccard 1981) however many studies attest to the model's predictive validity given these boundary conditions. Perhaps more compelling is the strong predictive utility of the model even in situations where the boundary conditions have not been used as research parameters (Sheppard et al. 1988). The Theory of Reasoned Action has been used successfully to explain a wide variety of health behaviors. These include mammography participation (Montano et al., 1997), breast self examination (Lierman et al. 1990), breast cancer screening (Gullatte 2006), blood donation (Baggozzi 1981), testicular self exam (Moore et al. 1998), colorectal cancer screening (McCaffery et al. 2003), cervical cancer screening (Bish et al. 2000; Barling and Moore 1996) diabetes screening (Orbell and Hagger 2006) Alzheimer's disease screening (Frost 2001), and promoting AIDS prevention behavior (Fisher et al. 1995).

Behavioral change is one of the goals of advertising, specifically how to influence overt behavior toward the acceptance of, preference for and purchase of a product or service. The Theory of Reasoned Action provides a rationale for changing behavior, specifically by focusing on the beliefs that are used by individuals as they form attitudes. According to Fishbein (2008), first a behavior must be specified as involving an *action* directed at a *target*, performed in a given *context*, at a certain point in *time* (the principle of

correspondence or compatibility). Substantial empirical research has documented that intention (readiness to engage) has been shown to be the single best predictor of behavior, given agreement the same action, target, context, and time elements. Various meta-analyses have reported mean intention-behavior correlations ranging from .45 to .56 (Notani 1998; Randall and Wolfe 1994; Van den Putte 1993). Intentions may be driven by attitudes or normative considerations, however both are functions of underlying beliefs. After evaluating the predictive capability of either attitudes or normative components upon intention, one can return to the beliefs that underlie either construct to devise a behavioral change strategy. Specifically, attitudes can be changed in two ways. First, information can be provided that attempts to change the strength of currently held beliefs or which generates the formation of new beliefs. Secondly, information can be provided that changes the person's evaluation of the consequences perceived to be associated with the performance of the behavior. As to subjective norms, the same approach is valid. Information can be provided that influences the respondent's evaluation of the referents impact (value), or information can attempt to change a respondent's level of motivation to comply with a referent. In an analysis of cancer screening intentions and behaviors, Smith-McLallen and Fishbein (2006) found that subjective norm was predictive of intention to participate in cancer screening behavior and recommend that communications to improve screening activity should draw particular attention to these norms. This dissertation should validate these results. Furthermore it should contribute to the understanding of the beliefs and evaluations underlying the formation of attitudes and subjective norms that impact clinical research trial participation decisions. According to Finnegan and Viswanath

(2008, p. 369), “media communications may be targeted to either change these beliefs or to reinforce them”.

These techniques for behavioral change can be further enhanced by examining the relationship of various control variables (gender or age for example) to better understand the beliefs of a particular target audience and in turn the message elements necessary to address concerns that may be impeding intention and behavior.

The first two research hypotheses are derived from the Theory of Reasoned Action:

H₁: Attitude toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

H₂: Subjective norm toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

Model Components

Appeals

The use of help-self or help-others appeals is based upon the belief that the motivation for helping can be egoistic or altruistic (Bendapudi et al. 1996). Historically egoism, or a concern for increasing one’s personal welfare, can be traced to the writings of Plato and Aristotle who proposed that the egoism concept was the central focus of human behavior. Alternatively altruism, which involves a greater concern for the welfare of others than for self, can be traced to the Judeo-Christian belief that proclaims one should “love thy neighbor as thyself”.

Batson (1990, 1987) describes helping behavior in terms of egoism and altruism. Egoistically motivated behavior has two components. The first describes helping behavior

from self-serving outcomes and includes actions of two types: those that are undertaken to gain rewards or those that are undertaken to minimize punishment. A second egoistic behavior includes actions that are taken to reduce feelings of personal distress or shame from inaction.

The second component of helping behavior is altruism. This refers to actions motivated not by implications to self but by a perceived unmet need of others (Batson 1990). This is particularly true if the helping individual experiences empathy, or the ability to put oneself in another's place and experience his or her feelings. Research has found support for both motives as being effective in generating support for social marketing causes. For example, Holmes et al. (2002) determined that monetary contributions increased when self-benefit appeals were featured, whereas Fisher et al. (2008) found that donation to public television drives was enhanced by other-focused appeals. Advertising messages will be most persuasive when there is a match between their content and the motivational base of the target audience (Eagly and Chaiken 1993; Shavitt 1990). This makes determining the influences (message components, mediators and moderators) on potential participants important so that messages can be more effectively tailored. A review of other research that has examined the relative importance of help-self and help-others appeals follows. Incidentally, there has been limited investigation into the use of both simultaneously. Most authors (White and Peloza 2009; Langer (2013) explain that the two are commonly examined in opposition to maintain consistency with prior research, and to determine situational preference.

White and Peloza (2009) examined help-self and help-others appeals to determine how non-profits could better position themselves and generate charitable support using

public self-image concerns as a moderator. They explain that the efficacy of help-self appeals is often explained by social exchange theory. Socially responsible behavior (such as donating) is undertaken when self-benefits are thought to outweigh the costs. Public accountability for donation responses did moderate the relationship such that other-benefit appeals led to greater charitable support in a public setting.

Another theoretical explanation for the use of these two appeals is found in self-construal theory. The theory was originally developed to describe and compare Eastern and Western self-conceptualizations (Markus and Kitayama 1991). The independent nature of the Western cultures includes a focus on the individual in self-centered terms with an emphasis on the betterment of one's self (Aaker and Lee 2001). The cultures identified as Eastern instead value an interdependent nature and an emphasis on the betterment of the larger community. These different self-views have been found to impact cognitive processes, in particular, responsiveness to advertising (Zhang and Gelb 1996; Han and Shavitt 1994).

Bendapudi et al. (1996) provide an assessment of the literature on helping behavior in leading marketing journals over a twenty year period and find that of several thousand publications, only 27 (less than .5%) dealt with helping. They lament this finding given the needs of charities and other organizations that rely on volunteers to accomplish their goals and encourage marketers to more fully research this neglected topic. Despite this call, nonprofit organization marketers have yet to determine the most effective ways to position charitable appeals. In a small-scale pilot investigation, White and Peloza (2009) did find that charities regularly use other-benefit and self-benefit appeals yet the relative success of either is not known. Both help-self (utilitarian) and help-others (altruistic) appeals have

been used to investigate limited issues in social marketing. Singhapakdi and LaTour (1991) examined altruistic and utilitarian appeals in the context of an anti-littering campaign and found the greater relative impact of altruistic messages. Kopfmann and Smith (1996) explored these themes with regard to organ donation. Brunel and Nelson (2000) investigate help-self and help-others charity ad appeals using gender as a moderator and world-view as a mediator and established support for both. Chang and Lee (2011) and Ye et al. (2015) investigated charity-giving behavior using help-self (egoistic) and help-others (altruistic) appeals. Hupfer (2006) and Huang (2012) examined blood donation using an agentic (self oriented) versus communal (others oriented) appeal. Kareklas et al. (2014) examined how egoistic and altruistic considerations impact consumers' attitudes and intentions toward the purchase of organic food. Green and Peloza (2014) examined societal benefits and consumer benefits of environmentally friendly products.

The research by Locock and Smith (2011) and McCann et al. (2010) both examine the reasons individuals state for participating in clinical trials and concluded that altruistic and personal benefit were both identified as reasons for participation. These motivations have been expressed repeatedly over time. Specific responses have included "to advance medical science", "to help others with the condition", "to have my condition and treatment reviewed by a specialist", and "worried that my illness would get worse without joining the trial" (Cassileth et al. 1982; Newberg et al. 1992; BBK Healthcare 2004; McCann et al. 2010; Jenkins et al. 2013). As suggested by Atkin and Freimuth (1989), the cognitive orientations of individuals must be known before the development of a persuasive communication. The investigation of help-self and help-others appeals as a component of

advertising copy intended to encourage participation in a clinical research trial is warranted. White and Simpson (2013) examined how three different types of normative appeals (injunctive, descriptive and benefit) impacted sustainable consumer behaviors given the activation of the individual (help-self) or collective (help-others) level of the self. They call for an examination of these two appeals in encouraging other helpful behaviors. As early as 1979, Rothschild describes the need for the examination of communication alternatives in the “nonbusiness” sector – charity, public and non-profits. As these various sectors have unique features, the communications approaches used in each should be customized. Past findings regarding the effectiveness of help-self or help-others messages in the realm of charity or even organ donation cannot be assumed to be valid for their direct application in the area of clinical research trials.

Based upon these findings, the next research hypotheses are proposed:

H₃: There will be a direct effect of appeal on intention to participate in a clinical research trial for melanoma skin cancer.

H_{3a}: A help-self appeal will have a positive impact on intention to participate in a clinical research trial for melanoma skin cancer.

H_{3b}: A help-others appeal will have a positive impact upon intention to participate in a clinical research trial for melanoma skin cancer.

H₄: There will be an effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer.

H_{4a}: A help-self appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.

H_{4b}: A help-others appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.

H₅: The effect of appeal upon intention to participate in a clinical research trial for melanoma skin cancer will be mediated by attitude.

Message Framing

Prospect theory, a behavioral economic theory that describes individuals' choice between alternatives, provides the theoretical basis for many investigations on health message framing (Kahneman and Tversky 1979; Gallagher et al. 2011). It describes decision making under conditions of uncertainty and risk. Message framing involves cognitive bias such that individual reaction to a choice differs according to how it is presented. The ultimate goal is to promote a particular behavior (Rothman and Salovey 1997). Messages can be framed in terms of the gains (less risky) that will result if a given action is taken or losses (more risky) that will result if the action is not taken. Positively framed messages specify attributes or benefits to be gained while negatively framed messages specify attributes or benefits to be lost by following a particular behavior (Levin 1987; Meyerowitz and Chaiken 1987). For example, a gain framed message promoting healthy eating would state: "Eating 5 fruits and vegetables a day will strengthen your immune system, improving your health." The same information in a loss framed version would state: "Not eating 5 fruits and vegetables daily will weaken your immune system, worsening your health." The investigation of the relationship between message framing and health communications and behavior has a long history and remains pertinent (McNeil 1982; Maheswaran and Meyers-Levy 1990; Rothman and Salovey 1997; Shao 2012). However, findings regarding the situation specific effectiveness of either frame remain inconsistent. O'Keefe and Jensen (2006, 2009) and Gong et al. (2013) describe research findings that have been unable to determine an advantage for either. This may be attributable to the limitations of prospect theory, given that in the area of health behavior context may also play an important role (Rothman and Salovey 1997). They offer that the amount of attention or cognitive processing devoted to the message, the acceptance of the frame presented (impacted by past and present

experiences), and the perceived function of the advocated health behavior (prevention, detection or recuperative) all can influence message framing. Levin et al. (1998) and O’Keefe and Jensen (2006) state that mixed results can be attributed to the different operationalizations of gain or loss frames. Same consequences framing (gains versus non-gains) emphasizes either the benefits of adopting a behavior or the benefits lost by failing to do so. Alternatively, different consequences framing (gain versus loss) emphasizes either the benefits of adopting a behavior or the costs of not doing so. O’Keefe and Jensen (2006) add that that differential outcomes of framing may be due to the certainty of the outcome behavior. Gain framed messages showed distinct advantages over loss-framed messages for preventive dental hygiene behaviors but not for having a flu vaccination. The rationale given by the authors was that “the underlying mechanism must be a corresponding distinctive difference in perceived-likelihood-of-outcomes between performing and not performing dental hygiene behaviors” (O’Keefe and Jensen (2007, p. 637). Given these conflicting results, suggestions have been made that may help to clarify the conflicting results. Latimer et al. (2007) suggest that risk implications be examined not at the level of the general behavior but instead at the level of the individual. In other words what could cause variation in individual response – what could moderate the reaction to the outcome variable? Additionally it has been proposed that research investigate not only the overriding frame but also the content of the message itself (Shao 2012). Gong et al. (2013) concur, and offer that health-related behaviors may be “modulated” by many variables or impacted by specific conditions, and suggest that both should be investigated in future research. To summarize, health messages must not only communicate information that is relevant to the behavioral issue, but also improve the correspondence between the content of the health message and the prevailing concern of the targeted individuals (Prochaska et al. 1992).

Many studies that examine the impact of message framing have been conducted in the area of health care disease detection. Many have documented the greater effectiveness of loss-framed appeals in the category of screening mammography (Meyerowitz and Chaiken 1987; Cox and Cox 2001; Finney and Iannotti 2002). Research of colorectal cancer screening has generated the same conclusion (Myers et al. 1991). Garcia-Retamero and Cokely (2011) found that loss-framed messages were more effective in promoting detection behavior (STD screening appointment with a doctor). Rothman and Salovey (1997) review framing and the promotion of healthy behavior and conclude that gain framed messages are more effective in situations that involve the prevention of diseases and loss framed messages are more effective in situations that involve the detection of disease. Loss-framed messages were also found to be effective in motivating women to have a Pap test (Rivers et al. 2005) and generating more positive attitudes toward testicular self-exam (Umphrey 2003). A possible rationale for these outcomes is the perception of elevated perceived risk with health issues that have been loss framed (Salovey et al. 2002). Another possible rationale is the negativity factor, which states that negative information is more heavily weighted than positive information in the formation of a response (Kellermann 1984; Baumeister et al. 2001).

Message framing has been used as a moderator in a variety of studies. Rothman and Salovey (1993) studied the effect of gender and message frame on performing either skin cancer prevention or skin cancer detection behavior. Block and Keller (1995) studied the effects of perceived efficacy (high or low) and message framing (gain or loss) on the intention to perform a health related behavior. They determined that under conditions of low efficacy negative frames are more persuasive than positive frames. However, in a high efficacy condition, positive and negative frames were equally persuasive. Schneider et al. (2001) studied the effects of ethnic

targeting (specific ethnic group or multicultural) and message frame on the use of mammography by low-income women. Loss-framed multicultural messages were found to be the most persuasive. Moorman and van den Putte (2008) examined the effect of message framing, nicotine dependence level and intention to quit smoking upon the persuasiveness of smoking cessation messages. They determined that with high nicotine dependence and intention to quit, a negative frame worked best, however when both were low a positive frame worked best. Lindenmeier (2008) studied the effect of self-efficacy perceptions and message framing on the willingness to volunteer. In the low self-efficacy condition gain frames were more effective; in the high self-efficacy condition, loss frames were more effective. Langer (2013) examined the impact of self-versus other-appeals and message framing upon green consumption. Buying intention for a detergent was stronger for the other-appeal using a gain message and the self-appeal using a loss message. Brick et al. (2015) examined the impact of cultural exposure (to the United States) and message framing on oral health behavior, specifically flossing. The results indicate that for individuals low in United States cultural exposure loss framing is more effective.

Bosone et al. (2015) perform the initial examination of message framing promoting participation in a clinical research trial to find a cure for a contagious versus non-contagious illness (a 2 by 2 experimental design). The nature of the illness did not have an impact on intention to participate but there was an interaction between illness and framing. Specifically, when the illness was perceived as highly contagious, individuals were more willing to enter a trial when in a gain framed condition than in a loss-framed condition. The authors concluded by suggesting other moderators be examined, specifically perceived severity of the illness and that a non-student sample be used. According to Ghuge (2010, p.11) no study has determined that a

gain-framed message has been more effective than a loss-framed message when promoting cancer-screening behaviors.

Based on these findings, it can be hypothesized that:

H₆: The effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer is moderated by message framing.

H_{6a}: The effect of a help-self appeal is greater for a loss-framed message than for a gain-framed message.

H_{6b}: The effect of a help-others appeal is greater for a loss-framed message than for a gain-framed message.

Involvement

The concept of involvement has a rich history in the field of consumer behavior. The dichotomy of high and low involvement consumer behavior originated with Engel and Blackwell (1982). Involvement research flourished with examinations of consumer involvement with advertising (Krugman 1962), products (Howard and Sheth 1969), and purchase decisions (Clarke and Belk 1978). Differences in the measurement of the involvement construct led to Zaichkowsky's development and refinement of the Personal Involvement Inventory (1985, 1994) a ten item scale that captures both the affective and cognitive dimensions of the construct. It has been used to successfully measure involvement in each of the categories mentioned above, as well as in the area of services marketing. It has also provided background for the development of involvement scales used in other settings.

Involvement definitions vary. Gabbott and Hogg (1999) synthesized the work of other researchers and suggest that involvement is "a motivational variable reflecting the

extent of personal relevance...to the individual in terms of basic goals, values and self-concept” (p. 360). Therefore, personal relevance is an important aspect of involvement and has been examined in attitude research (Petty and Cacioppo, 1981) and studies of argument-based persuasion (Claypool et al. 2004; Petty et al. 1981). The involvement concept was used by Petty et al. (1983) to develop the Elaboration Likelihood Model that describes different routes to persuasion given different involvement levels. Consumers are motivated and attend to advertising messages differently depending upon whether they experience a high or low involvement condition. In particular, individuals that are highly involved with an issue are more likely to process message content with greater scrutiny. Additionally, other studies have determined that under conditions of high involvement, negative information may be “overweighted” and have a greater impact upon impression formation (Kanouse 1984; Weinberger et al. 1981). Individuals who have low involvement with an issue are not likely to thoroughly scrutinize message arguments but rely instead upon heuristics or simple cues in the message. This may also include the valence of these peripheral cues and suggests that messages may be more persuasive when described in a positive way. Concluding, the degree of involvement can influence information processing and evaluation and therefore individual reaction to a message.

In general, involvement has been studied in three key areas – search behavior, information processing and persuasion (Andrews et al. 1990). In the health care area, involvement has been examined as it relates to personal satisfaction (Shaffer and Sherrell 1997). Although it may seem that personal health care is universally a highly involving topic, these authors warn that “even with a presumably high-involvement service such as health care, there will be patients who vary significantly (and meaningfully) in the level of

involvement they bring to the service encounter “ (Shaffer and Sherrell 1997, p. 264). Individuals may also be overly optimistic regarding their perception of susceptibility to disease, leading to low involvement with health related topics. Additional investigations include that of Rollins and Bhutada (2014) who examined disease state involvement in an investigation of celebrity endorsers in advertising for direct-to-consumer prescription medications. Their results indicate that involvement was a predictor of respondent outcomes. Frew et al. (2010) renamed involvement as personal relevance, given its close linkage to values and interests and inherent needs (p. 1113). It was then used as a component in their development of a scale designed to measure participation in a clinical research trial on HIV vaccine research. Involvement was used as a moderating variable by Gallagher et al. (2011) in an analysis of gain and loss framed messages and utilization of mammography. Finney and Iannotti (2008) examined involvement as an addition to the Health Belief Model variables in an attempt to better explain compliance with mammography screening. Bernhardt (2001) measured involvement in a study designed to measure the impact of tailored messages upon sun protection behavior. Issue involvement was also examined in a study of the impact of message framing on the intention to perform health behaviors, specifically actions related to the prevention and detection of skin cancer (Rothman et al. 1993).

The relationship between involvement and message framing was brought to the forefront by Maheswaran and Meyers-Levy (1990). They determined that issue involvement (as reflected by detailed processing of information) did moderate the impact of message framing in an examination of coronary heart disease. The relationship between issue involvement and message framing was studied in research promoting safe driving behavior (Millar and

Millar 2000). Message framing was found to moderate the impact of involvement such that when individuals were involved with the issue, gain messages increased intention to perform safe driving behavior.

The greater the degree of involvement with an issue, the more likely that systematic processing of information will occur (Petty and Cacioppo 1990). Since cognitive processing must occur for a message appeal to have an impact on persuasion, highly involving issues should be more responsive to message appeal manipulations. Often, loss framed message appeals are more involving given their negative tone and accompanying increased risk perceptions.

Thus, it can be hypothesized:

H₇: The effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer is moderated by involvement.

H_{7a}: The effect of a help-self appeal increases as the level of involvement increases.

H_{7b}: The effect of a help-others appeal increases as the level of involvement increases.

Control Variables

Age

Various studies have determined a relationship between age and empathy. Eisenberg (1986) found that “it is likely that empathy actually becomes a more effective mediator of prosocial action with age...” (p.49). Other age related characteristics that impact helping behavior have been investigated. Kopp (1982) examined self-regulation and determined that self-regulatory processes increase with age. Helping an individual in distress can be costly and

time consuming, requiring some sense of responsibility or obligation. Thus the success of such activities may be positively linked with age. Kohlberg and Candee (1984) examined moral judgment and found that higher stages of moral reasoning are associated with judgments of moral responsibility or obligation. The higher stages of moral reasoning are positively linked with age. Carman (1992) offers that altruism is triggered by underlying needs and values. Although individual values are pervasive and enduring they can be modified over a lifetime by such things as education and life experiences. As such, individuals at different life stages may respond differently to different types of appeals. Older individuals may seek fulfillment in different ways than those still active in careers, busy raising families or facing more stringent financial conditions. He suggests that they may be more altruistically responsive to values such as “salvation, a sense of accomplishment, and inner harmony” (p. 14). Acting in accordance with such variables is “motivated by self-reactions such as positive or negative self-evaluation” (Eisenberg, Lennon and Pasternak 1986, p. 116). Polonsky, Shelly and Voola (2002) examined charitable giving and cite various studies that led them to summarize “older individuals are more likely to give than younger individuals” (p.70).

The link of age and participation in medical research has been included in a variety of investigations. Champion (1984) examined the relationship between mammography participation and age. Although barriers to participation were important to women in an under 50 age group as well as to those in an over 50 age group, the barriers were found to have a greater impact in the older group. Worry, embarrassment, and time were significant in the older group while cost was significant in both. Kirkpatrick (1991) examined the reasons for healthy volunteer participation in a Phase One trial. Both the younger and older group of respondents designated money as the primary motivator (a help-self issue). No altruistic reasons were stated

by the younger group yet in the older group almost as many respondents expressed an altruistic reason for participation (40.7%) as had expressed a monetary motivation (37%). In an examination of skin care protective behavior, Carmel et al. (1994) found a difference in the attitude toward changing skin care actions between older and younger respondents. Advani et al. (2003) investigated the barriers to participation in clinical trials for African-Americans with cancer and found that younger age was correlated with a greater willingness to participate.

These studies illustrate the importance of including age as a control variable.

Gender and Ethnicity

Attempts to understand the impact of gender and ethnicity upon health behavior began in earnest in the 1990's. Given a paucity of data regarding women, minorities, and clinical trials, in 1993 the U. S. Congress passed legislation that requires the National Institutes of Health to set guidelines for the inclusion of these groups in clinical research programs. Specifically, trials are required to determine if examined variables have a differential impact upon women or minorities. An overview of previously published research (Swanson and Ward 1995) describes studies predominately filled with well-educated, middle class, married white males. The generalization of findings to a diverse population was not valid given this inherent selection bias. Trials are now required to determine if examined variables have a differential impact upon these groups.

Gender

Whereas sex refers to one's biological makeup, gender is a social construct that refers to culturally specified actions that accompany one's sex. In other words, gender is a learned

phenomenon that is culture bound. For example, some cultures dictate that men exhibit stoic characteristics, while others support emotionalism in male members of the society. The differences in male and female perspective or “world view” have been described in research conducted by various authors. Jensen, McGhie and Jensen (1991) examined male and female preference between adjective pairings and found support for their hypothesis on gender differences in world outlook. Men and women have been found to explore the world differently (Deaux and Kite 1987). Understanding the differing world-views of males and females via their gender roles is crucial to marketing research given that “consumption is a context in which these differences are often apparent” (Costa 1994). Gilligan (1982) describes women as relationship oriented and men as oriented towards separation and autonomy. Noddings (1984, 1988) concurs, describing women as having a greater concern with relationships and caring than men. Belenky et al. (1986) propose that women not only acquire information differently than men, but also experience the world in unique ways. Eagly and Crowley (1986) performed a meta-analysis of gender and helping behavior findings in the social psychology literature. Based upon this review they state that “social role theory has considerable potential to explain sex differences in social behaviors” (p. 303). The female role encourages caring for the needs of others, and facilitating others’ progress in accomplishing goals. In other words, a woman’s role encourages actions that help others. Male helping behavior is found to occur in other forms. The male role encourages helping in “heroic” situations, when saving others occurs under circumstances of personal risk. In that heroism can only be displayed in a public arena, males are more likely to help when such actions are visible to others. Although the heroic act of saving another is beneficial to the recipient of such behavior, the heroic individual acts to help oneself via the recognition received for performing the helping behavior.

A review of the early marketing literature yields early studies describing the impact of sex on marketing in the area of husband and wife decision-making. Davis (1970) describes marital roles and their relationship to consumer decision-making. Ferber and Lee (1974) examine husband – wife influence in family decision-making. Curry and Menasco (1979) describe the impact of differential processing strategies on husband and wife joint decision-making. Consumption decisions in these studies were summarized as husband dominant, wife dominant, joint or autonomic. The type of decision making used was theorized to be fluid, changing according to product category, family role structures, and stage in the decision making process.

Past sex role research has also focused on segmentation. Sex and product pairings have been proposed. For example, at one time men were found to be the primary purchasers of firearms and women the primary purchasers of cosmetics (Schiffman and Kanuk 1991, p. 32). The blurring of such sex/product pairings in contemporary Western society has minimized the use of gender as a distinguishing variable in many product class categories.

The differing roles adopted by males and females, and their differing world-views do continue to impact the interpretation of advertising messages. Indeed Stern and Holbrook (1994) describe such an impact in their research describing the different meanings that are read into an advertisement by a male and female evaluator. Meyers-Levy (1988) examined the influence of sex roles on judgment using advertising messages that differed in their presentation of information via sex role manipulation. Males were found to more favorably evaluate the advertisements with appeals that were more self-oriented while females preferred advertisements that had either a self or other orientation. This was the expectation of the authors given research indicating that males are relatively self focused, while females are sensitive to self and other

oriented issues (Bakan 1966; Carlson 1971,1972). In a subsequent examination of gender differences in information processing, Meyers-Levy (1989) proposes the selectivity hypothesis as a “unifying framework from which a broad array of observed gender differences can be interpreted” (p. 220). This hypothesis is based upon the assumption that males and females use different processing strategies to process information. A point of differentiation concerns the extent to which processing activities are performed. Males are less comprehensive processors who rely on heuristic devices based on cues that are “highly available and particularly salient in the focal context” (p. 220). The cues that males rely on are those that are readily available. Information pertaining to the self has been shown to be represented in memory by well-developed elaborate networks of associations (Markus 1977; Rogers, Kuiper and Kirker 1977). As such, males frequently simplify the task of information processing by focusing on self-related information. In contrast, females are more comprehensive information processors who engage in a “rather effortful, comprehensive, piecemeal analysis of all available information “ (p. 221). In turn, they equally process information that is relevant to the self and information that is relevant to others.

Brunel and Nelson (2000) examined the differences in males and females evaluations of advertisements designed to encourage charity giving. Advertising appeals were varied according to whether they featured a help-self or help-others format. Advertisements were evaluated in terms of both attitude toward the ad and ad preference. As hypothesized by the authors, males evaluated the help-self ads more favorably than females, and females evaluated the help-others ads more favorably than males. In terms of ad preference, males preferred the help-self as format while females preferred the help-others format. To better explain these findings the

authors examined the role of world-view as a mediator of the relationship between sex and ad preferences. This mediation was confirmed.

The results of these studies lend credibility to the argument that gender influences the interpretation of communications efforts and thus its designation as a control variable in this research.

Ethnicity

During the development of the current American health care system, African Americans (the largest racial/ethnic group in the country at the time) and the poor were statistically overrepresented in medical experimentation. The most commonly cited abusive study is the Tuskegee Study of Untreated Syphilis. This study, conducted by the United States Public Health Service from 1932-1972, involved over 400 African American farmers diagnosed with syphilis. They were given no specific antisyphilitic treatment in order for observations of the natural history and evolution of the disease to be gauged. This study is still well known in the African American community (McCallum et al. 2006). Shortly after the new standards were passed requiring greater inclusivity, a qualitative study of the reasons for lack of participation amongst African Americans, Hispanics and Native Americans determined principle responses were “fear”, “lack of information”, “mistrust of being treated as guinea pigs” and “mistrust of white people” (Roberson 1994). In a more recent study of African Americans alone, “being treated as a guinea pig” was still cited as a drawback to participation. Interestingly, “doing something that will help others” was the primary reason stated to participate (Kennedy and Burnett 2007). Smith et al. (2007) continue to find that among African American women there remains a belief that research is “biased to benefit white people” (p. 425). Villarruel et al. (2006) examined

recruitment and retention issues of Latino adolescents and describe both the need for special consideration of cultural factors and the lack of studies that document such considerations.

Advances in the health care system have been accompanied by increasingly positive mainstream beliefs regarding the advantages of experimental therapies. Unfortunately, this belief has not led to equivalent increases in participation in medical research across racial/ethnic groups. Cancer clinical trials have proven almost revolutionary in their contribution to the prevention and treatment of cancer. Over twenty percent of adult cancer patients are eligible for trial entry but less than five percent enroll with minorities making up a lesser percentage (Grann 2010). Participation in prevention trials by minorities is significantly lower. This general lack of participation is troubling given that many minority populations experience higher mortality rates and lower survival rates for cancer (Guiliano et al. 2000). To the extent that racial differences do exist in the rates of certain disease, disease severity and advancement, and the response to medication protocol the recruitment of racial/ethnic groups as clinical research participants is appropriate from both a social and scientific perspective.

These racial/ethnic disparities in clinical trial participation substantiate the need for using ethnicity as an additional control variable.

Educational Attainment

Many studies document the positive relationship between education level and trial participation. Harris et al. (1996) examined participation in clinical trials amongst African Americans. They determined a difference according to educational attainment leading to the conclusion that those with lower education may need additional counseling about trials to encourage participation. Ellis et al. (1999) found that amongst patients at a medical oncology

clinic, those with a higher education were less likely to participate in a randomized trial. In contrast, Shavers et al. (2002) examined the racial differences in factors that impact clinical trial participation and found that respondents with a high school education or greater were more willing to participate. Advani et al. (2003) investigated the barriers to participation in clinical trials for African-Americans with cancer and found that higher education level was correlated with a greater willingness to participate. Giuliano et al. (2000) investigated the impact of structural, cultural and linguistic factors upon participation and found that participation in US clinical trials is correlated with different sociodemographic variables including educational attainment. The inclusion of educational attainment as a control variable is warranted in the current research.

Familiarity/Personal experience

The Health Belief model includes the category “structural variables” as one of three modifying factors that influences likelihood of action. Included in this category are items such as “knowledge about the disease” and “prior contact with the disease”. Both of these issues inform one’s disease familiarity.

Familiarity has been used as a control variable in a variety of research settings. In an early study, Oliver and Bearden (1985) describe the impact of familiarity in the context of the Theory of Reasoned Action. Higher familiarity with a product reduces the need for external information (and thus lessens the influence of subjective norms) while product uncertainty increases the reliance upon others’ opinions. This implies the need to control for familiarity in appropriate research settings. Steenkamp et al. (2003) include brand familiarity in an investigation of perceived brand globalness and brand value. Ng et al. (2009) adapted the Health

Belief Model to explain users' computer security behavior. They included familiarity with computer security practices as a control in order to negate the impact of individual's prior knowledge and skills in computer security.

In the area of health care, Karlawish et al. (2002) examined patient and caregiver capacity and competency to enroll in an early stage Alzheimer's study and determined that familiarity may have been a source of bias. Smith et al. (2007) determined that African American women were more inclined to participate in research that addresses a personal or family medical issue or problem. In a study of a clinical trial for diabetes, the authors were not able to distinguish if the improvement in either treatment group was due greater familiarity with the testing procedure versus true physiologic change (Espeland 2007). Gallagher et al. (2011) included family history of breast cancer and number of prior mammograms in a questionnaire that that investigated the effect of perceived susceptibility as a moderator of gain and loss framed messages on the use of screening mammography. The six minute walk test is used in clinical trials of lung disease by Scirba et al. (2003). Specifically, they examined the impact of walking course layout and determined that the difference in walking performance was statistically differ on subsequent days and offer that course familiarity may have been the reason. Rothman et al. (2006) state that how an individual construes a behavior will impact the relative effectiveness of either message frame. According to Fazio and Zanna (1981) the most important determinant of how an individual construes a behavior is personal experience. Given these results, familiarity has been included as a control variable.

Perceived behavioral control

The theory of reasoned action is based upon the assumption that behavior is under complete volitional control. In that this assumption could limit the applicability of the theory, perceived behavioral control has been incorporated as an additional measure and the resulting theory is entitled the theory of planned behavior (Ajzen 1985,1991; Ajzen and Madden 1986). Perceived behavioral control refers to the perception one has regarding control over behavior and is assumed to be reflective of obstacles that have been involved in past behavioral contexts. This concept is described as being similar to Bandura's (1986) definition of perceived self-efficacy (Ryn, Lytle and Kirscht 1996). The measurement of perceived behavioral control includes items that attempt "to capture the respondent's sense of self-efficacy with respect to performing the behavior" (Ajzen 2002, p.7 and) and items that "address peoples' beliefs that they have control over the behavior" (Ajzen 2002, p.7).

Both theories have had widespread success in predicting participation in health care behaviors. Cooke and French (2008) performed a meta-analysis of both theories to determine how effective each was at predicting intention and attendance at screening programs. They determined that attitude was the best predictor of intention to screen, a component of both theories. Other meta-analytic reviews support the capability of the theory of reasoned action (Sheppard, Hartwick and Warshaw 1988) and the theory of planned behavior (Armitage and Conner 2001; Godin and Kok 1996) to predict both intention and behavior across wide ranging contexts.

Citations from research based upon the theory of reasoned action were noted earlier. Those involving the theory of planned behavior include the use of cervical screening (Bish et al.

2000; Roncancio et al. 2015), condom use (Albarracin et al. 2001), exercise behavior (Hausenblas et al. 1997), volunteer decision making (Warburton and Terry 2000), smoking cessation (Norman et al. 1999), breast self exam and exercise (Ryn et al. 1996), and prediction of attendance at health checks (Norman and Conner 1996). Given the possibility that perceived behavioral control has been shown to impact intention and behavior, this item is included as an additional control variable.

CHAPTER III

METHODOLOGY

Introduction

Chapters I and II described the research problem, provided background using the relevant literature and presented the research hypotheses to be investigated. Chapter III will present the methodology used in this research. Section one provides information on the research domain. Section two describes the research design and treatments. Section three describes the measures that will be used to test the hypotheses. Section four describes the sampling plan. Section five describes the determination of sample size. Section six explains the data analysis techniques.

Research Domain

The setting for this study is that of clinical research trials, specifically a screening/detection trial for melanoma, a potentially deadly form of skin cancer. A clinical research trial is a planned experiment to compare the effects of a treatment or intervention between a test and control group of participants. A wide variety of intervention techniques are used in clinical trials, and include “prophylactic, diagnostic, or therapeutic agents, devices, regimes, procedures, etc.” (Friedman et al. 2014). The scientific rigor of clinical trials has evolved since the 1800’s. The importance of the use of placebos is attributed to Gull in 1863 (Shelling 2004). The randomization of patient assignment to trials was introduced by Fisher (1923) and Amberson (1931). Grant support by the National Institutes of Health began in 1937 with the creation of the National Cancer Institute.

The National Institute of Health categorizes clinical trials into six groups. Natural history studies investigate how disease and health progress. Prevention trials study medicines, vaccines, or lifestyle changes that may prevent disease onset in those who have never had the disease, or prevent the disease from returning in those previously afflicted. Screening trials attempt to determine the best way to detect certain diseases or health conditions. Diagnostic trials explore better tests or procedures for diagnosing a disease or condition. Treatment trials test new drug combinations, new treatments or new approaches to radiation therapy or surgery. Quality of life trials (supportive care trials) explore and measure ways to improve quality of life and comfort of those with a chronic illness.

Clinical trials that involve new drugs are typically described in terms of four different phases or steps that relate to disease progression. The parameters and requirements of each step are determined and overseen by the Food and Drug Administration.

The need for participants in clinical trials is great. Centerwatch is a Boston based organization founded in 1994 to act as a clearinghouse for clinic trial information. It provides a list of thousands of trials enrolling participants in the United States. The National Institutes of Health operates ClinicalTrials.gov, a registry of worldwide clinical studies. It currently lists 214,889 studies with locations in all fifty states and in 193 countries. Of these, 10,475 are prevention trials and 4,410 are screening or detection trials. The National Cancer Institute lists 4,824 ongoing clinical trials (cancer.gov). Of these 99 are for prevention and 18 are for screening. Although these numbers seem small, the impact of such trials can be immense. The American Cancer Society estimates that

approximately 1,685,210 new cases of cancer will be diagnosed in the United States in 2016, and 595,690 people will die. The National Cancer Institute suggests that screening could eliminate anywhere from 3 % to 35% of these deaths (cancer.gov).

A primary challenge for clinical trials is recruitment. According to the Coalition for Clinical Trial Awareness (2016) a lack of patient awareness leads to a lack of participation and in turn delays and higher costs. A recent study conducted by the Tufts Center for the Study of Drug Development (2013) investigated 150 clinical trials comprised of almost 16,000 study cites and determined that 11% of cites fail to enroll a single patient and 37% do not meet their enrollment goals. Problematic recruitment is a continuing problem. Brescia (2000, p. 138) states that “nearly 80% of all clinical studies fall behind schedule year because researchers can’t find enough patients to participate”. Patient recruitment contributes up to 30% of the delay in clinical trials, and time is money. A typical Phase III trial takes nine months to complete and can cost up to \$86 million. Delays impose costs on trial sponsors, including lost patent time (Clinical Leader, 2013). In an assessment of barriers to clinical trials, the Eastern Research Group (2014) reports that a contributing factor is the difficulty of recruiting and retaining participants, with lack of knowledge of and attitudes toward trials the chief impediments. At a recent international conference devoted to achieving operational efficiency in clinical trials (2012), the following facts were presented: For each day a clinical trial is delayed, the cost to the sponsor is \$8 million dollars. Eighty six percent of clinical trials will experience delays, and ninety four percent are delayed over one month. According to the Institute of Medicine, only thirty percent of individuals first learned about a particular clinical trial from their physician; most are informed by the media or internet sources.

Over three decades ago, Agras and Bradford (1982) called for better planning of the recruitment phases of clinical research trials in order to minimize research costs and time for completion. They added that improvements would also lead to improved sample sizes and power in hypothesis tests. An early literature review of clinical trial research (Hunninghake et al. 1987) determined that published information on recruitment is limited and that the lack of published information provides little guidance for clinical trial investigators, many of whom were inexperienced. By 1991, Foley and Moertel determined that to improve accrual to trials, national media campaigns designed to improve public perceptions of clinical trials in general and to describe the individual benefits of participating would be useful. By 2000, studies examining media and its use in encouraging trial participation appeared. Simpson et al. (2000) reports on the inclusion of mass media efforts (television, radio, newspapers, and local posters) in the recruitment for a multicenter cancer screening trial, yet fails to elaborate on specifics regarding individual utility. Chung et al. (2000) reports that both television and news print media are effective in generating participants for cancer prevention trials (prostate cancer). A deeper look reveals that television referred to the use of interviews with task force participants, and news print media referred to the use of prepared press releases. Advertisements were not developed for either form of promotion. Both authors did however state the importance of determining the most effective methods for increasing public awareness about cancer and cancer prevention. Also in 2000, Garrett et al. summarized the efficiency of five different recruitment techniques (including television and radio advertising) for a long-term prevention study for cataracts. They determined that newspaper advertising was the

second most cost-effective technique (behind an electoral roll mail-out), yet specifics regarding the copy of the advertisements were not addressed.

Specific insight as to what promotional techniques and vehicles would effectively encourage participation continued to be lacking. To reach the audience of potential participants requires an understanding of motivations and attitudes. Ellis (2000) performed a brief literature review of these topics and concluded that altruistic and self-interest factors were most often stated as reasons for participation. Trauth et al. (2000) found that willingness to participate was associated with having a friend or relative who had been afflicted with the illness, being middle aged (35-64 years old), and having prior experience participating in a research study. Brown et al. (2008) describe the importance of pretesting messages for mammography recruitment yet research describing such efforts is non-existent. Message manipulation investigations are scarce as well. In their literature review, Lovato et al. (1997) found only two such investigations out of a total of 91. Friedman et al. (2015) suggest that future research examine the association between participation intentions and recruitment messages. This dissertation should provide findings that will verify the applicability of two specific advertising messages appropriate for a particular clinical research trial setting. The setting under investigation is a detection trial for melanoma. Given that melanoma is projected to be one of the most common cancers in 2016 (Cancer.gov) the ability to find it early would help to initiate treatment sooner and save many lives.

Research Design and Treatments

This research is being conducted using an experimental design. Two variables will be manipulated, appeal and message framing. Appeal is a three level variable (help-self and help-others and control). Message framing is a two level variable (gain frame and loss frame). A third variable, involvement, will be measured using a multi-item scale. The message appeal variable is an independent variable hypothesized to differentially impact the dependent variable attitude given the affect of the manipulated moderator, framing, and the measured moderator, involvement. Message appeal is also hypothesized to have a direct impact upon intention. Attitude and subjective norm are predictors of intention, which in turn have been shown to predict behavior. In addition, attitude is hypothesized to mediate the impact of appeal upon intention.

Each respondent will be randomly assigned to only one of the six combinations of treatments as summarized in Table 1.

Table 1

Treatments

1. Help self appeal	Gain frame
2. Help self appeal	Loss frame
3. Help other appeal	Gain frame
4. Help other appeal	Loss frame
5. Control	Gain frame
6. Control	Loss frame

Measures

A questionnaire was developed to test the hypotheses posed by this research (the final questionnaire is included in Appendix A, p.121). The development of the questionnaire was informed by three pretests. The questionnaire begins with the inclusion of an informed consent statement that is followed by instructions explaining the flow of the instrument and directions for completion. Next, one of the six possible treatments is randomly assigned, followed by two questions designed to serve as a manipulation check. The first of these questions is formatted as five-point semantic differential scale ranging from help-self to help-others and the second is a five-point semantic differential ranging from “increase the chance of survival” to “decrease the chance of death”. See Table 2 for an example of one treatment and the manipulation check questions. The other five treatments are provided in Appendix B, p.132.

Table 2

Treatment and manipulation check questions

(Help-self and gain frame example)

HELP YOURSELF!

Participate in a screening trial for melanoma – you will protect YOUR health and may SAVE YOUR LIFE.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year alone over 70,000 new cases were detected in the United States. Doctors know that with early detection the disease is less likely to spread and results in a much greater chance of YOUR SURVIVAL.

Table 2, continued

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible. Help yourself by helping researchers find medical cures.

Look out for YOURSELF- participate in this clinical research trial and help to SAVE YOUR LIFE.

INCREASE YOUR CHANCE OF SURVIVAL with the early detection that this trial may provide.

Manipulation check (appeal)

This ad stressed that your participation would:

Help self	1	2	3	4	5	Help others
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Manipulation check (frame)

Which potential outcome was described by the ad?

Increase the						Decrease the
Chance of	1	2	3	4	5	Chance of
Survival						Death

The next section of measures assesses individual perceptions. Items investigate involvement, attitude toward clinical trial participation for melanoma skin cancer, subjective norm influence and intention to participate in a clinical trial for melanoma skin

cancer. All are measured using a five-point Likert type scale ranging from strongly agree to strongly disagree. See Table 3 (p.50) for a list of these items.

All of the measures have been developed using previously published research. The three items used to measure involvement are drawn from the research of Gallagher et al. (2011) that examines perceived susceptibility and message framing as they relate to the use of screening mammography (Cronbach's alpha of .71). These items were originally used by Finney and Ianotti (2001) in a scale measuring involvement with breast cancer.

Six items, based upon the findings of the following studies, are used to assess respondents' attitudes toward clinical trial participation. Frew et al. (2010) developed the "Clinical Research Involvement Scale" to assess the factors that contribute to community participation in a clinical trial for an HIV vaccine. Madsen et al. (2002) examined the attitudes held by participants and nonparticipants toward clinical trial participation. Ellis (2000) performed a literature review to summarize attitudes toward and participation in oncology trials. Trauth et al. (2000) examined public attitudes toward willingness to participate in trials.

Subjective norm is measured using three items, all of which are adaptations from Frew et al. (2010).

Intention is measured using two items adapted from a study of pap smear participation by Bish et al. (2000).

Table 3
Individual Perceptions

Involvement

I frequently worry about getting melanoma cancer.

I frequently read information about melanoma cancer.

I frequently pay attention to media about melanoma cancer.

Attitude

I have a positive attitude toward my own participation in a clinical research trial for melanoma skin cancer.

I have a positive attitude toward my close friends or family members participating in a clinical research trial for melanoma skin cancer.

I agree with the use of human subjects in medical research.

The well being of those who participate in a clinical research trial for melanoma skin cancer is more important to the researcher than the results of the study.

It is important for me to participate in a clinical trial for melanoma skin cancer to help other people.

It is important for me to participate in a clinical trial for melanoma skin cancer to help myself.

Subjective Norm

Most people who are important to me think that I should participate in a clinical research trial for melanoma skin cancer screening.

Most people who are important to me would approve of my taking part in a clinical research trial for melanoma skin cancer screening.

Most people who are important to me would support my interest in a clinical research trial for melanoma skin cancer screening.

Table 3, continued

Intentions

If given the chance I would be willing to take part in a clinical research trial for melanoma skin cancer.

If given the chance I intend to take part in a clinical research trial for melanoma skin cancer screening.

The final section of the questionnaire includes classification information, specifically the demographics of age, gender, ethnicity and educational achievement. Three questions will be used to determine an individual's pre-existing familiarity with melanoma. Perceived behavioral control will be assessed using two different measures. The first, controllability, will consist of two items that will be scored using a five-point Likert-type scale. The second, self-efficacy, will consist of two items that will be scored using a five point Likert scale. All four items will be summated to form a single measure for perceived behavioral control. See Table 4 for a list of these classification questions.

Table 4**Classification Data**

Age:

Fill in the blank

Gender:

male, female

Ethnicity:

Asian/Asian Pacific/Pacific Islander; Hispanic/Latino/Chicano; African-American/ Black; Caucasian/White; Other

Educational Attainment:

K-12 grade; Technical, vocational, associates; Bachelor's; Master's or above

Table 4, continued

Familiarity

Do you have a close family member or friend that has had melanoma skin cancer? (yes, no)

Have you been diagnosed with melanoma skin cancer? (yes, no)

Have you been screened for melanoma skin cancer? (yes, no)

Perceived behavioral control (five point Likert scale; strongly agree to strongly disagree)

Controllability

Participating in this clinical research trial is entirely within my control.

It is mostly up to me whether or not I participate in this clinical research trial.

Self-efficacy

I am confident that I am able to attend this clinical research trial.

If I wanted to, I would be able to attend this clinical research trial.

Sampling Plan

Melanoma is a disease that afflicts individuals across a wide age spectrum. It is imperative for the sample to be randomly selected from a population of individuals representative of those who are at risk of contracting the disease. For that reason, Qualtrics of Provo Utah has been selected to collect the data for this research. They are able to provide random respondents given researcher provided details (no one less than 18 years old; roughly equivalent number of responses from males and females). In turn, they provide survey responses in an Excel format that is capable of being transformed into an SPSS input document. Six different versions of the questionnaire have been developed in order to accommodate the six treatments. These will be randomly provided to

respondents. Before the questionnaire was provided to Qualtrics, it was approved by the Institutional Review Board at Old Dominion University (IRB: 894429-1).

Sample Size

A sample size of 360 respondents is proposed as adequate to meet the requirements of a linear regression research design with the number of independent variables included in this research. Three approaches to sample size determination have been used to reach this conclusion.

Initially, a count of independent variables is required. For model components this count is 7 (Appeal 2, Involvement 1, Attitude 1, Frame 1, Subjective Norm 1, Intention 1). The covariates add another 11 (gender 1, age 1, ethnicity 4, educational attainment 3, familiarity 1, perceived behavioral control 1). The total number of independent variables is 18.

The first assessment is based upon the recommendation of Van Voorhis and Morgan (2007). They recommend that if there are more than 6 predictors there should be a minimum of ten and thirty is better per predictor. This guideline, using 18 predictors, generates a range of 180 to 540 respondents.

Green (1991) proposes that the larger of two calculations should dictate the sample size. The first, $N > 50 + 8 * m$ (m is the number of independent variables) yields a required sample size of 194. The second formula, $N > 104 + m$ yields a required sample size 122. Green (1991) notes that these provide medium effect size results with $\alpha = .05$ and $\beta = .20$.

Tabachnick and Fidell (2007) use a single sample size calculation:

$N \geq (8/f^2) + (m-1)$ whereby $f^2 = .02$ (small) .15 (medium) and .35 (large) effect sizes.

Using this formula yields a required sample size of 417 (small), 70 (medium) or 40 (large).

Summarizing, the actual sample size used in this research (378 – 18 extra were provided by the Qualtrics research firm) is greater than five of the seven recommendations. In addition it is greater than the grand average of all three methods ($n=231$). Tabachnick and Fidell (2007) actually caution against including too many cases: "one wants to measure the smallest number of cases that has a decent chance of revealing a relationship of a specified size" (p.123).

Data Analysis

Data analysis will be performed using OLS multiple regression. Regression assumptions will be checked and each hypothesis will be individually examined. The outcome of the hypotheses tests of the help-self and help-other appeal are all determined in comparison to the control variable. In addition mediation analysis and moderation analysis will also be assessed using the PROCESS macro (Hayes, 2103) for SPSS. The full model of moderated mediation will be analyzed using PROCESS. PROCESS is a relatively new analytical technique, which includes a straightforward analysis of a wide variety of conditional processes – in other words the assessment of mediation and moderation simultaneously. Multiple moderators and/or multiple mediators can be included in the model of interest. The basis for PROCESS is the same set of path analytic equations that are run in an ordinary SPSS OLS regression. The output however provides a bootstrap confidence interval for inference.

Fritz and MacKinnon (2007) review numerous methods for testing whether mediation is statistically significant. Included in their evaluation was an assessment of the causal steps approach described by Baron and Kenny (1986). They conclude that although the method is widely used, it is not the most highly recommended procedure at present. Primary criticisms include a concern for the ability of mediation to exist even in the case when there is not a significant total relationship between the independent and dependent variable (one of the necessary conditions). Additionally their analysis found that the causal steps approach had relatively low statistical power. Of the methods they did examine, Fritz and MacKinnon (2007) expressed support for the bootstrapped confidence interval for assessing the indirect effect. This approach has two strengths. First, it can be used in situations when the analytical formula for the standard error of a statistic is not known. Secondly it can be used when there may be violations of the assumptions of normality. The technique of bootstrapping involves the calculation of a , b , and ab for samples drawn from the population of interest (the entire sample data being analyzed). Bootstrapping with replacement typically involves the compilation of results from 1000 to 10000 samples. This allows the development of a confidence interval for ab . If the confidence interval does not include a zero then it is concluded that there is statistically significant mediation.

Hayes (2013) concurs and suggests that a bootstrap confidence interval provides superior insight to a mediation analysis, also arguing that the historically popular causal steps approach (Baron and Kenny 1986) is limited and outdated. "The bias- corrected bootstrap confidence interval has become the more widely recommended method for inference about the indirect effect in mediation analysis" (Hayes, 2013, p.116). Hayes (2013) has developed the PROCESS macro for SPSS that provides a confidence interval for

testing mediation, moderation and for moderated mediation analysis. There is growing acceptance and use of this approach across a variety of disciplines (Hayes et al. 2013, purchase and consumption behavior; Dijkmanns et al. 2015, social media use and corporate reputation and Hoyt et al. 2015, public health messages).

Chapter IV

Results

Introduction

This purpose of this chapter is to present the findings from the data analysis and to offer interpretations of these results. The first section describes the data collection and the sample characteristics. The second section describes the reliability assessment of the summated measurement variables. The third section describes the analysis of the assumptions of the regression models used in this study. The fourth section describes the tests that were used to analyze the research hypotheses and the resulting conclusions. The fifth section describes the outcome from an assessment of a moderated mediation analysis using the SPSS macro PROCESS (Hayes, 2013). The next section will provide a summary of findings. The final section will provide a discussion of the overall results.

Data Collection and Sample Characteristics

Qualtrics of Provo, Utah was contracted to provide the data. Qualtrics uses panel data and distributes a client provided questionnaire (see Appendix A, p.121 for the questionnaire) to the individuals that fit the inclusion parameters. The questionnaire evolved given the results of three pretests. Each was conducted to determine if the concepts of help-self and help-others and control as well as gain or loss framing were interpreted as intended in the contrasting advertising scenarios. Intermediate results allowed for improvements in the advertising language until successful differentiation occurred. The questionnaire restrictions were that individuals only 18 or older were acceptable, and an equivalent split of male and female respondents was necessary. Three

hundred seventy- eight surveys comprised the sample (eighteen more than requested). All surveys were complete as a force choice restriction was applied. Two quality checks were suggested by Qualtrics. The first, an attention filter, required the respondent to answer a question that indicated he or she was paying attention. The second safeguard, a speed check, eliminated responses that were completed in less than one-third of the median soft launch time. A soft launch refers to the initial collection of ten percent of the responses required to detect if there were any problems. Both of these safeguards were used. Median response time was 5.9 minutes. Responses were collected over several days in late August 2016. The data was provided in an Excel spreadsheet format. The OCCS department of Old Dominion University assisted in the transformation of the data to a file that could be read by SPSS.

The sample consists of an equal number of male and female respondents (189 each). Respondents ranged in age from 18 to 86 years old with a mode of 32 years and a mean of 44 years. A synopsis of sample characteristics is found in Table 5, p.59.

Reliability of Variables

The primary elements of the model being investigated are appeal, message framing, involvement, attitude, subjective norm and intention. Appeal is manipulated, and respondents were randomly assigned to one single message scenario from the six that were developed (see Appendix B, p. 132 for the complete language of each message scenario). Message framing was also manipulated in the message scenarios. Three described the ability to increase survival through participation (a gain frame) while three described the ability to decrease the chance of death through participation (a loss frame).

Two manipulation check questions confirmed the effectiveness of the scenario and framing manipulations (see Appendix C, p. 137 for the analysis of the manipulation check questions).

Table 5
Sample Profile

<u>CHARACTERISTIC</u>	<u>PERCENT</u>
Gender	
Male	50.0
Female	50.0
Age	
18-24	8.2
25-34	27.3
35-44	18.5
45-54	15.2
55-64	16.5
65 and over	14.3
Ethnicity	
Asian/Asian Pacific/Pacific Islander	3.7
Hispanic/Latino/Chicano	6.3
African American/Black	10.3
Caucasian/White	78.3
Other	1.3
Education (highest level completed)	
High school or less	38.6
Technical or Vocational or Associates degree	26.7
Bachelor's degree	23.8
Graduate degree (Master's, PhD., Law, etc.)	10.8

The remaining model variables were investigated using measures that had been previously used in published research. Involvement was measured using three scales,

attitude was measured using six scales, subjective norm was measured using three scales and intention was measured using two scales as detailed in chapter three. All items were in the format of five-point Likert-type scales with a one indicating strongly agree, a two somewhat agree, a three neither agree nor disagree, a four somewhat disagree, and a five strongly disagree. A summated scale was formed for each variable. Each combined scale was subjected to a reliability analysis using Cronbach's alpha. The results are listed in Table 6. The removal of question 36 from the attitude summated scale increased the Cronbach's alpha to an acceptable level. An examination of the item and the five remaining items led to the conclusion that the remaining items could sufficiently capture the concept.

Table 6

Scale Characteristics

<u>Summated scale</u>	<u>Cronbach's alpha</u>	<u>Range</u>	<u>Mean</u>
Involvement (three items)	.854	3-15	9.1
Attitude (five items)	.737	5-21	10.8
Subjective Norm (three items)	.782	3-15	6.9
Intention	.939	2-10	4.2
Perceived behavioral control	.774	4-18	7.1
Familiarity		3-6	5.5

Control variables (covariates) were included in each regression analysis. Four of these, age, gender, ethnicity and education have been described. The two other controls are familiarity and perceived behavioral control. Familiarity was assessed using three items that required a yes (1) or no (2) response option. Perceived behavioral control was assessed using four items, all measured with the same five-point Likert-type scale format. Cronbach's alpha for the perceived behavioral control variable is also summarized in Table 6.

Regression Assumptions Analysis

The use of multiple regression analysis requires that several assumptions be met. Specifically, data must meet parameters for normality, homoscedasticity, and linearity. In addition data must be examined for the presence of multicollinearity (Hair et al. 1992). There are seven hypotheses being examined and the residuals from each assessment must be examined and pass thresholds of acceptability.

The normality assumption requires that the residuals from a regression investigation be normally distributed around the predicted dependent variable scores. The initial examination of this assumption is performed with an examination of a histogram of the standardized residuals (error terms). This is followed by a visual examination of a normal probability plot of the residuals. For each of the seven multiple regression models used to test the seven research hypotheses, the analysis of both techniques indicated that the assumption of normality had not been violated.

The homoscedasticity assumption refers to the requirement that the variance of the residuals around the predicted dependent variable scores be roughly the same for all

predicted scores. A scatterplot of the standardized predicted values (X) against the standardized residuals (Y) allows a determination as to whether or not a violation has occurred. There is no violation of this assumption for any of the multiple regression analyses performed.

The linearity assumption requires that there is a linear relationship between the dependent and independent variables. A residual plot of each regression model indicated no violation.

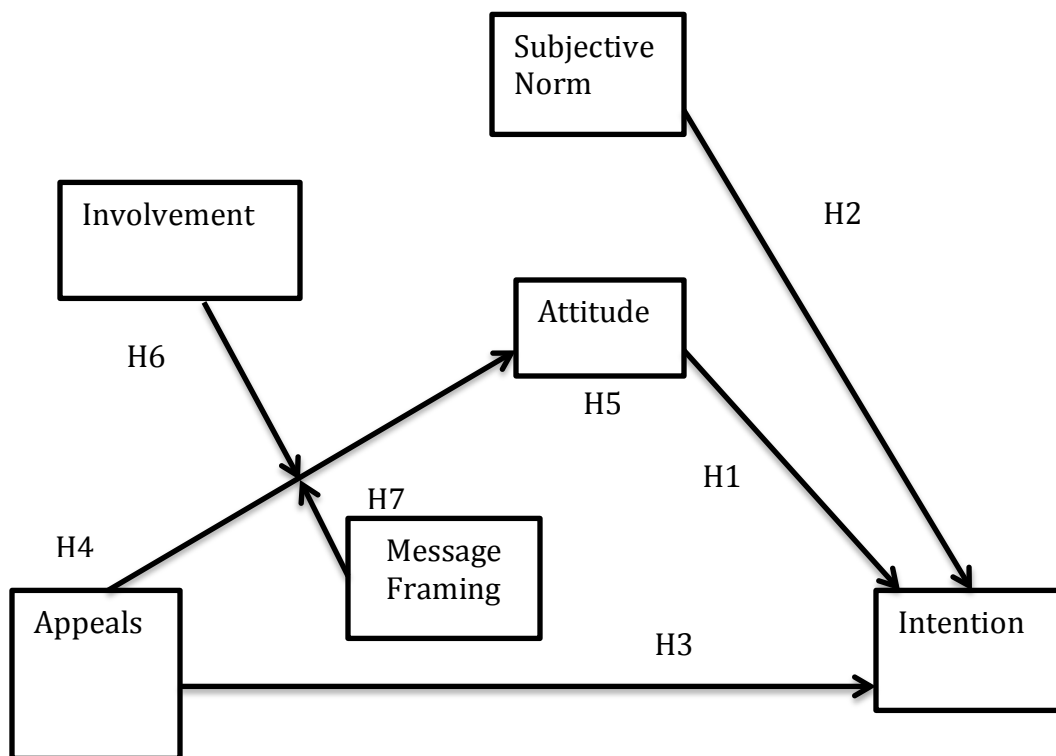
A final assumption of multiple regression analysis is that of the independence of the predictor variables. If independence is lacking and instead multicollinearity is present then determining the contribution of each independent variable is difficult as their effects become confounded. The VIF (variance inflation factor) allows an assessment of how much each independent variable is explained by other independent variables. If the VIF is above 10, then high multicollinearity is problematic (Hair et al., 1992). Each regression model of this research was examined for multicollinearity and no variables were found to be in violation of VIF limits.

Results of Hypotheses Tests

The comprehensive model being investigated in this dissertation is included in Figure 3, p. 63. The individual hypotheses being tested are shown on the model. They are listed in Appendix D, p. 140 and repeated individually along with results in this section. The model in its entirety will also be tested and analyzed.

Figure 3

The Model with Hypotheses



Covariates: age, gender, ethnicity, education, familiarity, perceived behavioral control

The first four hypotheses were tested using OLS regression via SPSS software. The final three were tested using both SPSS OLS regression and the PROCESS macro for SPSS designed by Andrew Hayes (2013, 2015, 2016). This is a technique for testing mediation, moderation and their combination that Hayes refers to as conditional process analysis.

Hypothesis One – Attitude as a predictor of Intention

The first research hypothesis examines a component of the Theory of Reasoned Action, attitude, and its relationship to the specific intention to participate in a clinical research trial for melanoma:

H₁: Attitude toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

The full model included six control variables: gender, age, ethnicity, education, familiarity and perceived behavioral control. Subjective norm is included as a control as well. The regression model in its entirety was significant ($F=63.120$, $p=.000$) and the variation in the predictor variables explained 57.8 percent of the variation in intention to participate (R^2 of .578 and adjusted R^2 of .569). The proposed relationship between attitude and intention was confirmed. There was a significant positive relationship between attitude and intention ($t=5.487$, $p=.000$, part correlation=.186). In addition, perceived behavioral control (positive, $p=.000$, part correlation=.279), subjective norm (positive, $p=.000$, part correlation = .165) and gender (moving from male to female increased intention, $p=.000$, part correlation = .090) were all significant predictors (when in the presence of the other predictors).

In conclusion, H₁ is supported. Attitude has a direct positive impact on intention to participate in a clinical research trial for melanoma skin cancer. For each one unit increase in attitude, there is a corresponding .170 unit increase in intention (holding the other predictor variables constant).

Hypothesis Two – Subjective Norm as a predictor of Intention

The second research hypothesis examines a component of the Theory of Reasoned Action, subjective norm, and its relationship to the specific intention to participate in a clinical research trial for melanoma:

H₂: Subjective norm toward participation in a clinical research trial for melanoma will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

The full model included six control variables; gender, age, ethnicity, education, familiarity, and perceived behavioral control. The regression model in its entirety was significant ($F= 62.890$, $p=.000$) and the variation in the predictor variables explained 54.3 percent of the variation in intention to participate (R^2 of .543 and adjusted R^2 of .535). The hypothesized relationship between subjective norm and intention was confirmed. There was a significant positive relationship between subjective norm and intention ($t=10.152$, $p=.000$, part correlation = .357). In addition, perceived behavioral control (positive, $p=.000$, part correlation = .332) and gender (moving from male to female increased intention, $p=.015$, part correlation = .086) were both significant predictors (when in the presence of the other predictors).

In conclusion, H₂ is supported. Subjective Norm has a direct positive impact on intention to participate in a clinical research trial for melanoma skin cancer. For each one unit increase in subjective norm, there is a corresponding .339 unit increase in intention (holding the other predictor variables constant).

Hypothesis Three – Appeal as a predictor of Intention

The third research hypothesis examines the relationship between appeal and intention:

H₃: There will be a direct effect of appeal on intention to participate in a clinical research trial for melanoma skin cancer.

H_{3a}: A help-self appeal will have a positive impact on intention to participate in a clinical research trial for melanoma skin cancer.

H_{3b}: A help-others appeal will have a positive impact upon intention to participate in a clinical research trial for melanoma skin cancer.

The full model included six control variables; gender, age, ethnicity, education, familiarity, perceived behavioral control as well as subjective norm. The regression model in its entirety was significant ($F=49.931$, $p=.000$) and the variation in the predictor variables explained 54.5 percent of the variation in intention to participate (R^2 of .545 and adjusted R^2 of .534). The appeal variable consists of three levels (control with no emphasis on helping behavior, help-self and help-others). Therefore dummy variables were created to run the regression, and the results contrast the impact of either appeal versus no appeal. In the output, RCA1 represents help self and RCA2 represents help others. The proposed relationship between appeal and intention was not confirmed. There was not a significant positive relationship between help self and intention when compared to the control appeal ($t=.776$, $p=.438$) or help others and intention when compared to the control appeal ($t= -.252$, $p=.801$). However, the control variables perceived behavioral control (positive, $p=.000$, part correlation=.332), subjective norm (positive, $p=.000$, part correlation=.555) and gender (moving from male to female increased intention, $p=.014$, part correlation =.087) were significant predictors (when in the presence of the other predictors).

In conclusion, H_{3a} is not supported. A help-self appeal (when compared to the control appeal) does not have a direct positive impact on intention to participate in a clinical research trial for melanoma skin cancer. Also, H_{3b} is not supported. A help-others appeal (when compared to the control appeal) does not have a direct positive impact on intention to participate in a clinical research trial for melanoma skin cancer.

These findings are important. Taken at face value they indicate that there is no impact of the manipulated appeals upon participation in a clinical research trial for melanoma skin cancer. However, this outcome also indicates that perhaps a more complex situation exists. There is a need for deeper probing and the analysis of the possible impact of mediators or moderators on the relationship between the appeal variables and the intention to participate in a clinical research trial for melanoma.

Hypothesis Four – Appeal as a predictor of Attitude

The fourth research hypothesis examines the relationship between appeal and attitude:

H₄: There will be an effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer.

H_{4a}: A help-self appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.

H_{4b}: A help-others appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.

The full model included six control variables; gender, age, ethnicity, education, familiarity, and perceived behavioral control. The regression model in its entirety was significant ($F=21.220$, $p=.000$) and the variation in the predictor variables explained 31.5 percent of the variation in intention to participate (R^2 of .315 and adjusted R^2 of .300). The

appeal variable consists of three levels (control with no emphasis on helping behavior, help self and help other). Therefore dummy variables were created to run the regression, and the results contrast the impact of either appeal versus no appeal. The hypothesized relationship between appeal and attitude (H_4) was partially supported. There was not a significant positive relationship between the help-self appeal and attitude ($t=1.147$, $p=.252$) however there was a significant relationship between the help-others appeal and attitude ($t=2.083$, $p=.038$, part correlation = .090). A help-others appeal generated a .775 unit increase in attitude. The direction of this relationship was positive, as hypothesized. The control variables perceived behavioral control (positive, $p=.000$, part correlation = .507), educational attainment (positive, $p=.007$, part correlation = .117) and familiarity (positive, $p=.028$, part correlation = .095) were all significant predictors (when in the presence of the other predictors).

In conclusion, H_{4a} is not supported. A help-self appeal does not have a direct positive impact on attitude toward participation in a clinical research trial for melanoma. However H_{4b} is supported: A help-others appeal does have a direct positive impact on attitude toward participation in a clinical research trial for melanoma

Hypothesis Five – Attitude as a mediator of appeal on intention

The fifth hypothesis examines the role of attitude toward participating in a clinical research trial for melanoma skin cancer as a mediator of appeal upon intention. As such, it seeks to determine if attitude is a variable that can explain the “why or how” of the relationship between appeal and intention.

H_5 : The effect of appeal upon intention to participate in a clinical research trial for melanoma skin cancer will be mediated by attitude.

H_{5a}: Attitude will mediate the effect of a help-self appeal upon intention to participate in a clinical research trial for melanoma.

H_{5b}: Attitude will mediate the effect of a help-others appeal upon intention to participate in a clinical research trial for melanoma.

Using both SPSS OLS regression and the SPSS macro PROCESS (Hayes, 2013) a mediation analysis was performed. The relevant regression models for analyzing mediation are included in Appendix C. p.137). The PROCESS macro allows the designation of a multicategorical independent variable that is capable of being transformed into dummy variables. As indicated in the SPSS output included in Appendix L p. 183 the variable appeal is a 3 level variable; in this application of PROCESS D1 represents help self and D2 represents help others.

The direct, indirect and total effect models are significant. Neither a help-self or help-others appeal is a significant predictor in the direct and total model. However in the indirect model help-others (but not help-self) is a marginally significant predictor of attitude ($p=.049$). Using bootstrapping to develop a confidence interval interpretation, there is no evidence of mediation by attitude of help-self appeal on intention (95% CI: $-.0686 .1329$). Therefore H_{5a} is not supported. However, there is support for the mediation of a help-others appeal by attitude upon intention (95% CI: $.0066 .2289$). H_{5b} is supported. As attitude toward participation becomes more positive, a help-others appeal leads to a greater intention to participate than a control appeal. Therefore H₅ is partially supported.

Hypothesis Six – Frame as a moderator of appeal on attitude

The sixth hypothesis examines the first of two moderators, message frame. Message frame refers to whether the outcome of participation characterizes a loss, or the ability to decrease the chance of death, or a gain, the ability to increase the chance of survival. This analysis investigates if the relationship between appeal and attitude is a function of the nature of message frame.

H₆: The effect of appeal on attitude toward participation in a clinical trial for melanoma skin cancer is moderated by message framing.

H_{6a}: The effect of a help-self appeal is greater for a loss-framed message than for a gain-framed message.

H_{6b}: The effect of a help-others appeal is greater for a loss-framed message than for a gain-framed message.

Using both SPSS OLS regression and the SPSS macro PROCESS (Hayes, 2013) a moderation analysis was performed. This macro allows the designation of a multicategorical independent variable that is capable of being transformed into dummy variables. In the model the variable APPEAL is a 3 level variable; in this application of PROCESS D1 represents help self and D2 represents help others. The total model, including covariates, was significant ($p=.000$, $R^2 =33.6$) as were the individual appeal variables (help-self, $p=.002$; help-others $p=.002$). In addition the interaction terms were both significant (help-self*frame $p=.005$; help-others*frame $p=.011$). There was a significant increase in R^2 from the interaction ($p=.008$, R^2 increase .018). The specific results support both hypotheses H_{6a} and H_{6b}. PROCESS allows an analysis of interaction at different values of the moderator. For the loss frame, both help-self and help-others had a significant conditional effect on attitude (help self $p= .005$ and help others $p=.001$). However with a gain frame, there was no conditional impact on attitude of either a help-self or help-others appeal

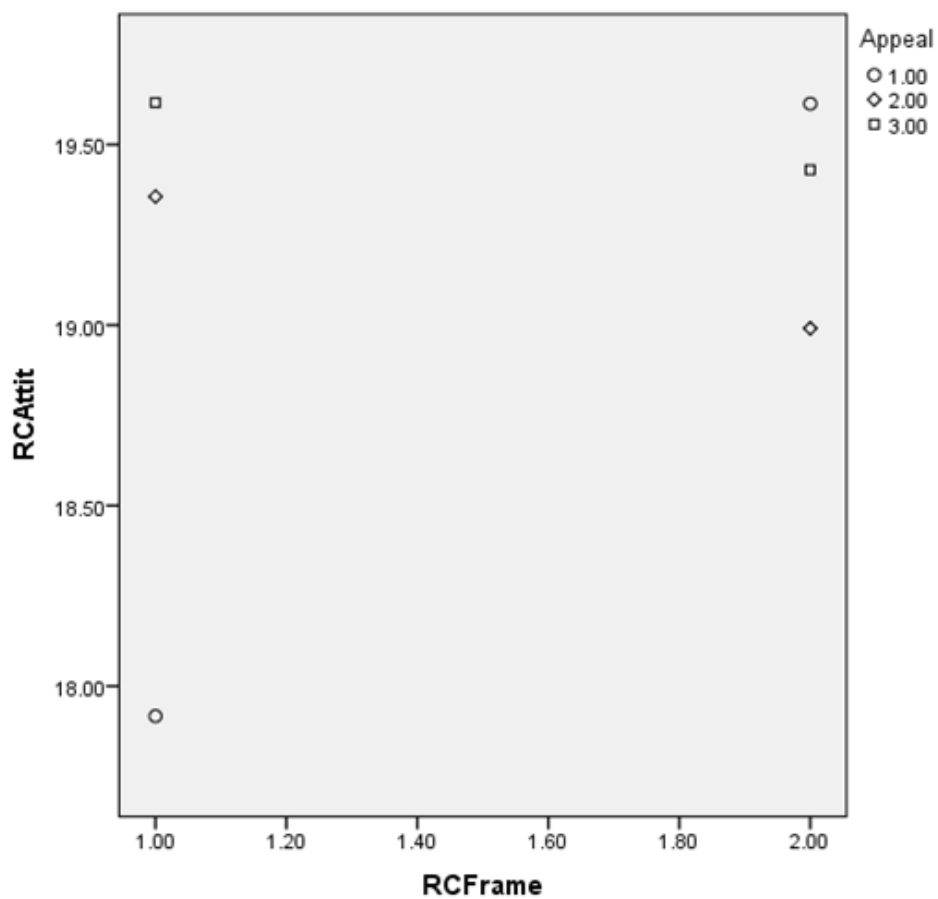
when compared to the control variable (help-self $p=.224$ and help-others $p=.73$). Figure 4 provides a visual of these hypothesized relationships.

Figure 4

The effect of appeal on attitude as moderated by frame

RCFrame: 1 = loss; 2=gain

Appeal: 1=control, 2=help self, 3=help others



Hypothesis Seven- Involvement as a moderator of appeal on attitude

The seventh hypothesis examines a second moderator, the level of involvement one has with melanoma, the disease featured in the scenarios. This analysis investigates if the relationship between appeal and attitude is a function of the level of involvement.

H₇: The effect of appeal on attitude toward participation in a clinical trial for melanoma skin cancer is moderated by involvement.

H_{7a}: The effect of a help-self appeal increases as the level of involvement increases.

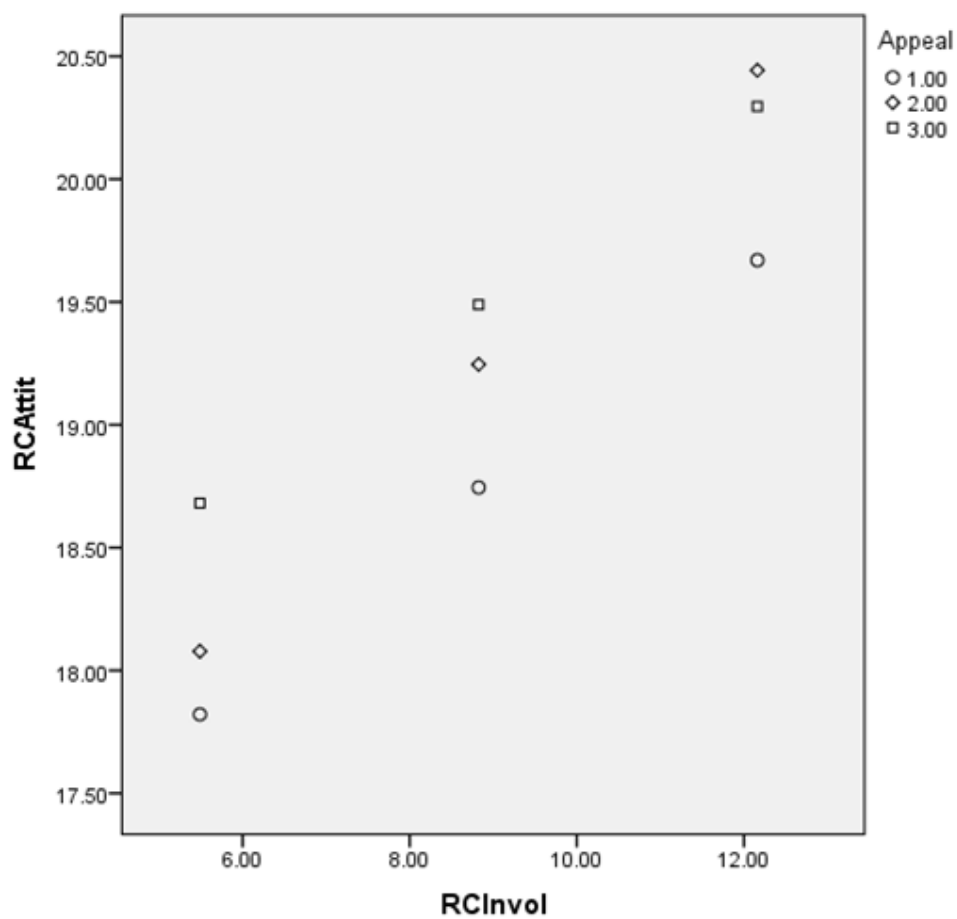
H_{7b}: The effect of a help-others appeal increases as the level of involvement increases.

Again, using both SPSS OLS regression and the SPSS macro PROCESS (Hayes, 2013) a moderation analysis was performed. This macro allows the designation of a multicategorical independent variable which is capable of being transformed into dummy variables. In my model the variable APPEAL is a 3 level variable; in this application of PROCESS D1 represents help self and D2 represents help others. The total model was significant ($p=.000$) however neither the individual appeal variables nor the interaction terms were significant. PROCESS allows an analysis of interaction at different values of a continuous moderator. In this case moderation was scrutinized at the mean and plus and minus one standard deviation above and below the mean. Interestingly at the mean level of involvement, the help-others appeal was significant as a moderator. Figure 5 provides a visual of this hypothesized relationship. To conclude, although overall moderation by involvement was not established, the relationship between the help-self and help-others appeal and the control variable is as anticipated. A help-self and a help-others appeal generate a more positive attitude at each level of involvement.

Figure 5

The effect of appeal on attitude as moderated by involvement

RCInvol = Involvement; mean =8.8
Appeal: 1=control, 2=help self, 3=help others



Moderated mediation analysis

Moderated mediation analysis allow for an examination of the “when of the how”, truly merging the analytical insight of both forms of data investigation. This allows a more rich understanding of relationships involved (Hayes 2013).

In the model being examined, a three level independent variable (appeal) is hypothesized to have a differential impact on both the dependent variable, intention as well as on the mediating variable, attitude. Two moderators (message frame and involvement) are hypothesized to positively influence a single mediator (attitude), which in turn is hypothesized to positively influence the dependent variable, intention. The use of moderating mediation analysis allows for an examination of these complex relationships simultaneously. The PROCESS macro for SPSS (Hayes, 2013) provides the output for the path analytic equations that allow for the integration of mediation and moderation (as described in Chapter 3). Furthermore, it allows for an assessment of the existence of partial moderated mediation when there are more than two moderators.

The first assessment is made to determine if there is a moderated mediation effect of a help-self appeal upon intention. Inference is made possible by examining the confidence interval for the indirect effect of moderated mediation created by bootstrapping for both moderators. The 95% confidence interval for involvement (.0046 .0637) is entirely above zero. Therefore it can be concluded that independent of any moderation of the indirect effect by frame, involvement positively moderates the indirect effect of help self on intention. However, since the confidence interval for frame (-.3836 .0133) contains a zero a different conclusion is drawn. Independent of any moderation of the indirect effect by involvement, the evidence does not definitively support a claim that the indirect effect of

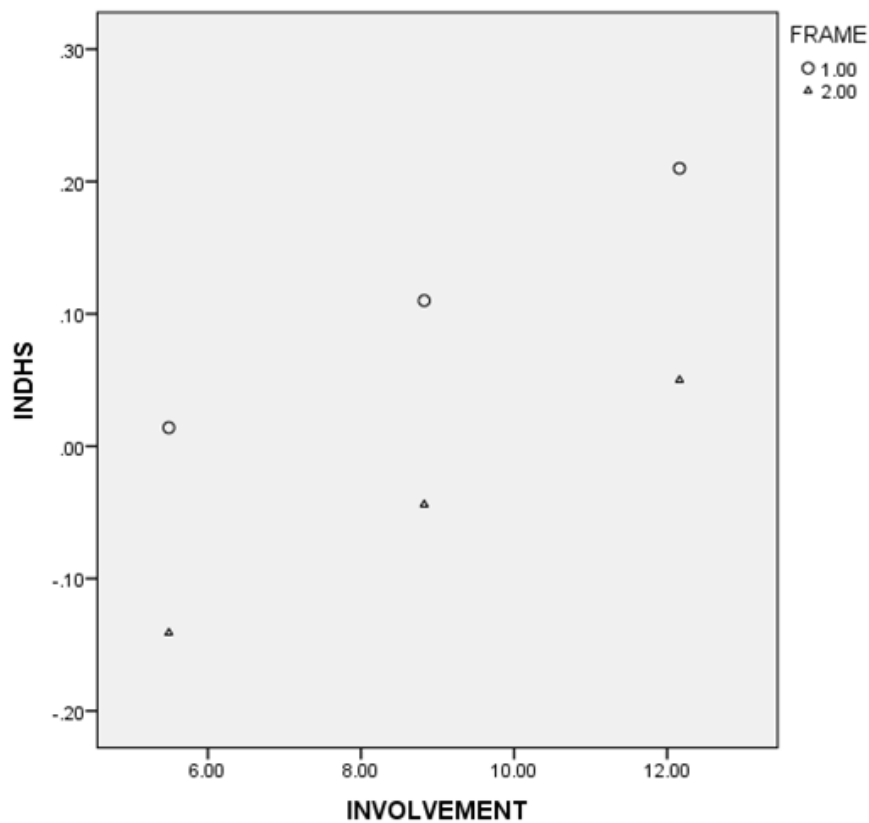
a help-self appeal on intention differs between a gain and a loss message frame. These relationships appear in Figure 6.

Figure 6

The indirect effect of a help-self appeal on intention as moderated by involvement

The slope of the lines is .030, the coefficient of Involvement. The gap between the lines is -.161, the coefficient of Frame. Frame is scored loss = 1 and gain = 2.

FIGURE I



In summary, it can be stated that the indirect effect of help-self on intention through attitude differs between respondents with different levels of involvement of the same frame.

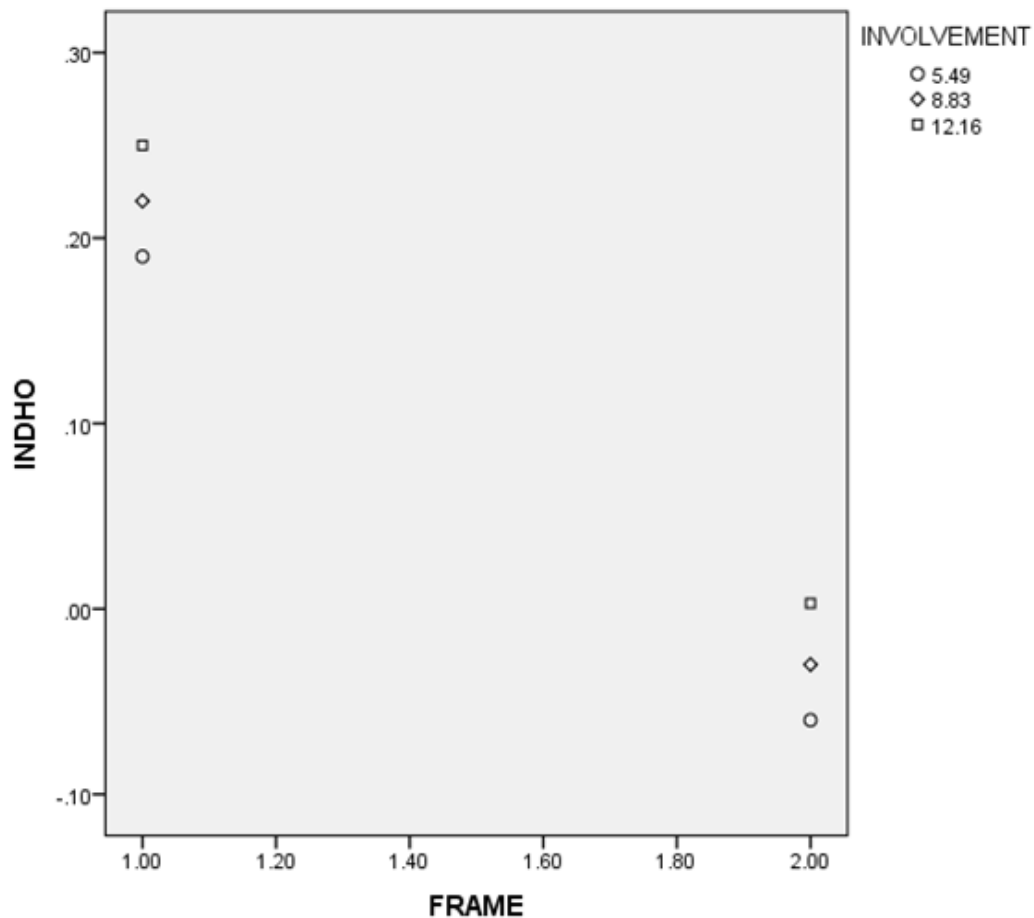
The second assessment is made to determine if there is a moderated mediation effect of help-others upon intention. Inference is again made possible by examining the confidence interval for the indirect effect of moderated mediation created by bootstrapping for both moderators. The confidence interval for involvement (-.0182 .0404) contains a zero. It can be concluded that independent of any moderation of the indirect effect by frame, the evidence does not definitively support a claim that the indirect effect of a help-others appeal on intention differs at different levels of involvement. The situation for message frame is different. The confidence interval for frame (-.5043 -.0601) is entirely below zero. It can be concluded that, independent of any moderation of the indirect effect by involvement, the indirect effect of a help-others appeal on intention to participate in a clinical research trial through attitude is moderated by message frame. For a loss frame, the indirect effect of a help-others appeal upon intention to participate is greater than for a gain frame. These relationships appear in figure 7

Figure 7

The indirect effect of a help-others appeal on intention as moderated by frame

The slope of the lines is $-.2436$, the coefficient of Frame. The gap between the lines is $.009$, the coefficient of involvement. Involvement is indicated as the mean (8.83) plus and minus one standard deviation. Frame is scored loss=1 and gain=2.

FIGURE F



In conclusion, it can be stated that the indirect effect of help other on intention through attitude differs between respondents viewing a gain or loss frame at the same level of involvement.

Summary of Analytical Tests

Table 7 summarizes the results of the testing of hypotheses and Table 8 summarizes the results of moderated mediation.

Table 7

Summary of Hypotheses Tests

<u>Hypothesis</u>	<u>Finding</u>
H ₁ : Attitude toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.	Supported
H ₂ : Subjective norm toward participation in a clinical research trial for melanoma will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma.	Supported
H ₃ : There will be a direct effect of appeal on intention to participate in a clinical research trial for melanoma skin cancer.	
H _{3a} : A help-self appeal will have a positive impact on intention to participate in a clinical research trial for melanoma skin cancer.	Not Supported
H _{3b} : A help-others appeal will have a positive impact upon intention to participate in a clinical research trial for melanoma skin cancer.	Not Supported
H ₄ : There will be an effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer.	
H _{4a} : A help-self appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.	Not supported

Table 7, continued

H _{4b} : A help-others appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma skin cancer.	Supported
H ₅ : The effect of appeal upon intention to participate in a clinical research trial for melanoma skin cancer will be mediated by attitude.	
H _{5a} : Attitude will mediate the effect of a help-self appeal upon intention to participate in a clinical research trial for melanoma skin cancer.	Not supported
H _{5b} : Attitude will mediate the effect of a help-others appeal upon intention to participate in a clinical research trial for melanoma skin cancer.	Supported
H ₆ : The effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer is moderated by message framing.	
H _{6a} : The effect of a help-self appeal is greater for a loss-framed message than for a gain-framed message.	Supported
H _{6b} : The effect of a help-others appeal is greater for loss-framed message than for a gain-framed message.	Supported
H ₇ : The effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer is moderated by involvement.	
H _{7a} : The effect of a help-self appeal increases as the level of involvement increases.	Not supported
H _{7b} : The effect of a help-others appeal increases as the level of involvement increases.	Not supported

Table 8**Summary of Moderated Mediation Analysis**

<u>Appeal</u>	<u>Moderator</u>	<u>Mediator</u>	<u>Finding</u>
Help-Self	Frame	Attitude	Not supported
Help-Self	Involvement	Attitude	Supported
Help-Others	Frame	Attitude	Supported
Help-Others	Involvement	Attitude	Not Supported

Discussion

Past research has attributed the motivation for helping behavior to either egoism or altruism (Bendapudi et al. 1996). These two rationales are historically anchored. Egoism refers to helping so that one is able to gain personal rewards or avoid punishment. In contrast altruism, based on empathy, refers to helping in order to benefit a perceived unmet need of others (Batson 1990). Both motivations have been found to generate support for social marketing causes (Holmes 2002; Fisher et al. 2008). However, the literature on helping behavior in leading marketing journals is sparse (Bendapudi et al. 1996). In that advertising messages have been found to be most effective when there is a match between their content and the motivational base of the target audience (Eagly and Chaiken 1993; Shavitt 1990) it is important to determine the motivational role of these two appeals in the specific setting under investigation. This dissertation extends the investigation of the impact of these appeals to a new area, specifically advertising messages designed to increase participation in clinical research trials for melanoma skin cancer.

The first hypothesis tested the relationship between attitude toward clinical trial participation and the intention to participate in a clinical trial for melanoma skin cancer. This essentially examined one of the basic tenets of the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980). This hypothesis was supported, and confirms the need for advertising to be developed in such a way that positive attitudes toward participation are fostered. Including belief statements that have been determined to be salient in the formation of positive attitudes about trial participation in advertising copy would be one technique for accomplishing this outcome.

The second hypothesis tested the relationship between subjective norm and the intention to participate in a clinical research trial for melanoma skin cancer. Subjective norm is also an element in the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980). The subjective norm component specifically allows for the inclusion of influence from individuals who are important to an individual's decision making. This hypothesis was supported. This implies that advertising copy should include a reference to the acceptability of participation by one's trusted reference group.

Taken together the first two hypotheses establish support for the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980) as an appropriate foundation for this dissertation.

The third hypothesis examined the direct effects of the help-self and the help-others appeals on intention to participate in a clinical research trial for melanoma skin cancer. The direct relationship for either appeal was not supported. In other words, there is more to the formation of intention to participate in a clinical research trial for melanoma skin

cancer than the appeal alone. The examination of the moderators as well as the mediation effect provided greater insight.

The fourth hypothesis examined the direct effect of the help-self and the help-others appeals on the attitude toward participation in a clinical research trial for melanoma skin cancer. The hypothesized direct relationship between the help-self appeal and attitude toward participating in a clinical research trial was not supported. There is no significant difference in the ability of a help-self appeal compared to a control appeal to have a positive impact upon attitude toward participation in a clinical research trial. However the results support the direct relationship between the help-others appeal and attitude toward participation in a clinical research trial. In other words, a help-others appeal was more likely to generate a positive attitude toward participation in a clinical research trial for melanoma skin cancer. Altruistic motivation appears to have had an impact whereby egoistic motivation did not.

The fifth hypothesis examined the role of attitude toward participation in a clinical research trial for melanoma as a mediator of the relationship between appeal and intention to participate in a clinical research trial for melanoma skin cancer. Mediation analysis attempts to explain the “why” or the “how” of the relationship between an independent and a dependent variable by investigating the impact of a third variable, the mediator. The results of the mediation analysis allowed for conclusions to be drawn separately for the help-self and help-others appeal. Attitude was not found to mediate the relationship between the help-self appeal and intention to participate in a clinical research trial. The attitude variable can not be used to account for the relationship between the help-self appeal and the intention to participate in a clinical trial for melanoma skin cancer.

However, findings for the help-others appeal are different. Attitude toward participation in a clinical research trial was found to positively mediate the relationship between the help-others appeal and intention to participate in a clinical trial for melanoma skin cancer. The findings indicate that as attitude toward participation became more positive, a help-others appeal led to a greater intention to participate in a clinical research trial for melanoma skin cancer.

The results of the fourth and fifth hypothesis indicate the importance of the help-others appeal to the intention to participate in a clinical research trial for melanoma skin cancer. The relationship between the help-others appeal and attitude toward a clinical trial is significant. The help-others appeal has a significant positive impact on attitude formation, and attitude significantly mediates the relationship between the help-others appeal and intention to participate in a clinical research trial for melanoma skin cancer.

The sixth hypothesis introduces the first of two potential moderators of the relationship between appeal and the attitude toward participation in a clinical research trial for melanoma skin cancer. Moderation analysis allow for an assessment of whether or not the relationship between the independent and the dependent variable is a function of the level of a third variable, the moderator. As such a moderation analysis assesses if a third variable affects the direction and/or the strength of the relationship between the independent and the dependent variable. In simplistic language, *when* will the appeal have a significant impact upon attitude? The first moderator, message frame, refers to whether or not the outcome of an action is described as a gain or a loss. The moderation investigation determines if the impact of the help-self appeal or the help-others appeal upon attitude toward participation in a clinical research trial for is greater for a scenario

featuring a loss frame than a scenario featuring a gain frame as hypothesized. The total model was significant. In addition both of the individual appeals, help-self and help-others were also significant. The interaction terms (help-self*frame) and (help-others*frame) were both significant indicating that frame does affect the relationship between both the help-self appeal and the help-others appeal and attitude toward participating in a clinical trial. To better understand the nature of the relationships, the impact of the moderator was individually assessed for a loss frame and a gain frame. The outcome indicates a significant conditional effect of a loss frame on attitude for both the help-self and the help-others appeal. However the result of the analysis of the gain frame did not indicate a significant conditional impact on attitude for either the help-self or the help-others appeal.

These findings confirm the research of Rothman and Salovey (1997) regarding the impact of loss frames in screening/detection scenarios. They determined that regardless of appeal, a loss frame has a significant impact upon attitude toward participation in a clinical research trial for the purpose of detection. These finding also support the research of Ghuge (2010, p.11) that states no study has determined that a gain-framed message has been more effective than a loss-framed message when promoting cancer-screening behaviors. Given these findings, to encourage the intention to participate in a clinical research trial for melanoma skin cancer the use of a loss frame is recommended when either a help-self or a help-others advertising appeal is used in an advertising campaign.

The seventh hypothesis examined the impact of the second proposed moderator, involvement with the disease melanoma. Involvement was measured using three scales that were then tallied into a summated score (higher score, greater involvement). The total model was significant however neither of the individual appeals, help-self or help-others

was a significant predictor. In addition, neither of the two interaction terms (help-self*involvement or help-others*involvement) was significant. For completeness, the moderation effect was examined at different values of the moderator (the mean and one standard deviation above and below the mean). This allowed for the development of a scatterplot of the actual relationships between the variables. Although moderation by involvement was not established, the relationship between both the help-self and the help-others appeal and the control appeal was as hypothesized: at each level of involvement, the control appeal generated the lowest attitude toward participation in a clinical research trial. Although involvement was not found to be a significant moderator for either the help-self or the help-others appeal the direction of the relationship between involvement and attitude is positive. If involvement could be enhanced, it is possible that it could become a significant moderator. Two of the three scale items that were used to measure involvement described “reading about” or “paying attention to media about” melanoma skin cancer. Perhaps greater use of public service announcements or posted materials or media at physician’s offices would provide greater access to melanoma information. As greater numbers of people are exposed to such information, involvement may increase. More research regarding the role of involvement is warranted.

The final analysis was performed to assess moderated mediation effects, or the full model of this dissertation. Included in this analysis were all model variables including the covariates. As described by Hayes (2013) moderated mediation analysis allows for a greater understanding of the relationships being investigated as it is a simultaneous examination of the “when of the how”. Both moderators are included in a single analysis that also includes mediation effects.

This level of analysis allows for findings in terms of “the indirect effect of the independent variable on the dependent variable (through the mediator) is or is not moderated (by ___)”. For the help-self appeal, the results indicate that independent of any moderation by involvement, the indirect effect of a help-self appeal on intention through attitude does not differ between a gain and a loss frame. However, it can be concluded that independent of any moderation by frame, the indirect effect of the help-self appeal on intention through attitude is moderated by involvement. As involvement with melanoma increases, the indirect effect of the help-self appeal through attitude upon intention to participate in a clinical research trial also increases regardless of frame. The earlier analysis of involvement as a moderator of the relationship between the help-self appeal and attitude was not significant. However when attitude is included as a mediator the finding is significant.

For the help-others appeal, it can be concluded that independent of any moderation by frame, the indirect effect of a help-others appeal upon intention through attitude is not significantly different for varying levels of involvement. However, it can be concluded that independent of any moderation by involvement, the indirect effect of the help-others appeal upon intention through attitude is moderated by frame. At each level of involvement, there is a greater indirect effect of the help-others appeal through attitude upon intention for a loss frame than a gain frame.

At this point, it is important to try to understand how the results and conclusions of moderated mediation compare to those determined through the individuals hypotheses. Table 9 provides a comparison of findings.

Table 9**Summary of findings from hypotheses and moderated mediation analysis**

<u>Hypothesis</u>	<u>p value; decision</u>	<u>M/M p value, decision</u>	<u>agreement</u>
1. H ₁ , AP→INT	.000; supported	.000; supported	yes
2. H ₂ , SN→INT	.000; supported	.000; supported	yes
3. H _{3a} , HS→INT	.438; not supported	.474 not supported	yes
4. H _{3b} , HO→INT	.801; not supported	.404 not supported	yes
5. H _{4a} , HS→ATT	.252; not supported	.968 not supported	yes
6. H _{4b} , HO→ATT	.038; supported	.052 supported (weak)	yes
7. H _{5a} , HS→ATT→INT	CI; not supported	not determined*	unknown
8. H _{5b} , HO→ATT→INT	CI; supported	not determined*	unknown
9. H _{6a} , HS→FR→ATT	.005; supported loss .005; gain. 224	.107; not supported	no
10. H _{6b} , HO→FR→ATT	.011; supported loss .001; gain .73	.015; supported	yes
11. H _{7a} , HS→IV→ATT	.492; not supported	.045; supported	no
12. H _{7b} , HO→IV→ATT	.742; not supported	.553; not supported	yes

LEGEND:

AP=Appeals
 INT=Intentions
 SN=Subjective norm
 HS=Help self
 HO=Help other
 ATT=Attitude
 FR=Frame
 IV=Involvement

*results for mediation not reported independently of moderation

The last four items in Table 10 (items 9 through 12) involve an analysis of moderation. The original hypothesis test analysis for each moderation was conducted independently of the other. In other words, frame was examined as a possible moderator of the help-self and the help-others appeal (compared to the control) upon attitude. Likewise, involvement was examined as a possible moderator of a help-self and a help-others appeal (compared to the control) upon attitude. Moderated mediation analysis includes both moderators in a single model that also includes the effect of mediation. Since the purpose of this dissertation does not include comparing the help-self appeal and the help-others appeal to each other the findings for moderation from the original hypotheses are more relevant.

The results of the moderated mediation analysis strongly support prior findings related to the help-others appeal. The help-others appeal was found to have a significant positive relationship to attitude toward clinical trials (H_{4b}) and attitude toward clinical trials was found to significantly mediate the relationship between the help-others appeal and the intention to participate in a clinical research trial for melanoma (H_{5b}). Furthermore message frame (loss) was a significant moderator of the relationship between the help-others appeal and attitude toward participation in a clinical trial (H_{6b}). The finding of the moderated mediation analysis for the help-others appeal confirms each of these prior findings in an integrated outcome. Given these results, the use of loss framing paired with a help-other appeal is recommended in advertising copy designed to increase participation in a clinical research trial for melanoma skin cancer.

The findings of moderated mediation analysis for the help self appeal are not as clear-cut. The help-self appeal did not have a significant relationship to attitude toward

participation in a clinical trial (H_{4a}). Furthermore, attitude toward participation in a clinical research trial was not found to be a mediator of the help-self appeal upon intention to participate in a clinical research trial for melanoma skin cancer (H_{5a}). Although a positive relationship was found, involvement was not a significant moderator of the relationship between the help-self appeal and attitude toward participation in a clinical research trial (H_{7a}). However when these relationships are investigated simultaneously using the moderated mediation analytical technique, a different conclusion emerges. Specifically, as involvement with melanoma increases, the indirect effect of the help-self appeal through attitude upon intention to participate in a clinical research trial for melanoma skin cancer also increases, regardless of frame. An advertising campaign featuring a help-self appeal would be wise to include elements that nurture involvement. Since “worrying about melanoma” was the topic of one of the measured involvement items, including advertising copy from a credible spokesperson that references “worry” may be one way to increase involvement. Since the relationship between the help-self appeal and intention to participate in a clinical research trial for melanoma skin cancer is not as clear-cut further research is needed.

Chapter V

Conclusions and Recommendations

Introduction

This chapter presents the conclusions and implications of this dissertation and is organized into four sections. Following a brief summary, the contributions of the study are presented. Next, the limitations of the research are offered. Concluding, the recommendations for future research are provided.

Summary

The purpose of this dissertation is to examine the relationship between help-self and help-others advertising appeals and participation in a clinical research trial for melanoma skin cancer. This research addresses a gap in the literature by expanding the investigation of helping behavior and promotional appeals to a novel area – clinical research trials. Help-self and help others appeals were examined in an attempt to gain insight into their respective effects, not to compare one to the other. In order to determine the relationship between appeal and intention, a model based upon the Theory of Reasoned Action (Fishbein and Ajzen 1975; Azjen and Fishbein 1980) was developed. The model was tested using an experimental design. Seven separate relationships (twelve hypotheses) were tested, as was the full model. A questionnaire was developed and responses were collected from a diverse consumer panel in the United States. The results were tested using SPSS OLS regression analysis and the SPSS macro PROCESS (Hayes 2013). The explanatory power of the models was good. Six of the twelve hypotheses were supported. For the full model, two relationships were supported and two were not.

Contributions of the Study

From a theoretical perspective, this research affirms the relationships between attitude and intention and subjective norm and intention as specified by the Theory of Reasoned Action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980). Furthermore, this research demonstrates the applicability of the Theory of Reasoned Action in a new health behavior setting, clinical trial participation. Given that the relationship between attitude and intention and subjective norm and intention are both positive, it is suggested that media communications that reinforce the underlying beliefs for both variables be used (Finnegan and Viswanath 2008). Since the covariate perceived behavioral control was significant, the extended model, The Theory of Planned Behavior (Ajzen 1985) is also validated in this setting. Furthermore, this research heeds the call of Johar (2006) to look more broadly at consumers as they act in different roles, in this case as a trial participant.

From a broad perspective, this research heeds the call of Friedman et al. (2014) to examine the association between participation intentions and recruitment messages. This study extends prior research involving helping behavior and two relevant help oriented advertising appeals to a novel area of investigation. Clinical trials are in dire need of volunteers to act as research participants. Many studies cover basic expenses but provide no remuneration. It is therefore important to determine which appeals best encourage individuals to take part in studies. Help-self and help-others appeals have been examined in other research contexts. Brunel and Nelson (2000) investigated response to these appeals in the area of charity giving. Singhapakdi and LaTour (1991) studied altruistic and utilitarian appeals and green marketing. In the health care field these appeals have been

used to study blood donation (Hupfer 2006; Huang 2012). The extension of the examination of appeals to clinical trial participation intention is logical and necessary.

In the past, studies have been conducted that by design compare findings regarding a help-self or a help-others appeal. The stated purpose has been to determine situational preference or to maintain consistency with past research (White and Pelozo 2009). This dissertation is instead designed to determine the feasibility of both a help-self and a help-others appeal without regard for preference between the two. In other words the focus is on the “win-win” situation of being able to use both to best meet recruitment goals. Past empirical support exists for the use of both helping appeals to increase participation in clinical research trials (Holmes et al. 2002; Fisher et al. 2008).

As called for by Cox and Cox (2001), this study helps to bring clarity to the framing debate by investigating a specific setting with specific message components and moderators. Given the outcome of the moderation analysis, support is provided for previous findings (Rothman et al. 2003; Salovey 2005) that in a screening/detection scenario, a loss frame is a more effective message component than is a gain frame. This was found to be true for either the help-self or help-others appeal. The result of the moderated mediation analysis determined that this result was specific to the help-others appeal.

The use of national consumer panel data enhances the external validity of this research. A student sample would not have been appropriate given the age and life experience range needed for the findings to have credibility. In addition, the data was collected by a reputable provider. Findings from this research may be useful to others

conducting studies in related areas given the generalizability that the sampling plan provides.

This research utilized the SPSS macro PROCESS (Hayes 2013) to analyze mediation and moderated mediation effects. This approach relies on bootstrapped confidence intervals for determining significance, a technique that is gaining acceptance as an alternative or replacement for the causal step approach (Baron and Kenny 1986). This research adds to the growing literature that supports the use of this technique.

As to managerial implications, the outcome of this research can help to improve clinical research trial recruitment efforts. Most clinical research trials do not meet fulfillment quotas in the projected timeframe, or meet budget goals. Many trials report the use of a variety of outreach techniques including print advertising. The steps used in developing the advertising copy are absent. Research about specific advertising appeals can allow for a better expenditure of promotion funds and an improved ability to recruit participants. Research and development costs, including advertising expense, become a part of the final cost of any new pharmaceutical product. To the extent that advertising cost can be minimized given better recruitment insight, the final cost of new products to the consumer could feasibly be reduced.

Limitations

Despite the contributions of this study, there are various limitations that provide context to the findings. First of all, even though the data was provided by a reliable firm (Qualtrics), there may be a uniqueness to individuals that participate in consumer research panels. In other words, the respondents may not represent the population of interest with

complete accuracy. Therefore future research should attempt to validate these results with a different sample provided by either Qualtrics or another reliable research firm. The use of an alternative sampling design would also provide insight as to the validity of the results.

This research was designed to understand the impact of two specific advertising appeals upon participation in clinical research trials. However, the experimental manipulations included only one illness category, that of melanoma. This is a potentially life threatening illness and it may have generated responses that were different from those that may have been generated for a different life threatening illness or for any non-life threatening illness. Future research using a different life threatening cancer or a different life threatening illness would provide insight as to the generalizability of these results. Research using a non-life threatening cancer or illness is also recommended as the results may be situation specific.

Prior research results regarding the efficacy of the use of a gain frame versus the use of a loss frame have been mixed. (Rothman and Salovey 1997). In a health behavior context this has often been attributed to differences in the purpose of the investigative trial. This research specifically investigated a screening/detection trial. The need for effective advertising to encourage trial participation for preventive trials is also great. Rothman et al. (2003) and Salovey (2005) found that in an illness detecting situation a high level of risk is present and loss framing is effective. In an illness prevention situation, seen as health affirming, risk is low and gain framing has been effective. However Gong (2012) found inconsistencies and Shao (2012) suggests that the content of the message should also be examined. The effect of the combination of gain or loss message frame and a help-self and

a help-others appeal to generate the intention to participate in a trial for a prevention purpose remains unknown.

The research scenarios developed for use in this dissertation are print based with copy suitable for a newspaper, magazine or online source of information. The inclusion of complimentary images may impact attitude or intention. Friedman et al. (2014) recommend that recruitment resources present a combination of text and images that will appeal to the target audience and enhance readability. Animation could accompany the print appeal message in social media (You Tube, etc.). These message elements may also heighten awareness of television advertising or public service announcements leading to a greater impact of the stated appeals upon both attitude and intention. Future research is necessary to determine relevant findings.

Finally, the focus of this research was the United States. Many large pharmaceutical firms operate globally, and the need for participants in clinical research trials is world-wide. The generalizability of the findings may be limited to the United States, or to those countries with similar cultural orientations. It would be valuable to conduct this study in diverse cultural settings. Robustness could be gauged by focusing first in areas with similar cultures. Then testing should be undertaken in countries with dissimilar cultures.

Recommendations for Future Research

In that the investigation into the impact of help-self and help-others appeals upon clinical research trial participation is at an early stage, much work remains. The current findings provide a foundation for many potential areas of investigation.

The ability to enhance the basic help-self or help-others message is possible given the significance of the attitude and subjective norm variable. They both had a positive relationship to participation intention. What other wording could be included to accentuate the beliefs underlying these positive relationships? One example is: “Ask your friends – they probably approve of your participation in a trial”. The same is true of the covariate perceived behavioral control. Copy could include language that stresses personal ability to participate. A re-examination of the six appeal scenarios featured in this research with amended copy elements such as these would be worthwhile.

This research did not find support for a direct effect of either the help-self or the help-other appeal upon intention to participate in a clinical research trial for melanoma skin cancer. However, when the analysis included other components of the advertising message relationships including the appeals were supported. This affirms the need for research to include pertinent moderators and mediators. Future research should attempt to determine the impact of other message variables upon clinical trial participation.

In several instances, gender was found to be a significant covariate. Specifically in H₁ (the impact of attitude on intention) females were found to have a significantly greater intention to participate. This is also true of females for hypothesis H₂, the impact of subjective norm upon intention. Brunel and Nelson (2000) specifically explored gender as a moderator in their research on response to charity ad appeals. They found that males responded more favorably to the help-self appeal and females responded more favorably to the help-other appeal. The analysis of gender deserves greater scrutiny in future research about clinical trial participation. This could lead to the development of more effective advertising copy as well as outreach efforts for either gender.

The findings from this study indicate that past racial perceptions of unjust treatment in medical research may have diminished. No hypothesis tested indicated a significant relationship between ethnicity and either attitude toward participation in a clinical research trial for melanoma skin cancer or intention to participate in a clinical research trial for melanoma skin cancer. This is a finding that warrants further investigation.

In H_{4b} it was determined that a help-others appeal had a significant and positive relationship with attitude toward trial participation. The education covariate was found to be significant. It would be interesting to explore this relationship further. In other settings are individuals with higher educations more likely to respond to advertising with a help-others appeal? This could have a discrete implication for choice of media vehicle.

Although the moderation analysis indicated that neither H_{7a} nor H_{7b} was significant (involvement as a moderator) the nature and direction of the relationship with attitude was positive, as hypothesized. The results of moderated mediation analysis indicated that the indirect effect of the help self appeal through attitude upon intention was moderated by involvement. With a help-self appeal, those with greater involvement with melanoma did indicate a more positive attitude toward participation in a clinical research trial and a greater intention to participate in a clinical research trial for melanoma skin cancer. Familiarity is positively correlated with involvement and was a significant covariate in H_{4a} and H_{4b} , the effect of appeal on attitude. Individuals with direct personal or family melanoma experience or those who have had melanoma screening may also be useful as spokespersons. The use of familiarity in advertising copy to increase reader involvement should be investigated.

The utilization of diagnostic techniques that have been found to be superior to past techniques is worthwhile (PROCESS as an improvement to the causal step approach for analyzing mediation). The scales used to measure the various constructs in this research should be examined to determine their validity for current applications.

BIBLIOGRAPHY

- Aaker, Jennifer L. and Angela Y. Lee (2001), "'I' Seek Pleasures and 'We' Avoid Pains: The Role of Self-Regulatory Goals in Information Processing and Persuasion," *Journal of Consumer Research*, 28 (June), 33-49.
- Advani, Anjali S., et al. (2003), "Barriers to the participation of African-American patients with cancer in clinical trials," *Cancer*, 97(6), 1499-1506.
- Agras, W. Stewart, and R. H. Bradford (1982), "Recruitment: an introduction," *Circulation*, 66(6) Pt 2, IV 2-5.
- Agras, W., G. Marshall, H. Kraemer (1982), "Planning Recruitment," *Circulation*, 66(6) pt.2, IV 54-58.
- Ajzen, Icek (1985) "From intentions to actions: A theory of planned behavior," *Action control*, 11-39.
- Ajzen, Icek. (1991), "The theory of planned behavior," *Organizational behavior and human decision processes*, 50(2), 179-211.
- Ajzen, Icek. (2002) Constructing a TPB questionnaire: Conceptual and methodological considerations.
- Ajzen, A. and M. Fishbein (1980), *Understanding attitudes and predicting social behavior*, Upper Saddle River, NJ: Prentice Hall.
- Ajzen, Icek and Thomas J. Madden (1986), "Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control," *Journal of Experimental Social Psychology*, 22(5), 453-474.
- Albarracin, D., B. Johnson and M. Fishbein,(2001), "Theories of reasoned action and planned behavior as models of condom use: A meta-analysis," *Psychological Bulletin*, 127 (January), 142-161.
- Amberson Jr, J. Burns (1931), "A clinical trial of sanocrysin in pulmonary tuberculosis," *American Review of Tuberculosis*, 24, 401-435.
- Anastasi, J., B. Capili, G. Kim,G. and A. Chung (2005), "Clinical trial recruitment and retention of a vulnerable population," *Gastroenterology Nursing*, 28(6), 463-468.
- Andrews, J. Craig, Srinivas Durvasula and Syed H. Akhter (1990), "A Framework for Conceptualizing and Measuring the Involvement Construct in Advertising Research," *Journal of Advertising*, 19(4), 27-40.

- Armitage, Christopher J. and Mark Conner (2001), "Efficacy of the theory of planned behaviour: A meta-analytic review," *British Journal of Social Psychology*, 40(4), 471-499.
- Atkin, C., V. Freimuth (1989), "Formative evaluation research in campaign design" In C. Atkin & R. Rice (Eds.) *Public Communication Campaigns* 131-150. Newbury Park, CA: Sage.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C. and K. D. Vohs (2001), "Bad is stronger than good," *Review of general psychology*, 5(4), 323.
- Bagozzi, Richard P. (1981), "Attitudes, intentions, and behavior: A test of some key hypotheses," *Journal of personality and social psychology*, 41(4), 607
- Bakan, David. (1966), *The duality of human existence: Isolation and communion in Western man*, Massachusetts: Beacon Press.
- Barling, Norman R. and Susan M. Moore. (1996), "Prediction of cervical cancer screening using the theory of reasoned action," *Psychological reports*, 79(1), 77-78.
- Baron, Reuben M. and David A. Kenny (1986), "The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations," *Journal of personality and social psychology*, 51(6), 1173.
- Barquet, N. and P. Domingo. (1997), "Annals of Internal Medicine." *Smallpox: the triumph over the most terrible of the ministers of death*, 127(8 PT.1), 635-642.
- Barrett, P. (2014), "Stop Squabbling, Mom tells troubled Biotech: 'Just get my kid the drug'," *Business Week*, July 28.
- Bandura, Albert. (1986), "The explanatory and predictive scope of self-efficacy theory," *Journal of social and clinical psychology*, 4(3), 359-373.
- Batson, C. (1987) *Prosocial motivation: Is it ever truly altruistic?* In L. Berkowitz (Ed.) *Advances in Experimental Social Psychology*, 20:65-122. San Diego, CA: Academic Press.
- Batson, C. Daniel (1990), "How Social an Animal? The Human Capacity for Caring," *American Psychologist*, 45 (3), 336-46.
- Batson, C. Daniel (1991), *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Baum. M., K. Zilka and J.Houghton (1989), "Ethics of clinical research: lessons for the future." *British Medical Journal*, 299, 251-253.

- Becker, M., Maiman, L. (1975), "Sociobehavioral Determinants of Compliance with Health and Medical Care Recommendations," *Medical Care*, 1,10-24.
- Becker, MH. (1974), "The Health Belief Model and Personal Health Behavior." *Health Education Quarterly*, 2(4), 324-473.
- Becker, MH. (1974), "The Health Belief Model and sick role behavior," *Health Education Monographs*, 2(4), 409-419.
- Belenky, Mary Field. 1986. *Women's ways of knowing: The development of self, voice, and mind*. Basic books.
- Bendapudi, N., S. Singh & V. Bendapudi (1996), "Enhancing helping behavior: an integrative framework for promotion planning," *Journal of Marketing*, 60, 33-49.
- Bernaix, L. (2000), "Nurses'attitudes, subjective norms, and behavioral intentions toward support of breastfeeding mothers," *Journal of Human Lactation*, 16(3), 201-209.
- Bernhardt, Jay M. (2001),"Tailoring messages and design in a Web-based skin cancer prevention intervention," *Int Electron J Health Educ*, 4, 290-297.
- Bevan, E., L. Chee, S. McGhee and G. McInnes (1993), "Patients' attitudes to participation in clinical trials," *British Journal of Clinical Pharmacology*, 35, 204-207.
- Bhatt, Arun (2010), "Evolution of clinical research: a history before and beyond James Lind," *Perspectives in clinical research*, 1(1), 6.
- Bish, Alison, Stephen Sutton and Susan Golombok. (2000), "Predicting uptake of a routine cervical smear test: A comparison of the health belief model and the theory of planned behaviour." *Psychology and Health*, 15(1), 35-50.
- Block, L. and P.Keller (1995) "When to accentuate the negative: the effects of perceived efficacy and message framing on intentions to perform a health-related behavior," *Journal of Marketing Research*, 32, (2), 192-203.
- Bosone, L., F. Martinez and N. Kalampalakis (2015), "The effect of message framing and the nature of targeted illness on individuals' intention ot participate in clinical trials," *European Journal of Applied Psychology*, 65(June), 171-177.
- Brescia, B. (1999). Patient recruitment comes of age as a new communications discipline. *Medical Marketing and Media*, 34(4), 78-84.
- Brescia, B. (2003),"Good Recruitment practice = Patient Pull," *Pharmaceutical Executive*, June, 64-70.
- Brescia, B. (2000), "Put patients first in clinical trials," *Pharmaceutical Executive*, 138-140.

- Brick, Cameron, S. N. McCully, J. A. Updegraff, P. J. Ehret, M. A. Areguin and D. K. Sherman (2015), "Impact of Cultural Exposure and Message Framing on Oral Health Behavior Exploring the Role of Message Memory." *Medical Decision Making*, 0272989X15570114.
- Brown, K., J. Lindenberger and C. Byrant (2008), "Using pretesting to ensure your messages are on strategy," *Health Promotion Practice*, 9(2), 116-122.
- Brunel, F. and M. Nelson (2000), "Explaining gendered responses to "help-self" and "help-others" charity ad appeals: the mediating role of world-views," *Journal of Advertising*, 29 (3), 15-27.
- Burnkrant, R. and T. Page (1982), "An examination of the convergent, discriminant, and predictive validity of Fishbein's behavioral intention model," *Journal of Marketing Research*, 550-561.
- Butt, D., M. Lock and B. Harvey (2010), "Effective and cost-effective clinical trial recruitment strategies for postmenopausal women in a community-based, primary care setting," *Contemporary Clinical Trials*, 31(5), 447-456.
- Cacioppo, J. and R. Petty. (1985) *Central and Peripheral routes to persuasion: The role of message repetition*. Hillsdale, NJ: Lawrence Erlbaum.
- Cambron, J., J. Dexheimer, M. Chang & G. Cramer (2010), "Recruitment methods and costs for a randomized, placebo-controlled trial of chiropractic care for lumbar spinal stenosis: a single -site pilot study," *Journal of Manipulative and Physiological Therapeutics*, 33(1), 56-61.
- Carbone, P.P., K. Sielaff, M. Hamielec and H. Bailey (2005), "Recruitment strategies for cancer prevention trials," *Cancer Chemoprevention*, 2, 163-179.
- Carlson, Rae. (1971), "Sex differences in ego functioning: Exploratory studies of agency and communion," *Journal of Consulting and Clinical Psychology*, 37(October), 267-277.
- Carlson, Rae. (1972), "Understanding women: Implications for personality theory and research," *Journal of Social Issues*, 28(2), 17-32.
- Carman, James M. (1992), "Theories of Altruism and Behavior Modification Campaigns," *Journal of Macromarketing*, 12(1), 5-18.
- Carmel, Sara, Esther Shani and Lior Rosenberg. (1994), "The role of age and an expanded Health Belief Model in predicting skin cancer protective behavior," *Health Education Research*, 9(4), 433-447.

- Cassileth, B., E. Lusk, D. Miller, and S. Hurwitz (1982), "Attitudes toward clinical trials among patients and the public," *Journal of the American Medical Association*, 248(8), 968-970.
- Caulfield, T. (2005), "Legal and Ethical Issues Associated with Patient Recruitment in Clinical trials: The Case of Competitive Environment," *Health Law Review*, 13(2,3), 58-61.
- Chaiken, S. (1980), "Heuristic versus systematic information processing and the use of source versus message cues in persuasion," *Journal of personality and social psychology*, 39(5), 752-766.
- Champion, Victoria Lee (1984), "Instrument development for health belief model constructs," *Advances in Nursing Science*, 6(3), 73-85.
- Chang, Chun-Tuan and Yu-Kang Lee. (2011), "The 'I' of the beholder: How gender differences and self-referencing influence charity advertising," *International Journal of Advertising*, 30(3), 447-478.
- Chen, Caroline. (2015), "The superhumans are real and their DNA could be worth billions," *Businessweek*, July 22.
- Chung, Theodore DK, Irwin I. Park, Lani Ignacio, Rose Catchatourian, Mitchell Kopnick, Evelyn Davison, Geraldine Conrad, Azhar M. Awan, David Crawford, and Srinivasan Vijayakumar (2000), "Television and news print media are effective in recruiting potential participants in a prostate cancer chemoprevention trial," *International journal of cancer*, 90(5), 302-304.
- Clarke, Keith and Russel Belk (1978), "The Effects of Product Involvement and Task Definition on Anticipated Consumer Effort," in H. Keith Hunt (ed.) *Advances in Consumer Research* (5), 313-318. Ann Arbor: Association for Consumer Research.
- Claypool, H. M., D.M. Mackie, T. Garcia-Marques, A. McIntosh and A. Udall (2004), "The effects of personal relevance and repetition on persuasive processing," *Social Cognition*, 22, 310-335.
- Cohen, E. (2007), " "My Loss is Your Gain": Examining the role of message frame, perceived risk, and ambivalence in the decision to become an organ donor," Thesis, Georgia State University.
- Comis, Robert L., Jon D. Miller, Carolyn R. Aldigé, Linda Krebs and Ellen Stoval (2003), "Public attitudes toward participation in cancer clinical trials," *Journal of Clinical Oncology*, 21(5), 830-835.
- Cooke, Richard and David P. French. (2008), "How well do the theory of reasoned action and theory of planned behaviour predict intentions and attendance at screening programmes? A meta-analysis," *Psychology and Health*, 23(7), 745-765.

- Costa, Janeen (1994), "Introduction ," In J. Costa (Ed.) *Gender issues and consumer behavior* 1-10. Thousand Oaks CA:Sage.
- Cox, D. & A.Cox (2001), "Communicating the consequences of early detection: The role of evidence and framing," *Journal of Marketing*, 65(3), 91-103.
- Cronbach L.J. (1951), "Coefficient alpha and the internal structure of tests," *psychometrika*, (16), 297-334.
- Cunney, K. and H. Miller (1994), "Participation in clinical drug studies: motivations and barriers," *Clinical Therapeutics*, 16(2), 273-282.
- Curry, David J. and Michael B. Menasco. (1979), "Some effects of differing information processing strategies on husband-wife joint decisions," *Journal of Consumer Research*, 6(2), 192-203.
- Deaux, K. and M. Kite (1987). Thinking about gender. In B. B. Hess & M. M. Ferree (Eds.) *Analyzing gender: A handbook of social science research* 92-117. Beverly Hills, CA: Sage.
- Dijkmans, Corné, Peter Kerkhof and Camiel J. Beukeboom (2015), "A stage to engage: Social media use and corporate reputation." *Tourism Management* 47,58-67.
- DiMatteo, M., K. Haskard and S. Williams (2007), "Health beliefs, disease severity , and patient adherence," *Medical Care*, 45, 521-528.
- Eagly A.H. and S. Chaiken (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace.
- Edwards, W. (1954), "The theory of decision making," *Psychological Bulletin*, 51, 380-417.
- Eisenberg N. (1986), *Altruistic emotion, cognition and behavior*. Hillsdale: NJ: Erlbaum.
- Eisenberg, N., R. Lennon and J. F. Pasternak (1986), "Altruistic values and moral judgment," *Altruistic emotion, cognition and behavior*, 115-159.
- Ellis, P. M. (2000), "Attitudes towards and participation in randomised clinical trials in oncology: a review of the literature," *Annals of Oncology*, 11(8), 939-945.
- Ellis, Peter M., S.M. Dowsett, P.N. Butow and M.H.N. Tattersall (1999), "Attitudes to randomized clinical trials amongst out-patients attending a medical oncology clinic," *Health Expectations*, 2(1), 33-43.
- Engel, J. F. and R.D. Blackwell (1982), *Consumer behavior*. New York: Dryden.
- Espeland, Mark (2007), "Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial," *Diabetes care*.

- Fazio, R. (1990), "Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework," *Advances in Experimental Social Psychology*, 23, 75-109.
- Fazio, Russell H. and Mark P. Zanna (1981), "Direct experience and attitude-behavior consistency," *Advances in experimental social psychology*, 14, 161-202.
- Ferber, Robert and Lucy Chao Lee. (1974), "Husband-wife influence in family purchasing behavior," *Journal of Consumer Research*, 1, 43-50.
- Finnegan John R. Jr. and K. Viswanath (2008), "Communication theory and health behavior change: the media studies framework " in K. Glanz, B.K. Rimer and K. Viswanath (Eds.) *Health behavior and health education: theory, research, and practice* 363-388. John Wiley & Sons.
- Finney, Lila J. and Ronald J. Iannotti (2002), "Message framing and mammography screening: A theory-driven intervention," *Behavioral Medicine*, 28(1), 5-14.
- Fishbein, Martin (2008), "A reasoned action approach to health promotion," *Medical Decision Making*, 28(6), 834-844.
- Fishbein, M. and I. Ajzen, (1975). *Belief, attitude, intention and behavior: An introduction of theory and research*. Reading, MA: Addison-Wesley.,
- Fisher, R. and W.A. Mackenzie (1923), " *Studies in crop variation. II. The manurial response of different potato varieties.*" *Journal of Agricultural Science*, 13, 311-320.
- Fisher, W.A., J.D. Fisher and B.J. Rye (1995), "Understanding and promoting AIDS - preventive behavior: insights from the theory of reasoned action," *Health Psychology*, 14(3), 255-264.
- Fisher, Robert J., Mark Vandenbosch, and Kersi D. Antia (2008), "An empathy-helping perspective on consumers' responses to fund-raising appeals," *Journal of Consumer Research*, 35(3) 519–531.
- Foley, John F., and Charles G. Moertel (1991), "Improving accrual into cancer clinical trials." *Journal of Cancer Education*, 6(3), 165-173.
- Francis, D., I. Roberts, D. Elbourne, H. Shakur, R. Knight, J. Garcia and C. Snowden, (2007), "Marketing and clinical trials," *Trials*, 8(1), 1.
- Frew, Paula M., et al. (2010), "The likelihood of participation in clinical trials can be measured: the Clinical Research Involvement Scales," *Journal of clinical epidemiology*, 63(10), 1110-1117.
- Friedman, D., S. Kim, A. Tanner, C. Bergeron, C. Foster and K. General (2014), "How are we communicating about clinical trials: An Assessment of the content and readability of recruitment resources," *Contemporary Clinical Trials*, 38(2), 275-283.

- Friedman, Daniela B., Caroline Foster, Caroline D. Bergeron, Andrea Tanner, and Sei-Hill Kim. (2015), "A qualitative study of recruitment barriers, motivators, and community-based strategies for increasing clinical trials participation among rural and urban populations, " *American Journal of Health Promotion*, 29(5), 332-338.
- Fritz, Matthew S. and David P. MacKinnon (2007), "Required sample size to detect the mediated effect," *Psychological science*, 18(3), 233-239.
- Frost, Susie, Lynn B. Myers and Stanton P. Newman (2001), "Genetic screening for Alzheimer's disease: what factors predict intentions to take a test?," *Behavioral Medicine*, 27(3), 101-109.
- Gabbott, Mark and Gillian Hogg (1999), "Consumer involvement in services: A replication and extension," *Journal of Business Research* 46(2),159-166.
- Gallagher, Kristel M., et al. (2011), "Perceived susceptibility to breast cancer moderates the effect of gain-and loss-framed messages on use of screening mammography," *Health Psychology*, 30(2), 145.
- Garcia-Retamero, Rocio and Edward T. Cokely. (2011), "Effective communication of risks to young adults: using message framing and visual aids to increase condom use and STD screening," *Journal of Experimental Psychology: Applied*, 17(3), 270.
- Garrett, S., A. Thomas, F. Cicuttinia, C. Silagy, H. Taylor and J. McNeill (2000), "Community-based recruitment strategies for a longitudinal interventions study: the VECAT experience," *Journal of Clinical Epidemiology*, 53, 541-548.
- Ghuge, Shreyas (2010), "The role of personal relevance and mood on the persuasive impact of gain and loss frames in advertising messages about a vaccine against alcohol addiction," Thesis, Iowa State University.
- Gilligan, Carol 1982, *In a Different Voice: Psychological Theory and Women's Development*, Cambridge MA: Harvard University Press.
- Glanz, K. and D.B. Bishop (2010), "The role of behavioral science theory in development and implementation of public health interventions," *Annual Review of Public Health*, 31, 399-418.
- Glanz, Karen, Barbara K. Rimer, and Kasisomayajula Viswanath, eds., (2008), *Health behavior and health education: theory, research, and practice*, John Wiley & Sons, 2008.
- Green, Samuel B. (1991), "How many subjects does it take to do a regression analysis," *Multivariate behavioral research*, 26(3), 499-510.

- Green, Todd and John Peloza (2014), "Finding the right shade of green: The effect of advertising appeal type on environmentally friendly consumption," *Journal of Advertising*, 43(2), 128-141.
- Godin, Gaston and Gerjo Kok (1996), "The theory of planned behavior: a review of its applications to health-related behaviors," *American journal of health promotion*, 11(2), 87-98.
- Gong, J., Y. Zhang, Z. Yang, Y. Huang, J.Feng and W. Zhang (2013), "The framing effect in medical decision making- a review of the literature," *Psychology, Health and Marketing*, 18(6), 645-653.
- Grann, Victor R. (2010), "Erasing barriers to minority participation in cancer research," *Journal of Women's Health*, 19(5), 837-838.
- Giuliano, Anna R., et al. (2000), "Participation of minorities in cancer research: the influence of structural, cultural, and linguistic factors," *Annals of epidemiology*, 10(8), S22-S34.
- Gullatte, Mary (2006), "The influence of spirituality and religiosity on breast cancer screening delay in African American women: application of the Theory of Reasoned Action and Planned Behavior (TRA/TPB)," *ABNF Journal*, 17(2), 89.
- Hair, J., et al. (1992), *Multivariate data analysis with readings*, New York: Macmillan.
- Han, Sang-Pil and Sharon Shavitt (1994), "Persuasion and culture: Advertising appeals in individualistic and collectivistic societies," *Journal of experimental social psychology*, 30(4), 326-350.
- Hansen, F. (1981), "Hemispheric Lateralization: implications for understanding consumer behavior," *Journal of Consumer Research*, 8, 23-36.
- Hapca, A., C. Jennings, L. Wei, A. Wilson, T. MacDonald and J. Mackenzie, (2014), "Effectiveness of newspaper advertising for patient recruitment into a clinical trial," *British Journal of Clinical Pharmacology* 77(6), 1064-1072.
- Harris, Yvonne, et al. (1996), "Why African Americans may not be participating in clinical trials," *Journal of the National Medical Association*, 88(10), 630.
- Hausenblas, Heather A., Albert V. Carron and Diane E. Mack (1997), "Application of the theories of reasoned action," *Journal of sport & exercise psychology*, 19, 36-51.
- Haws, Kelly, Karen Page Winterich and Rebecca Walker Reczek (2013), "Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products." *Journal of Consumer Psychology*.

- Hayes, Andrew F. (2009), "Beyond Baron and Kenny: Statistical Mediation Analysis in the new millennium," *Communication Monographs*, 76(4), 408-420.
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling. Retrieved from <http://www.personal.psu.edu/jxb14/M554/articles/process2012.pdf>.
- Hayes, Andrew F. (2013), *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, New York: Guilford Press.
- Hayes, Andrew F. (2015), "An index and test of linear moderated mediation." *Multivariate Behavioral Research*, 50(1), 1-22.
- Hayes, Andrew F. (2015), "A Tutorial on Testing, Visualizing, and Probing an Interaction Involving a Multicategorical Variable in Linear Regression Analysis," In press, *Communication Methods and Measures*. Retrieved from <http://processmacro.org>.
- Hayes, Andrew F. (2016) "Partial, Conditional, and Moderated Moderated Mediation." Working paper, retrieved from <http://processmacro.org>.
- Helgeson, H. (1992), "Moderators of the relation between perceived control and adjustment to chronic illness," *Journal of Personality and Social Psychology*, 63(4), 656-666.
- Hennick-Kaminski, H., J. Willoughby and D. McMahan (2014), "Join the Conquest: Developing a Campaign to Increase participation in Clinical Research in North Carolina," *Science Communication*, 36(1), 30-55.
- Hochbaum, G.M. (1958), "Public Participation in Medical Screening Programs: A Socio-Psychological Study," PHS Publication No. 572, Government Printing Office, Washington, DC.
- Holmes, John G., Dale T. Miller and Melvin J. Lerner (2002), "Committing Altruism Under the Cloak of Self-Interest: The Exchange Fiction," *Journal of Experimental Social Psychology*, 38 (2), 144-151.
- Hondras, M., C.Long, A. Haan, L. Soencer and W. Meeker., W. (2008), "Recruitment and enrollment for the simultaneous conduct of 2 randomized controlled trials for patients with subacute and chronic low back pain at a CAM research center," *The Journal of Alternative and Complimentary Medicine*, 14(8), 983-992.
- Horton, R. (1991), "Marketing the concept of becoming a potential organ donor," *Marketing Health Services*, 11(3), 36.

- Howard, John A. and Jagdish N. Sheth (1969), *The Theory of Buyer Behavior*, New York: John Wiley.
- Hoyt, Crystal L., Jeni L. Burnette and Lisa Auster-Gussman. "“Obesity Is a Disease” Examining the Self-Regulatory Impact of This Public-Health Message," *Psychological science*, 25(4), 997-1002.
- Huang, Chung-Yun (2012), "A Study of Blood donation on Altruistic and Egoistic appeal."
- Hunninghake, D., C. Darby and J. Probstfield (1987), "Recruitment experience in clinical trials: literature summary and annotated bibliography," *Controlled Clinical Trials*, 8(4), 6-30.
- Hupfer, M. E. (2006), "Helping me, helping you: self-referencing and gender roles in donor advertising," *Transfusion*, 46(6), 996-1005.
- Hussain-Gambles, K. A. Mahvash and Brenda Leese (2004), "Why ethnic minority groups are under-represented in clinical trials: A review of the literature," *Health & social care in the community*, 12(5), 382-388.
- “Invisible Heroes: Battling Smallpox.” www.monticello.org. Accessed 10 October 2015.
- Jaccard, James (1981), "Toward Theories of Persuasion and Belief Change," *Journal of Personality and Social Psychology*, 40 (February), 260-269.
- Janz, N. and M. Becker (1984), "The Health Belief Model: A Decade Later," *Health Education Quarterly*, 11(1), 1-47.
- Jenkins, V., et al. (2013), "Drivers and barriers to patient participation in RCTs," *British journal of cancer*, 108(7), 1402-1407.
- Jensen, Larry C., Angela R. McGhie and Janet R. Jensen. (1991), "Do men's and women's world-views differ?," *Psychological Reports*, 68(1), 312-314.
- Johar, G., D. Maheswaran and L. Peracchio "Mapping the frontiers: Theoretical advances in consumer research on memory, affect, and persuasion," *Journal of Consumer Research*, 33(1), 139-149.
- Kahneman, D., and A. Tversky (1979), "Prospect theory: An analysis of decision under risk." *Econometrica*, 46, 263-192.
- Kanouse, David E. (1984), "Explaining negativity biases in evaluation and choice behavior: Theory and research," *NA-Advances in Consumer Research*, 11.
- Kareklas, Ioannis, Jeffrey R. Carlson and Darrel D. Muehling (2014), " 'I eat organic for my benefit and yours': Egoistic and altruistic considerations for purchasing organic food and their implications for advertising strategists," *Journal of Advertising*, 43(1), 18-32.

- Karlawish, Jason H.T., David J. Casarett and Bryan D. James (2002), "Alzheimer's Disease Patients' and Caregivers' Capacity, Competency, and Reasons to Enroll in an Early-Phase Alzheimer's Disease Clinical Trial," *Journal of the American Geriatrics Society*, 50(12), 2019-2024.
- Kellermann, K. (1984), "The negativity effect and its implications for initial interaction," *Communication Monographs*, 51, 37-55.
- Kennedy, Betty M. and Michael F. Burnett (2007), "Clinical research trials: factors that influence and hinder participation," *Journal of cultural diversity*, 14(3), 141.
- King, A., R. Harris and W. Haskell (1994), "Effect of Recruitment strategy on types of subjects entered into a primary prevention clinical trial," *Annals of Epidemiology*, 4(4), 312-320.
- King-Fai, C., L. Ping-Chung, W. Lai-Yi and F. Yuet-Shim (2008), "Patient recruitment for clinical trials on traditional Chinese medicine: Challenges, barriers, and strategies," *Patient Preference and Adherence*, 2, 207-214.
- Kirkpatrick, Mary Ann F. (1991), "Factors that motivate healthy adults to participate in phase I drug trials," *Drug Information Journal*, 25(1), 109-113.
- Kirscht, J. (1974), "The Health Belief Model and Illness Behavior," *Health Education Monographs*, 2, 2387-2408.
- Kloebin, A., N. Thompson and K. Miner (1999), "Predicting breast-feeding intention among low-income pregnant women: a comparison of two theoretical models," *Health and Education Behavior*, 26(5), 675-688.
- Kohlberg, Lawrence and Daniel Candee. (1984), "The relationship of moral judgment to moral action," *Morality, moral behavior, and moral development*, 52, 73.
- Kopfman, J. and S. Smith (1996), "Understanding the audiences of a health communication campaign: A discriminant analysis of potential organ donors based on intention to donate," *Journal of Applied Communication Research*, 24(1), 33-49.
- Kopp, Claire B. (1982), "Antecedents of self-regulation: A developmental perspective," *Developmental psychology*, 18(2), 199.
- Kotler, P. and S. Levy (1969), "Broadening the concept of marketing," *Journal of Marketing* 10-15.
- Krugman, Herbert E. (1962), "An Application of Learning Theory to TV Copy Testing," *Public Opinion Quarterly*, 26 (Winter), 626-34.

- Krusche, A., I. von Rohr, K. Muse, D. Duggan, C. Crane and J. Williams, (2014), "An evaluation of the effectiveness of recruitment methods: The staying well after depression randomized controlled trial," *Clinical Trials*, 11(3), 141-149.
- Laflin, M., S. Moore-Hirschl, D. Weis and B. Hayes (1994), "Use of the theory of reasoned action to predict drug and alcohol-use," *International Journal of the Addictions*, 29(7), 927-940.
- Langer, Alexandra (2013), "'I' Lose, 'Others' Gain—Message Framing and Beneficial Appeals in Ads Promoting Green Consumption," *Advances in Advertising Research* (IV), 223-232.
- Latane, B. and J. Darley (1970), *The unresponsive bystander: why doesn't he help?* New York: Appleton-Century-Crofts.
- Latimer, A., P. Salovey and A. Rothman (2007), "The effectiveness of gain-framed messages for encouraging disease prevention behavior: Is all hope lost?," *Journal of Health Communication*, 12, 645-649.
- Levenkron, J. and J. Farquhar (1982), "Recruitment using mass media strategies," *Circulation*, 66(6 pt.2), IV32-36.
- Levin, I. P. (1987), "Associative effects of information framing," *Bulletin of the Psychonomic Society*, 25, 85-86.
- Levin, I. P., S.L. Schneider and G.J. Gaeth (1998), "All frames are not created equal: A typology and critical analysis of framing effects," *Organizational Behavior and Human Decision Processes*, 76, 149-188.
- Lewis, C., V. George, V. Proter, D. Bowen and N. Urban (1998), "Recruitment strategies in the women's health trail: feasibility study in minority populations," *Controlled Clinical Trials*, 19(5), 461-476.
- Lierman, Letha M., et al. (1990), "Predicting breast self-examination using the theory of reasoned action," *Nursing Research*, 39(2), 97-102.
- Lindenmeier, Jörg. (2008), "Promoting volunteerism: Effects of self-efficacy, advertisement-induced emotional arousal, perceived costs of volunteering, and message framing," *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 19(1), 43-65.
- Locock, Louise and Lorraine Smith. (2011), "Personal benefit, or benefiting others? Deciding whether to take part in clinical trials," *Clinical trials*, 8(1), 85-93.

- Lovato, L., K. Hill, S. Hertert, D. Hunninghake and J. Probstfield (1997), "Recruitment for Controlled trials: Literature summary and annotated bibliography, " *Controlled Clinical Trials*, 18(4), 328-352.
- Mackenzie, I., L. Wei, D. Rutherford, E. Findlay, W. Saywood, M. Campbell and T. MacDonald (2010), "Promoting public awareness of randomised clinical trials using the media: the "Get Randomised" campaign, " *British Journal of Clinical Pharmacology*, 69(2) 128-135.
- Maddux, J., and R. Rogers (1983), "Protection Motivation and Self-Efficacy: A Revised Theory of Fear Appeals and Attitude Change," *Journal of Experimental Social Psychology*, 19, 469-479.
- Madsen, S. M., et al. (2002), "Attitudes towards clinical research amongst participants and nonparticipants," *Journal of internal medicine*, 251(2),156-168.
- Maheswaran, D., and J. Meyers-Levy (1990), "The influence of message framing and issue involvement," *Journal of Marketing Research*, 361-367.
- Mapstone, J., D. Elbourne and I. Roberts (2007), "Strategies to improve recruitment to research studies." *Cochrane Database of systematic reviews* 2.
- Marketwired. "Cost to Develop and Win Marketing Approval for a New Drug is \$2.6 billion, According to the Tufts Center for the study drug development." *database*. Marketwire(English), November 18, 2014.
- Markman, Maurie (1977), "The needs of science vs the needs of patient: ethical concerns in cancer clinical trials," *Cleveland Clinic Journal of Medicine*, 70(12), 1008-1015.
- Markus, Hazel. (1977), "Self-schemata and processing information about the self," *Journal of personality and social psychology*, 35(2), 63.
- Markus, Hazel R. and Shinobu Kitayama (1991), "Culture and the Self: Implications for Cognition, Emotion, and Motivation," *Psychological Review*, 98(2), 224-53.
- Mattson, M., J. Curb and R. McArdle (1985), "Participation in a clinical research trial: the patients point of view," *Controlled Clinical Trials*, 6(2), 156-167.
- McCaffery, Kirsten, Jane Wardle and Jo Waller (2003), "Knowledge, attitudes, and behavioral intentions in relation to the early detection of colorectal cancer in the United Kingdom," *Preventive medicine*, 36(5), 525-535.
- McCallum, Jan M., et al. (2006), "Awareness and knowledge of the US Public Health Service syphilis study at Tuskegee: implications for biomedical research, " *Journal of Health Care for the Poor and Underserved* 17(4), 716.

- McCann, Sharon K., Marion K. Campbell and Vikki A. Entwistle (2010), "Reasons for participating in randomised controlled trials: conditional altruism and considerations for self," *Trials* 11(1), 1.
- McNeil, B., S. Pauker, H. Sox and A. Tversky (1982), "On the elicitation of preferences for alternative therapies," *New England Journal of Medicine*, 30, 1259-1262.
- Meyers-Levy, Joan (1988), "The influence of sex roles on judgment," *Journal of consumer research*, 14(4), 522-530.
- Meyers-Levy, Joan (1989), "Gender Differences in Information Processing: A Selectivity Interpretation," In Patricia Cafferata and Alice M. Tybout (Eds.) *Cognitive and Affective Responses to Advertising*. Lexington, MA:Lexington.
- Meyerowitz, Beth E. and Shelly Chaiken (1987), "The effect of message framing on breast self-examination attitudes, intentions, and behavior," *Journal of personality and social psychology*, 52(3), 500.
- Millar, Murray G. and Karen U. Millar (2000), "Promoting safe driving behaviors: The influence of message framing and issue involvement," *Journal of Applied Social Psychology*, 30(4), 853-866.
- Montaño, Daniel E., et al. (1997), "Understanding mammography intention and utilization among women in an inner city public hospital clinic," *Preventive medicine*, 26(6), 817-824.
- Moore, Susan M., Norman R. Barling and Bernadette Hood. (1998), "Predicting testicular and breast self-examination behaviour: A test of the theory of reasoned action," *Behaviour Change*, 15(1), 41-49.
- Moorman, Marjolein and Bas van den Putte. (2008), "The influence of message framing, intention to quit smoking, and nicotine dependence on the persuasiveness of smoking cessation messages," *Addictive behaviors*, 33(10), 1267-1275.
- Morrow, G., J. Hockok, and T. Burish (1994), "Behavioral aspects of clinical trials," *Cancer (supplement)*, 74(9), 2676-2682.
- Mouton, C., S. Harris, S. Rovi, P. Solorzano and M. Johnson (1997), "Barriers to black women's participation in cancer clinical trials," *Journal of the National Medical Association*, 89(11), 721-727.
- Myers, Ronald E., et al. (1991), "Behavioral interventions to increase adherence in colorectal cancer screening," *Medical care*, 1039-1050.
- Neill, K., and F. Chessa (1998), "Recruitment and retention of women in nontherapeutic clinical trials," *Applied Nursing Research*, 11(3), 148-151.

- Newberg, S. A. Holland and L. Pearce (1992), "Motivation of subjects to participate in a research trial," *Applied Nursing Research*, 5, 89-93.
- Ng, Boon-Yuen, Atreyi Kankanhalli and Yunjie Calvin Xu (2009), "Studying users' computer security behavior: A health belief perspective," *Decision Support Systems* 46(4), 815-825.
- Noar, S. and R. Zimmerman (2005), "Health Behavior Theory and cumulative knowledge regarding health behaviors: are we moving in the right direction," *Health Education Research*, 20, 275-290.
- Noddings, N. (1984), *Caring: A feminine approach to ethics and moral education*. Berkeley: University of California Press.
- Noddings, Nel (1999), "An ethic of caring and its implications for instructional arrangements," *American journal of education*, 215-230.
- Norman, Paul, Mark Conner and Russell Bell (1999), "The theory of planned behavior and smoking cessation," *Health psychology*, 18(1), 89.
- Notani, A. S. (1998), "Moderators of perceived behavioral control's pre-dictiveness in the theory of planned behavior: A meta-analysis," *Journal of Consumer Psychology*, 7, 242-272.
- O'Keefe, Daniel J. and Jakob D. Jensen (2006), "The advantages of compliance or the disadvantages of noncompliance? A meta-analytic review of the relative persuasive effectiveness of gain-framed and loss-framed messages," *Annals of the International Communication Association*, 30(1), 1-43.
- O'Keefe, D. and J. Jensen (2007), "The relative persuasiveness of gain-framed and loss-framed messages for encouraging disease prevention behaviors: A meta-analytic review," *Journal of Health Communication*, 12, 623-644.
- O'Keefe, D. and J. Jensen (2009), "The relative persuasiveness of gain-framed and loss-framed messages for encouraging disease detection behaviors," *Journal of Communication*, 59, 296-316.
- Oliver, Richard L. and William O. Bearden (1985), "Crossover effects in the theory of reasoned action: A moderating influence attempt," *Journal of consumer research* 12(3), 324-340.
- Orbell, S., & Hagger, M. (2006), "Temporal framing and the decision to take part in Type 2 diabetes screening: Effects of individual differences in consideration of future consequences on persuasion," *Health Psychology*, 25, 537-548.
- Painter, J, M. Hynes and K. Glanz (2008), "The use of theory in Health Behavior Research from 2000 to 2005: A systematic review," *Annals of Behavioral medicine*, 35, 358-362.

- Partridge, S., K. Balestracci, A. Wong, L. Hebden, K. McGeechan, E. Denney-Wilson, M. Harris, P. Phongsavan, A. Bauman and M. All-man-Farinelli (2015), "Effective Strategies to Recruit Young Adults Into the TXT2BFiT mHealth Randomized Controlled Trial for Weight Gain Prevention," *JMIR Research Protocols*, 4(2), e66.
- Petty, Richard E. and John T. Cacioppo (1981), "Issue involvement as a moderator of the effects on attitude of advertising content and context," *NA-Advances in Consumer Research*, 08.
- Petty, R. and J. Cacioppo (1983), "Central and peripheral routes to persuasion: application to advertising." In L. Woodside and A. Percy (Eds.) *Advertising and Consumer Psychology* 3-23. Lexington, MA: Lexington Books.
- Petty R. and J. Cacioppo (2012), *Communication and persuasion: central and peripheral routes to attitude change*. Springer Science and Business Media.
- Petty, R. and Cacioppo, J. (1986), "The elaboration likelihood model of persuasion." In L. Berkowitz (Ed.) *Advances in Experimental Social Psychology* 123-205. San Diego, CA: Academic Press.
- Petty, R. E. and J.T. Cacioppo (1990), "Involvement and persuasion: Tradition versus integration," *Psychological Bulletin*, 107, 367-374.
- Petty, R., J. Cacioppo, and Schumann, D. (1983), "Central and Peripheral routes to persuasion: The moderating role of involvement," *Journal of Consumer Research* 10(2), 135-146.
- Petty, R., T. Ostrom and T. Brock, (1981), *Cognitive responses in persuasive communications*. Hillsdale, NJ: Erlbaum.
- Piliavin, J., J. Dovidio, S. Gaertner and R. Clark (1981), *Emergency Intervention*, New York, NY: Academic Press.
- Piliavin, J., Dovidio, J., Gaertner, S. and R. Clark (1982), "Responsive bystanders: the process of intervention," In V. Grzelak and J. Derlega (Eds.) *Cooperation and helping behavior: Theories and Research*, New York, NY: Academic Press.
- Piliavin, J., D. Evans and P. Callero (1982), "Learning to "give to unnamed strangers": The process of commitment to regular blood donation." In E. Bar-Tal, J. Karylowski, J. Reykowski and J. Staub (Eds.) *The development and maintenance of prosocial behavior: International perspectives* 471-492. New York: Plenum.
- Poss, Jane E. (2001), "Developing a new model for cross-cultural research: synthesizing the health belief model and the theory of reasoned action," *Advances in Nursing Science*, 23(4), 1-15.

- Poss, Jane E. (1999), "Developing an instrument to study the tuberculosis screening behaviors of Mexican migrant workers," *Journal of Transcultural Nursing*, 10(4), 306-319.
- Prochaska, J.O., DiClemente, C.C. and J. C. Norcross (1992) "In search of how people change: applications to addictive behaviors," *American Psychologist*, 47, 1102–1114.
- Randall, D. M. and Wolff, J. A. (1994) "The time interval in the intention–behaviour relationship: Meta-analysis," *British Journal of Social Psychology*, 33, 405–418.
- Rimer, B. (1996), "Participating in a women's breast cancer risk counseling trial: Who participates? Who declines?," *Cancer*, 77, 2348-2355.
- Rivers, Susan E., et al. (2005), "Message framing and pap test utilization among women attending a community health clinic," *Journal of Health Psychology* 10(1), 65-77.
- Roberson, Noma L. (1994), "Clinical trial participation: viewpoints from racial/ethnic groups," *Cancer*, 74(S9), 2687-2691.
- Robinson, J., J. Fuerch, D. Winiewicz, S. Salvy, J. Roemmich and L. Epstein (2007), "Cost effectiveness of recruitment methods in an obesity trial for young children," *Preventive Medicine* 44(6), 499-503.
- Rogers, R. (1975), "A protection motivation theory of fear appeals and attitude change," *Journal of Psychology*, 91, 93-114.
- Rogers, Timothy B., Nicholas A. Kuiper and William S. Kirker (1977), "Self-reference and the encoding of personal information," *Journal of personality and social psychology* 35(9), 677.
- Rollins, Brent and Nilesh Bhutada (2014), "Impact of celebrity endorsements in disease-specific direct-to-consumer (DTC) advertisements: an elaboration likelihood model approach" *International Journal of Pharmaceutical and Healthcare Marketing*, 8(2), 164-177.
- Roncancio, A. M., K. K. Ward, I. A. Sanchez, M. A. Cano, T. L. Byrd, S. W. Vernon, . . . and M. E. Fernandez (2015), "Using the Theory of Planned Behavior to Understand Cervical Cancer Screening Among Latinas," *Health Education & Behavior*, 1090198115571364.
- Ronis, D. (1992), "Conditional Health threats: Health Beliefs, Decisions, and Behaviors Among Adults," *Health Psychology*, 11(2),127-134.
- Rosenstock, I. (1974), "Historical Origins of the Health Belief Model," *Health Education Monographs*, 2, 328-335.
- Rosenstock, I. (1974), "The Health Belief Model and Preventive Health Behavior," *Health Education Monographs*, 2(4), 354-386.

- Rosenstock, IM. (1966), "Why people use health services," *Milbank Memorial Fund Quarterly* 44(3), s94-127.
- Ross, Sue, et al. (1999), "Barriers to participation in randomised controlled trials: a systematic review," *Journal of clinical epidemiology* 52(12), 1143-1156.
- Rothman, A., P. Salovey, C. Antone, K. Keough and C. Martin "The influence of message framing on intentions to perform health behaviors," *Journal of Experimental Social Psychology*, 29, 408-433.
- Rothman, Alexander J. and Peter Salovey (1997), "Shaping perceptions to motivate healthy behavior: the role of message framing," *Psychological bulletin*, 121(1), 3.
- Rothman, A. J., S. C. Martino, B. T. Bedell, J. B. Detweiler and P. Salovey (2003), "The systematic influence of gain- and loss-framed messages on interest in and use of different types of health behavior" In P. Salovey & A. J. Rothman (Eds.) *Social psychology of health: Key readings in social psychology* 286–299. New York: Psychology Press.
- Rothschild, M. (1979), "Marketing Communications in Nonbusiness Situations or Why It's so Hard to Sell Brotherhood like Soap," *Journal of Marketing* 43, 11-20.
- Ryn, Michelle, Leslie A. Lytle, and John P. Kirscht (1996), "A Test of the Theory of Planned Behavior for Two Health-Related Practices," *Journal of Applied Social Psychology* 26(10), 871-883.
- Salovey, P. (2005). Promoting prevention and detection: Psychologically tailoring and framing messages about health. In R. Bibace, J. D. Laird, K. L. Noller and J. Valsiner (Eds.), *Science and medicine in dialogue: Thinking through particulars and universals* 17–42. Westport, CT: Praeger/Greenwood Publishing Group.
- Salovey, Peter, Tamara R. Schneider and Anne Marie Apanovitch (2002), "Message framing in the prevention and early detection of illness." *The persuasion handbook: Developments in theory and practice*, 391-406.
- Schelling, Franz A. (2004), "Clinical trials: deliberations on their essence and value," *Journal of evaluation in clinical practice*, 10(2), 291-296.
- Schiffman, L.G., and L. L. Kanuk (1991), *Consumer Behavior*, Englewood Cliffs, NJ: Prentice-Hall.
- Schneider, Tamera R., et al. (2001), "The effects of message framing and ethnic targeting on mammography use among low-income women," *Health Psychology*, 20(4), 256.
- Schwartz, S. (1977), "Normative influence on altruism," *Advances in experimental social psychology*, 10, 221-279.

- Sciurba, Frank, et al. (2003), "Six-minute walk distance in chronic obstructive pulmonary disease: reproducibility and effect of walking course layout and length," *American Journal of Respiratory and Critical Care Medicine*, 167(11), 1522-1527.
- Shaffer, Teri Root and Daniel L. Sherrell, (1997), "Consumer satisfaction with health-care services: The influence of involvement," *Psychology & marketing*, 14(3), 261-285.
- Shao, W. (2012), "Framing and efficacy: the effect of regulatory fit on skin cancer prevention and detection," *Journal of Nonprofit and Public Sector Marketing*, 24, 161-180.
- Shavers, Vickie L., Charles F. Lynch and Leon F. Burmeister, (2002), "Racial differences in factors that influence the willingness to participate in medical research studies," *Annals of epidemiology*, 12(4), 248-256.
- Shelley, Laura, and Michael Jay Polonsky (2002), "Do charitable causes need to segment their current donor base on demographic factors?: An Australian examination," *International Journal of Nonprofit and Voluntary Sector Marketing*, 7(1), 19-29.
- Shen, F., V. Sheer and R. Li (2015), "Impact of narratives on Persuasion in Health Communication: A Meta-analysis," *Journal of Advertising*, 44(2), 105-113.
- Sheppard, B. H., J. Hartwick, and P. R. Warshaw (1988), "The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research," *Journal of Consumer Research*, 15, 325-343.
- Simpson, Nancy K., et al. (2000), "Recruitment strategies in the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial: the first six years," *Controlled clinical trials*, 21(6), 356S-378S.
- Singhapakdi, A. and M. LaTour (1991), "The link between social responsibility orientation, motive appeals, and voting intention: A case of an Anti-littering campaign," *Journal of Public Policy and Marketing*, 10(2), 118-129.
- Smith, R. and S. Biddle (1999), "Attitudes and exercise adherence: Test of the Theories of reasoned action and planned behavior," *Journal of Sports Sciences*, 17(4), 269-281.
- Smith, Yolanda R., et al. (2007), "Perceptions of clinical research participation among African American women," *Journal of women's health*, 16(3), 423-428.
- Smith-McLallen, A. and M. Fishbein (2006). Towards an understanding of the role of normative influence on cancer-related behaviors. Unpublished Manuscript, University of Pennsylvania.

- Sood, A., K. Prasad, L. Chhatwani, E. Shinozaki, S. Cha, L. Loehrer, and D. Wahner-Roedler (2009), "Patients' attitudes and preferences about participation and recruitment strategies in clinical trials," *Mayo Clinic Proceedings*, 84(3), 243-247. Elsevier.
- Spiro, H. (1986), "Mammon and medicine: the rewards of clinical trials," *Journal of the American Medical Association*, 255(9), 1174-1175.
- Steca, P., A. Greco, D. D'Addario, D. Monzani, R. Pozzi, A. Villani, A. Rella, A. Giglio, G. Malfatto, and G. Parati (2013), "Relationship of illness severity with health and life satisfaction in patients with cardiovascular disease: the mediating role of self-efficacy beliefs and illness perceptions," *Journal of Happiness Studies*, 14, 1585-1599.
- Steenkamp, Jan-Benedict EM, Rajeev Batra and Dana L. Alden (2003), "How perceived brand globalness creates brand value," *Journal of International Business Studies*, 34(1), 53-65.
- Stern, Barbara B. and Morris B. Holbrook (1994), In Janeen Costa (Ed.) "Gender and genre in the interpretation of advertising text," *Gender issues and consumer behavior*, 11-41. Thousand Oaks, CA: Sage.
- Sutherland, H., K. Carlin, W. Harper, L. Martin, C. Greenberg and J. Till (1993), "A study of diet and breast cancer prevention in Canada: Wht healthy women participate in controlled trials," *Cancer Causes and Control*, 4, 521-528.
- Swanson, G. and A. Ward (1995), " Recruiting minorities into clinical trials: Toward a participant-friendly system," *Journal of the National Cancer Institute*, 87, 1747-1759.
- Tabachnick, Barbara G. and Linda S. Fidell (2007), *Using multivariate statistics, 5th*. Needham Height, MA: Allyn & Bacon.
- Tate, D., J. LaRose, L. Griffin, K. Erickson, E. Robichaud, L. Perdue, M. Espeland and R. Wing (2014), "Recruitment of young adults into a randomized controlled trial of weight gain prevention: meassage development, methods, and cost," *Trials*, 15(1), 1.
- Trauth, Jeanette M., et al. (2000), "Public attitudes regarding willingness to participate in medical research studies," *Journal of health & social policy*, 12(2), 23-43.
- Treise, D., Weigold, M. (2001), "AIDS public service announcements: Effects of fear and repetition on predictors of condom use," *Health Marketing Quarterly*, 18(3-4), 39-61.
- Tversky, A., and D. Kaheman (1981), "The framing of decisions and the psychology of choice," *Science*, 211, 453-458.
- Umphrey, Laura R. (2003), "The effects of message framing and message processing on testicular self-examination attitudes and perceived susceptibility," *Communication Research Reports*, 20(2), 97-105.

- Van den Putte B. (1991), "20 years of the theory of reasoned action of Fishbein and Ajzen: A meta-analysis, "Unpublished manuscript, University of Amsterdam, Amsterdam, the Netherlands.
- VanVoorhis, Carmen R. Wilson and Betsy L. Morgan. (2007), "Understanding power and rules of thumb for determining sample sizes," *Tutorials in Quantitative Methods for Psychology*, 3(2), 43-50.
- Villarruel, Antonia M., John B. Jemmott and Loretta S. Jemmott (2006), "A randomized controlled trial testing an HIV prevention intervention for Latino youth," *Archives of Pediatrics & Adolescent Medicine*, 160(8), 772-777.
- Warburton, Jeni and Deborah J. Terry. (2000), "Volunteer decision making by older people: A test of a revised theory of planned behavior, " *Basic and Applied Social Psychology*, 22(3), 245-257.
- Weinberger, Marc G., Chris T. Allen and William R. Dillon (1981), "Negative information: Perspectives and research directions, " *NA-Advances in Consumer Research* 08.
- Weinstein, N. (2003), "Testing four competing theories of health-protective behavior, " In P. Rothman and A. Salovey (Eds.) *Social Psychology of Health. Key readings in social psychology* 33-46. New York, NY: Psychology Press.
- White, K. and J. Peloza (2009), "Self-Benefit versus Other-Benefit Marketing Appeals: Their Effectiveness in Generating Charitable Support," *Journal of Marketing*, 73, 109-124.
- White, K., and B. Simpson (2013), "When do (and don't) normative appeals influence sustainable consumer behaviors?," *Journal of Marketing*, 77, 78-95.
- Ye, Nan, et al. (2015), "'What's in it for me?': The effect of donation outcomes on donation behavior," *Journal of Business Research*, 68(3), 480-486.
- Zaichkowsky, Judith Lynne (1985), "Measuring the involvement construct," *Journal of consumer research*, 12(3), 341-352.
- Zaichkowsky, Judith Lynne (1994), "The personal involvement inventory: Reduction, revision, and application to advertising," *Journal of advertising*, 23(4), 59-70.
- Zhang, Yong and Betsy D. Gelb (1996), "Matching advertising appeals to culture: The influence of products' use conditions, " *Journal of advertising*, 25(3), 29-46.

APPENDICES

Appendix A:

Questionnaire

The Impact of Help-Self and Help-Others Appeals upon Participation in Clinical Research Trials

Informed Consent

This survey should take approximately ten minutes to complete. Your responses will remain confidential, and you should feel no pressure to participate. You are free to decline to complete the survey with no penalty.

Q2 Gender (please fill in the appropriate circle):

- Male (1)
- Female (2)

Q3 Age: _____

Clinical Trial Questionnaire

Thank you for completing this questionnaire. Your responses to this survey will be used in a university research project. Please carefully read the advertisement in Section I and answer the questions that follow. Next, please answer the questions in Section II. Section III contains questions that will help to classify all survey respondents. Please answer each question as best you can.

Section I

(In this section individuals were randomly assigned to one of the six scenarios that combine the three appeals and the two message frames. These are listed in Appendix SC).

Please read the next two questions and answer by filling in the appropriate circle.

Q12 This ad stressed that your participation would:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Help You	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Help others

Q13 This ad stressed that your participation would:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Increase the chance of Survival	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Decrease the chance of Death

Section II: Individual Perceptions

This section contains a number of statements that represent commonly held opinions. There are no right or wrong answers. Please read each statement carefully and then indicate the extent to which you agree or disagree by filling in the appropriate circle.

Q31

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I frequently worry about getting melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q32

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I frequently read information about melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q33

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I frequently pay attention to media about melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q34

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I have a positive outlook toward my own participation in a clinical research trial for melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q35

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I have a positive outlook toward my close friends or family members participating in a clinical research trial for melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q36

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I do not agree with the use of human subjects in medical research. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q37

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
The well being of those who participate in a clinical research trial of melanoma skin cancer is more important to the researcher than the results of the study. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q38

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
It is important for me to participate in a clinical research trial for melanoma to help other people. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q39

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
It is important for me to participate in a clinical research trial for melanoma skin cancer to help myself. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q40

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Most people who are important to me think that I should participate in a clinical research trial for melanoma skin cancer screening. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q41

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Most people who are important to me would approve of my taking part in a clinical research trial for melanoma skin cancer. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q42

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Most people who are important to me would support my interest in a clinical research trial for melanoma skin cancer screening. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q43

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
If given the chance I would be willing to take part in a clinical research trial for melanoma skin cancer screening. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q44

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
If given the chance I intend to take part in a clinical research trial for melanoma skin cancer screening. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q45 Section III: Classification Information

This section contains questions that allow the responses to be grouped for better understanding and interpretation. You will not be personally identified in any way.

Q46 Ethnicity (please fill in the appropriate circle):

- Asian/Asian Pacific/Pacific Islander (1)
- Hispanic/Latino/Chicano (2)
- African American/ Black (3)
- Caucasian/White (4)
- Other (5)

Q47 Educational Attainment (please indicate the highest level):

- High school or less (1)
- Technical or Vocational or Associates degree (2)
- Bachelor's degree (3)
- Post graduate degree (Master's, PhD., Law, etc.) (4)

Q48 Do you have a close family member or friend that has had melanoma skin cancer?

- Yes (1)
- No (2)

Q49 Have you been diagnosed with melanoma skin cancer?

- Yes (1)
- No (2)

Q50 Have you been screened for melanoma skin cancer?

- Yes (1)
- No (2)

Please read each statement carefully and then indicate the extent to which you agree or disagree by filling in the appropriate circle.

Q52

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Participating in this clinical research trial is entirely within my control. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q53

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
It is mostly up to me whether or not I participate in this clinical research trial. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q54

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I am confident that I am able to attend this clinical research trial. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q55

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
If I wanted to, I would be able to attend this clinical research trial. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you for participating in this research project.

Appendix B

Advertising Scenarios

1. (Help self/Gain)

HELP YOURSELF!

Participate in a screening trial for melanoma – you will protect YOUR health and may SAVE YOUR LIFE.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a much greater chance of YOUR SURVIVAL.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

Look out for YOURSELF- participate in this clinical research trial and help to SAVE YOUR LIFE.

INCREASE YOUR CHANCE OF SURVIVAL with the early detection that this trial may provide.

2. (Help self/Loss)

HELP YOURSELF!

Participate in a screening trial for melanoma –otherwise you may sacrifice YOUR health and and ultimately LOOSE YOUR LIFE.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a decreased chance of YOUR UNTIMELY DEATH.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

Look out for YOURSELF- participate in this clinical research trial and help avoid YOUR UNTIMELY DEATH.

DECREASE YOUR CHANCE OF DEATH with the early detection that this trial may provide.

3. (Help others/Gain)

HELP OTHERS!

Participate in a screening trial for melanoma – you will protect OTHERS' health and may SAVE OTHERS' LIVES.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a much greater chance of SURVIVAL.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

Show that you care for others - participate in this clinical research trial and help to SAVE OTHERS' LIVES.

MANY OTHERS' CHANCE OF SURVIVAL CAN INCREASE with the early detection that this trial may provide.

4. (Help others/Loss)

HELP OTHERS!

Participate in a screening trial for melanoma –otherwise many OTHERS may experience poor health and ultimately LOOSE THEIR LIVES.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a decreased chance of UNTIMELY DEATH.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

Show that you care for others - participate in this clinical research trial and help OTHERS AVOID UNTIMELY DEATH.

MANY OTHERS' CHANCE OF DEATH CAN DECREASE with the early detection that this trial may provide.

5. (No appeal/Gain)

Participate in a screening trial for melanoma.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a much greater chance of SURVIVAL.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

The CHANCE OF SURVIVAL INCREASES with the early detection that this trial may provide.

6. (No appeal/Loss)

Participate in a screening trial for melanoma.

Melanoma is a potentially deadly form of skin cancer with increasing rates of occurrence in individuals of any age. Last year over 70,000 new cases were detected just in the United States. Doctors know that with early detection the disease is less likely to spread and results in a decreased chance of UNTIMELY DEATH.

Clinical Associates is conducting a local clinical trial for a painless new screening product for the early detection of cells that are likely to develop into melanoma.

Participation in this free trial requires only one appointment and scheduling is flexible.

The CHANCE OF DEATH DECREASES with the early detection that this trial may provide.

Appendix C

Manipulation checks

1. Appeal Categories (1=help self 2=help other, 3=control) and Help self (1) or Help other (5) response options (Q12)

Descriptives

Q12

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	130	2.14	1.461	.128	1.88	2.39	1	5
2.00	123	4.35	1.032	.093	4.17	4.53	1	5
3.00	125	2.66	1.566	.140	2.38	2.93	1	5
Total	378	3.03	1.665	.086	2.86	3.20	1	5

Test of Homogeneity of Variances

Q12

Levene Statistic	df1	df2	Sig.
20.769	2	375	.000

ANOVA

Q12

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	334.997	2	167.498	88.507	.000
Within Groups	709.683	375	1.892		
Total	1044.680	377			

There is evidence that at least two means differ ($p=.000$).

Individuals viewing the help self appeal had a mean score of 2.14 on a 5 point Likert scale where a 1 indicated you would help yourself and a 5 indicated that you would help others. Likewise individuals viewing the help other appeal had a mean score of 4.35. Those in the control group that saw neither type of appeal had a mean score of 2.66. The absolute and relative position of these mean scores indicates that the manipulation for appeal was successful.

In order to determine which means were significantly different a Tukey Kramer ad hoc procedure was run. By examining each pair wise comparison it was determined that each mean is significantly different than the other.

Multiple Comparisons

Dependent Variable: Q12

Tukey HSD

(I) Appeal	(J) Appeal	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-2.211 [*]	.173	.000	-2.62	-1.80
	3.00	-.518 [*]	.172	.008	-.92	-.11
2.00	1.00	2.211 [*]	.173	.000	1.80	2.62
	3.00	1.694 [*]	.175	.000	1.28	2.10
3.00	1.00	.518 [*]	.172	.008	.11	.92
	2.00	-1.694 [*]	.175	.000	-2.10	-1.28

*. The mean difference is significant at the 0.05 level.

2. Frame categories (loss=0, gain =1) and increase survival (1) or decrease death (5) response options (Q13)

Descriptives

Q13

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
					.00	191		
1.00	187	1.72	1.163	.085	1.55	1.89	1	5
Total	378	2.21	1.501	.077	2.06	2.36	1	5

Test of Homogeneity of Variances

Q13

Levene Statistic	df1	df2	Sig.
58.257	1	376	.000

ANOVA

Q13

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	88.754	1	88.754	43.892	.000
Within Groups	760.315	376	2.022		
Total	849.069	377			

There was a significant difference in the group means. Individuals viewing a loss scenario had a mean score of 2.69 on a 5 point Likert scale where a 1 indicated that you would increase your chance of survival and a 5 indicated that you would decrease your chance of death. Likewise individuals viewing a gain frame had a mean score of 1.72. The relative position of these mean scores indicate that the manipulation for frame was successful.

Appendix D

Hypotheses

H₁: Attitude toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

H₂: Subjective norm toward participation in a clinical research trial for melanoma skin cancer will have a direct positive impact upon the intention to participate in a clinical research trial for melanoma skin cancer.

H₃: There will be a direct effect of appeal on intention to participate in a clinical research trial for melanoma.

H_{3a}: A help-self appeal will have a positive impact on intention to participate in a clinical research trial for melanoma.

H_{3b}: A help-others appeal will have a positive impact upon intention to participate in a clinical research trial for melanoma.

H₄: There will be a direct effect of appeal on attitude toward participation in a clinical research trial for melanoma.

H_{4a}: A help-self appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma.

H_{4b}: A help-others appeal will have a positive impact on attitude toward participation in a clinical research trial for melanoma.

H₅: The effect of appeal upon intention to participate in a clinical research trial for melanoma will be mediated by attitude.

H_{5a}: Attitude will mediate the effect of a help-self appeal upon intention to participate in a clinical research trial for melanoma.

H_{5b}: Attitude will mediate the effect of a help-others appeal upon intention to participate in a clinical research trial for melanoma.

H₆: The effect of appeal on attitude toward participation in a clinical research trial for melanoma skin cancer is moderated by message framing.

H_{6a}: The effect of a help-self appeal is greater for a loss-framed message than for a gain-framed message.

H_{6b}: The effect of a help-others appeal is greater for a loss-framed message than for a gain-framed message.

H₇: The effect of appeal on attitude toward participating in a clinical research trial for melanoma skin cancer is moderated by involvement.

H_{7a}: The effect of a help-self appeal increases as the level of involvement increases.

H_{7b}: The effect of a help-others appeal increases as the level of involvement increases.

VITA**Susan Lewis Casey****Strome College of Business, Old Dominion University
Department of Marketing, Constant Hall 2160, Norfolk, VA****EDUCATION**

2017 PhD in Business Administration – Marketing, Old Dominion University, Norfolk VA

1979 MBA, The College of William and Mary, Williamsburg, VA

1977 BBA, The College of William and Mary, Williamsburg VA

ACADEMIC EXPERIENCE

1980-1983 Christopher Newport College, Newport News, VA
Instructor, Department of Management and Marketing

1983-1990 Christopher Newport College, Newport News, VA
Assistant Professor, Department of Management and Marketing

INDUSTRY EXPERIENCE

1979-1980 Xerox Corporation, Norfolk, VA
Branch Service Planning Manager

PUBLICATIONS

Ford, J.B., P.K. Voli, E.D. Honeycutt Jr., and S.L. Casey (1997), “An examination of gender role portrayals in advertising: A magazine content analysis, *Journal of Advertising*, 27(1), 113-124.