WHEN TRANSLATION ISN'T ENOUGH: TESTING THE EFFECTS OF CULTURALLY TARGETED COLORECTAL CANCER SCREENING MESSAGES FOR LATINOS

By

Everett L. Long

(Under the Direction of Mark Wilson)

Abstract

This study examines how the cultural factor of attitudinal familism in the Latino community might be used in print messages to increase intention to screen for colorectal cancer. To understand how this trait might enhance these messages, a sample of Latinos (n=93) ages 49-86 was randomly assigned to either a family-focused print intervention or standard translated print information. The results did not show an increased intention to screen in the intervention group over the control group. A test for mediation found no relationship between the psychological variable of negative screening emotions and attitudinal familism. And there was no increased intention to screen among those who had higher attitudinal familism over those who had lower attitudinal familism. Factors such as the preference for Spanish Language and having insurance shed light on the importance of including culture in such health communication information about the disease. High reliabilities of measurement scales may have use for future research. The overall increase in the intention to screen suggests that a cultural factor such as familism should be considered in the design of cancer screening messages.

Index Words: Culture, Familism, Colorectal Cancer Screening, Latino, Health Communication

WHEN TRANSLATION ISN'T ENOUGH: TESTING THE EFFECTS OF CULTURALLY TARGETED COLORECTAL CANCER SCREENING MESSAGES FOR LATINOS

By

EVERETT L. LONG

B.A., Wake Forest University, 2004

M.A., University of Georgia, 2010

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSPOHY

ATHENS, GEORGIA

@2014

Everett L. Long

All Rights Reserved

WHEN TRANSLATION ISN'T ENOUGH: TESTING THE EFFECTS OF CULTURALLY TARGETED COLORECTAL CANCER SCREENING MESSAGES FOR THE LATINO POPULATION

By

EVERETT L. LONG

Major Professor: Mark Wilson

Committee: Jeong Yeob Han Karen Hilard Jennifer Gay

Electronic Version Approved:

Maureen Grasso Dean of the Graduate School The University of Georgia May 2014

TABLE OF CONTENTS

BACKGROUND	1
LITERATURE REVIEW	8
METHODS	
RESULTS	
DISCUSSION	
WORKS CITED	53
APPENDICES	64

BACKGROUND

Communicating the importance of cancer screenings to the Latino population is not as simple as translating the information into Spanish and expecting people to get screened. Messages urging individuals to engage in cancer screenings have to convince the target audience that the screening is medically necessary, feasible, and will produce an outcome that outweighs inaction. Cancer screening messages targeting Latinos must do so in a culturally sensitive way to have the most impact. The messages not only have to focus on awareness and knowledge of the particular cancer, but also address the group's cultural connotations or beliefs surrounding cancer and screening. Communication that promotes cancer screenings to Latinos should strive to acknowledge and incorporate culture as a means to increase the salience of cancer-related messages, and the resulting behaviors.

Colorectal Cancer and Screening Trends in the United States

Colorectal cancer (CRC) is cancer that occurs in the colon or rectum—the colon consisting of the large intestine, and the rectum, the passageway that connects the colon to the anus—and is the second highest cause of cancer death in the United States (Centers for Disease Control and Prevention, 2012). The cancer affects men and women, all racial and ethnic groups, and is most commonly seen in people 50 years of age or older (Centers for Disease Control and Prevention, 2012).

The current screening recommendations from the U.S. Preventive Services Task Force include screening using fecal occult blood testing (FOBT), sigmoidoscopy, or colonoscopy at

recommended intervals, beginning at age 50 and continuing until age 75 (U.S. Preventive Services Task Force, 2010). Unlike screenings for cancers such as prostate or breast, an early detection using a colonoscopy can remove possible cancers at the time of observation. The fiveyear survival rate for removal of polyps that cause CRC is 90%, but only 40% of colorectal cancers are caught early on due to underutilization of CRC screenings (Centers for Disease Control and Prevention, 2012).

The incidence and death rates from CRC have trended downward over the past 10 years because of increased recommendations for screening, increased coverage of screening by private insurance and public programs such as Medicaid, and increased efforts of awareness about prevention and treatment (Steinwachs et al., 2010). Over the past decade, uptake in CRC screening has increased drastically. Among U.S. adults ages 50-75, colonoscopy screening rates have increased by more than 25% since 2000 (Klabunde et al., 2011). However, CRC screening disparities persist, with the largest gap occurring in U.S. Latinos (Centers for Disease Control and Prevention, 2012).

Latinos and Colorectal Cancer

Cancer has recently surpassed heart disease as the number one killer of U.S. Latinos (Siegel, Naishadham, & Jemal, 2012). Colorectal cancer is the second highest cause of cancer death among Latinos, and the group has the lowest screening rates of any ethnic group—almost 20% lower than the national average (46.5% versus 64%) (Centers for Disease Control and Prevention, 2012). This low screening rate contributes to Latinos' growing incidence rates and higher likelihood to be diagnosed at a more advanced stage of CRC than their non-Latino White counterparts (Theuer et al., 2001).

Population growth and acculturation also contribute to the growing concern of cancer among Latinos. Latinos comprised over 50% of the population growth over the last decade and the group continues to grow (Passel, Cohn, & Lopez, 2011). As the population grows and spends more time in the United States, they adopt the cultural health behaviors of Americans, which studies have found are associated with negative health outcomes, such as increased obesity and cancer rates (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). And even though research has found that acculturation is positively associated with increased access to healthcare and cancer screenings, CRC screenings among Latinos remain disproportionately low. The continued rise in CRC rates along with the projected increase in the Latino population make it imperative that public health efforts focus on increasing CRC screening rates in this group.

Factors Contributing to Noncompliance in CRC Screening among Latinos

Cancer disparities in Latinos continue to persist, and research confirms that they are more likely than their non-Latino counterparts to encounter barriers accessing healthcare (Diaz et al., 2002). These barriers include lack of health insurance, limited financial resources, lack of English proficiency, low education and literacy levels, and cultural barriers (Carrasquillo, Orav, Brennan, & Burstin, 1999; Diaz et al., 2002; Documet & Sharma, 2004; Huerta, 2003; Ku & Waidmann, 2003). These barriers to healthcare are primary contributors to the low screening rates among the group. Low socioeconomic status, lack of insurance, and residency status, along with the fact that few facilities provide low-cost or free healthcare, exacerbate decreased access to preventive health services (Ku & Waidmann, 2003; Manos et al., 2001). This is in addition to the fact that Latinos already tend to partake in minimal preventive care,

and have a propensity to seek services only when there is an urgent need (Carrillo, Treviño, Betancourt, & Coustasse, 2001).

Psychosocial and cultural factors contribute to this disparity as well. For example, Latinos report lower levels of knowledge of cancer screening guidelines than other ethnic groups (Ramirez, Suarez, Laufman, Barroso, & Chalela, 2000). National samples corroborate these findings—the 2003 HINTS reported that Latinos were overall less familiar with cancer prevention strategies than non-Latino Whites and African Americans (Berkowitz, Hawkins, Peipins, White, & Nadel, 2008).

Community-based research on Latinos' CRC health beliefs found low levels of knowledge among Latinos concerning the anatomy, pathology, and screening surrounding the cancer. In a 2007 study assessing perceptions of colorectal cancer among 234 Latinos between 50 and 80 years of age, less than 20% of participants correctly identified the colon, 19.2% correctly identified one aspect of a polyp, and only 25.2% knew that 50 was the recommended age to begin CRC screening (Cameron, Francis, Wolf, Baker, & Makoul, 2007). Other barriers to getting a CRC screening included not getting screened because the individual felt fine or was not worried (27.3%), and reporting never having an FOBT because it had not been suggested by a physician (65.7%) (Cameron et al., 2007).

Lack of proficiency in English is often cited as a main cultural barrier in navigating the medical system (Carrasquillo et al., 1999). In the 2010 U.S. Census, almost 40% of those who reported speaking Spanish at home, reported that they speak English "less than very well" (U.S. Bureau of the Census, May 2011). This may be a particular concern in the target age group for CRC screening, where there is higher risk of developing CRC, and fewer proficient English-speakers (U.S. Bureau of the Census, May 2011).

Health beliefs, such as fatalistic thoughts concerning cancer, have been identified in the Latino population as contributing to lower cancer screening rates (Flynn, Betancourt, & Ormseth,

2011). Other cultural elements, such as different expectations of trust and respect for medical professionals, have also been reported to make the medical visit less successful than with their Anglo counterparts (Antshel, 2002). The multiple barriers that contribute to Latinos not getting screened for CRC range from systemic to more individual level barriers, however, it remains that no matter at which level they occur, each needs to be addressed to reduce the current low CRC screening rates among Latinos.

Latino Culture and Public Health

Social science researchers recognize culture as one of the most relevant concepts in creating effective health education interventions, and contend that such interventions will have better health outcomes when cultural appropriateness is considered (Betancourt & López, 1993; Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003; Kreuter & McClure, 2004). When targeting Latinos, researchers highly recommend including cultural aspects into the medical visit or in public health education or promotion efforts (Antshel, 2002; Blackhall, Murphy, Frank, Michel, & Azen, 1995; Buki, Salazar, & Pitton, 2009; Kline & Huff, 2008). For example, even if the provider does not speak Spanish, using a few words to greet and thank the patient can be effective for showing that the provider is interested in understanding the patient, which can increase trust (Antshel, 2002).

Familism is one relevant cultural value that researchers have identified as a protective cultural factor among Latinos (Campos et al., 2008; Losada et al., 2008; Ramirez et al., 2004). Familism refers to the importance placed on close relationships with family in the Latino community (Buki et al., 2009; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987; Steidel & Contreras, 2003). This cultural value is also thought to explain much of the Latino paradox—the idea that Latinos have some better health outcomes despite their low social

economic status (Franzini, Ribble, & Keddie, 2001). And though not every Latino individual holds the exact beliefs regarding the role of family, understanding the role of this cultural value is a worthwhile cultural component that public health communicators should explore to increase the relevance of cancer screening information. Health communicators can emphasize the importance of family in making the decision to get screened, in order to increase attention to messages and contextualize the information in a way that is more consistent with Latino values (Buki et al., 2009).

The present study will explore how the cultural concept of familism in the Latino community can be employed in a communication context to increase intentions to obtain a CRC screening. The study recognizes the socioeconomic factors and issues of access to care in the population, but puts forth that enhancing messages with cultural sensitivity can also affect the health beliefs and intentions that encourage getting a screening. To gain a deeper understanding of how culture might serve as a conduit to CRC screening in the Latino community, the following research question and hypotheses are proposed:

RQ: How does the presence or absence of familism in CRC screening messages affect Latinos' intentions to get the screening?

H1: Participants who receive material with familism content will report higher intention to comply with CRC recommendations than those who receive material without familism content.

H2: Screening emotions will mediate the effect between attitudinal familism and the intention to get a colorectal cancer screening.

H3: The intention to obtain a CRC screening will be more pronounced among those who express higher *attitudinal familism* than those who do not.

The hypotheses will be tested in a randomized pre-test post-test equivalent group design, using CRC screening messages with (experiment group) or without (control group) familism content. The first hypothesis (H1) proposes that since familism is an important cultural factor to Latinos, increasing its salience in a communication context will increase the viewers' intention to get the screening.

The second hypothesis (H2) proposes that the psychological factor of negative screening emotions associated with the screening will mediate the effect between attitudinal familism and the intention to get a screening. That is, the negative emotions associated with screening will impact the need for one to stay healthy, which in turn will affect the intentions to get screened.

The third hypothesis (H3) proposes that any effect on the intention to obtain the screening produced from reading the material with familism content will be more pronounced in those who express higher levels of attitudinal familism than those who do not. Those who hold a stronger belief that family is important will be even more affected by the material with the familism content and will feel even more strongly about getting a screening.

LITERATURE REVIEW

The first section of this review of the literature will focus on the cultural concepts in public health interventions. The second section will review literature about the cultural concept of familism and its relationship to Latino health outcomes. The final section will review the literature on the theoretical model guiding the present study.

The Concept of Culture in Public Health Interventions

Culture continues to be an important, but obscure, concept in public health research. What is agreed upon is that culture is learned, shared, and transmitted from one generation to the next, and may be observed in various contexts such as value systems, norms, practices, systems of meaning, and general ways of life (Betancourt & López, 1993; Kreuter et al., 2003; Seidman, 1993). To articulate the distinct ways in which culture can be approached or implemented in public health, researchers have defined the concepts of: *cultural sensitivity, deep structure culture, surface structure culture, cultural competence, cultural appropriateness,* and *cultural targeting* (Kreuter & McClure, 2004).

Cultural sensitivity is the extent to which ethnic or cultural characteristics, experiences, norms, values, behavior patterns and beliefs, and relevant historical, environmental and social forces are incorporated into the design, delivery, and evaluation of targeted health interventions, including health promotion materials (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999). The sensitivity concept is useful when trying to embed culture into health communication efforts, and affords the use of culture at either a surface or deep structure level.

Surface structure culture consists of cultural elements of a health resource that matches social or behavioral features or appearance of the intended audience (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999). This includes language, relevant color-schemes, and images of the target group. The usefulness of surface structure elements is in raising awareness, increasing relevance, and drawing attention to the desired messages. Generic or non-culturally relevant materials may not be as successful in capturing the attention of the intended audience (Buki et al., 2009). This includes the use of necessary cultural components such as language, which may completely undermine the target audience's initial comprehension of the messages.

Deep structure culture recognizes cultural, social, historical, and environmental variables that influence health behaviors and includes ethnic differences in the perceptions of health, disease prevention, and illness (Resnicow et al., 1999). Examples include traditions, health beliefs, and cultural values pertinent to the group. Using deep structure culture may include incorporating cultural health beliefs or known cultural ideals into the intervention to make the messages more meaningful in a sociocultural way. This aids in comprehending, internalizing, and contextualizing the information by capitalizing on notions already familiar into that particular culture.

Cultural targeting is a strategy that identifies a population subgroup for which an intervention or program is to be developed (Marks, Reed, Colby, & Ibrahim, 2004). Overall, the attempt would be a single intervention approach for a defined population that is shaped by the group's shared characteristics. This strategy is heavily used in social marketing and health campaign approaches, especially ones that use mass media to spread messages.

Cultural targeting does not seek to tailor information to each individual of the population, but instead uses characteristics of the larger group to capture as many in the target audience as possible (Kreuter, et al., 2003).

In the present research these concepts are relevant to the cultural factors explored in the study. The study will use the relevant cultural factor of *familism* to provide cues (surface structure) to increase salience to CRC screenings messages. Also, by using the highly regarded value of familism, the messages will better contextualize (deep surface) the information than standard translated messages.

Cultural Concepts, Latinos, and Health

Research on Latino health-related cultural factors has included concepts such as respect, personal relationships, trust, fatalism, and familism (Buki et al., 2009; Cameron et al., 2007; Jandorf et al., 2010; Sheinfeld Gorin & Heck, 2005). Trust in health professionals and health messages can affect how Latinos feel about information and whether they follow cancerscreening recommendations (Cameron et al., 2007; Clayman, Manganello, Viswanath, Hesse, & Arora, 2010). Familism has been found to be a protective factor regarding various health outcomes, including an individual's willingness to adhere to medical treatment (Campos et al., 2008; Losada et al., 2008; Ramirez et al., 2004;Antshel, 2002). This increased adherence has implications for taking part in cancer screenings.

Research has shown that among Latinos, physician recommendation is the strongest predictor of getting a CRC screening (Cameron, Francis, Wolf, Baker, & Makoul, 2007; Jandorf et al., 2010; Sheinfeld Gorin & Heck, 2005). In a study investigating the health beliefs of Latinos concerning CRC screening, more than 97% percent of the participants said they would get the screening if their doctor recommended it (Cameron, et al., 2007). This willingness to follow

doctor recommendation is related to establishing a personal relationship of trust with the physician that can increase positive health outcomes including following screening recommendations (Buki, et al., 2009; Antshel, 2002).

Trust of health information also affects how Latinos respond to and comply with cancer screening messages. A 2005 study using the Health Information National Trends Survey (HINTS), pulled from a sample of almost 500 U.S. Spanish- and English-speaking Latinos to understand how trust translates directly to source credibility among the group (Clayman et al., 2010). Particularly, the study focused on the differences in trust between English-speaking and non-English speaking Latinos, and their perceptions and use of health information sources regarding cancer. The results showed that participants comfortable speaking English reported higher trust for health information coming from newspapers, magazines, and the Internet as compared to those less comfortable with English (Clayman et al., 2010). Those less comfortable with English also reported lower levels of usage of traditional media and the Internet. This differential trust in health information could have a direct effect on the usefulness of CRC screening information, particularly in a group that relies heavily on secondary sources for health information (Cheong, 2007).

Familism as a Latino Cultural Factor

Familism, or *familismo* in Spanish, is the prominence of interdependent networks that form within and across immediate and extended family members (Buki et al., 2009; Sabogal et al., 1987; Steidel & Contreras, 2003). The significance of the family in Latino culture can be seen in how the total family system is considered as a support network, and the fact that the family as a group takes precedence over individuals. Regarding health, familism may manifest as family

members taking part in medical and treatment decisions, and family may accompany a patient to medical visits (Blackhall et al., 1995; Kline & Huff, 2008; Magaña, 1999).

Familism itself is not strictly a Latino characteristic, and has been shown to serve as social support within non-Latino families as well (Desmond & Turley, 2009). However, for Latinos the concept goes beyond simple social support and is distinct in its emphasis on emotionally positive and supportive family relationships (Sabogal et al., 1987).

Studies have repeatedly shown that Latinos possess higher levels of familism when compared to non-Latino White and Black individuals (with White individuals demonstrating the lowest amount) (Desmond & Turley, 2009; Mindel, 1980; Niemeyer, Wong, & Westerhaus, 2009). For example, Latinos prefer living in closer proximity to extended kin networks, migrate toward these family networks, and overall are more family-oriented than other ethnic groups (Moore, 1993; Vega, 1990). This does not suggest that other American ethnic groups do not value family; instead, it reflects the American value of individualism, which places high value on independence as opposed to interdependence, like the more collectivist Latino community (Fuligni, Tseng, & Lam, 1999; Gaines et al., 1997).

Familism has been shown to be a protective factor for various health issues in the Latino community. Among adolescents there are positive implications for substance abuse, including findings that familism was a protective factor associated with a decreased risk for marijuana use among high-risk Latino teenagers (n=1,094) (Ramirez et al., 2004). This study found that positive family attitudes predicted lifetime marijuana use among both the White Non-Latino and Latino participants. Specifically, among the Latinos, for those who possessed at least moderate knowledge about marijuana, attitudinal familism had a negative association with abuse of the drug (Ramirez et al., 2004).

A longitudinal study about how familism affects alcohol use among Latinos found that it was associated with a lower disposition to deviance, which predicted lower levels of alcohol use (Gil, Wagner, & Vega, 2000). The three-year study examined differences in alcohol abuse between U.S. born (n=968) and immigrant Latino (n=1,051) male and female adolescents. Former research has found that U.S. born Latinos are more likely to abuse drugs and alcohol than their immigrant counterparts (Vega & Gil, 1998); however this study found that familism had a significant negative association on deviant behavior and alcohol use among both groups (Gil, Wagner, & Vega, 2000).

In a cross-sectional study comparing teenage Latina girls (average age 16) (n=109) who had attempted suicide and those who had not (n=109), familism was found to increase the odds of having a "tight-knit," family (Peña, et al., 2011). In turn, "tight-knit" families were significantly less likely to have Latina girls who had attempted suicide (Peña et al., 2011). Data from the Youth Risk Behavior Surveillance Survey (YRBSS) have shown that over the past decade Latinas have reported increasingly elevated rates of suicidal behavior when compared to their White counterparts (Eaton et al., 2006; Eaton et al., 2008; Eaton et al., 2010). However, this study shows that familism may be a valuable protective factor among Latina girls regarding suicide, and perhaps its protective factors could be harnessed for other public health issues such as CRC screening.

Familism has also been negatively associated with stress levels and pregnancy anxiety among pregnant Latinas (Campos et al., 2008). A prospective 2008 study examined familism during pregnancy among White (n=166), U.S.-born Latina women (n=68), and foreign-born Latinas (n=31) and found that for all groups, familism was positively associated with social support. Social support was associated with decreased stress during pregnancy and was

negatively associated with pregnancy anxiety. As hypothesized the effect was stronger for the Latina women. Even further, the study found that among the foreign-born Latinas familism was associated with higher birth weight (Campos et al., 2008).

However, some research has found familism may be detrimental. In a study of a sample of almost 5,000 Latino high school students, the tight bonds of family served as a predictor of a lower likelihood of Latino students going away to college, and hampered educational attainment (Desmond & Turley, 2009). The authors explained how some Latino students were so dedicated to their families that they sacrificed their education in order to stay close to home. In some cases familism and dedication to family has also been observed to be a stressor and contributor to isolation, particularly for Latina women (Delgado & Canabal, 2006; Desmond & Turley, 2009). In this case, Latina women strive so hard to improve and serve the family and takes on the stresses that come with this high goal.

Despite a few studies with negative associations, many others have found familism to be a protective factor concerning various health issues among Latinos, which makes it worth exploring for use in other public health issues (Eaton et al., 2006; Eaton et al., 2008; Eaton et al., 2010; Gil, Wagner, & Vega, 2000; Ramirez et al., 2004).). The importance of familism among Latinos, its positive effects regarding substance abuse, mental health and suicide, and stress during pregnancy, demonstrates the possibilities for familism in other health settings. The ability to make familism more salient in preventive settings would be a valuable tool in colorectal cancer screening promotion.

Familism and Acculturation

Like *familism*, acculturation is thought to play a role to a second part of the Latino paradox—Latino health outcomes tend to grow worse as they spend more time in the United

States (Campos et al., 2008). Research on Latinos has found associations between acculturation and differential health outcomes (Lara et al., 2005).

Acculturation refers to the acquisition of cultural elements of the dominant society, through which those from outside the dominant group assimilate (Lara et al., 2005). The effects of acculturation on health have sustained both positive and negative outcomes on Latino's health. Acculturation has a negative association with healthy behaviors such as eating healthy, taking exercise, and avoiding drug abuse. On the contrary, acculturation has positive associations with access to health care and cancer screenings (Lara et al., 2005). Research employing a nationally representative sample of Latinos from the National Health Interview Survey (NHIS) corroborates the association of increased CRC screenings with higher acculturation. More highly acculturated Latinos were over four times more likely to have had a fecal occult blood test (FOBT) in the past year than low-acculturated Latinos (Afable-Munsuz, Liang, Ponce, & Walsh, 2009).

One way that researchers have measured acculturation is through the proxy of language preference (Clayman et al., 2010; Dawson, Crano, & Burgoon, 1997; Stein & Fox, 1990). One study examined cancer information seeking behaviors among low-acculturated Latinos (low comfort with English) and more high-acculturated Latinos (more comfortable with English), and found significantly lower cancer information seeking behaviors among the low-acculturated group (Clayman et al., 2010). The Stein and Fox study (1990) found a sharp disconnect in rates of mammography screening between Latina women who preferred a Spanish interview and those who preferred an English interview (13.8% versus 47.1%, respectively). Knowing that language preference is a predictor of cancer screening is important to understand when executing a health communication intervention for Latinos.

Acculturation also has implications for how a cultural trait such as familism may be differentially represented throughout the Latino population. Research suggests that familism attenuates with acculturation, similarly to Spanish language—the more time Latino immigrants spend in the country, the less familism is a preserved cultural trait. (Almeida, Molnar, Kawachi, & Subramanian, 2009; Balcazar, Peterson, & Krull, 1997; Steidel & Contreras, 2003). The Steidel and Contreras study (2003) testing a *familism* scale, among 124 Spanish- and English-speaking Latino adults found that more acculturated individuals adhered less to overall familistic attitudes. The researchers found, as in other studies that with increased exposure to U.S. culture, certain familistic values may be abandoned while others are retained despite acculturation (Steidel & Contreras, 2003). For example, more highly acculturated individuals held less to the values of familial interconnectedness and honor than lower acculturated individuals. The differential expression of familism may affect how and to what extent using the factor in a message may be effective. It may also aid creators of those messages with deciding which target Latino audiences would be the most receptive to messages using this concept.

Familism and Health Communication

The possibilities for use of *familism* in health communication are in messages. Health communication practitioners can incorporate and highlight cultural factors to enhance overall message relevance and draw increased attention from the target population. Research that has made recommendations for culturally appropriate cancer education materials has urged using familism (Buki, et al., 2009). After reviewing the literature on appropriateness of cancer information for Latinos, the researchers recommend that messages strive to address the individual who needs the screening or treatment, but also speak to the family or caregiver perspective (Buki, et al., 2009). Messages should emphasize that a screening or treatment would

benefit the individual as well as the family unit. The researchers suggest that familism be incorporated visually by including images of Latino families. Finally, they recommend use of narratives and pictures of Latino families carrying out the healthcare process together if modeling or story lines are incorporated (Buki et al., 2009).

Integrating Culture into a Theoretical Behavioral Model

A critique of traditional public health theory is that it does not sufficiently account for cultural concepts such as familism in understanding the adoption of health behaviors and psychological processes that lead to performing the behaviors (Betancourt & López, 1993; Neuhauser & Kreps, 2003). By not considering the effects of culture, researchers may fail to correctly identify the entire psychological process of a population that may affect a certain health behavior. Having a better comprehension of certain cultural factors could enhance theoretical approaches of these interventions, and provide more precise answers to how and why individuals make changes through health communication interventions. One manner to increase this understanding would be to use theoretical models that incorporate culture as a construct.

Betancourt's Model of Culture and Behavior is such a model that explicitly includes cultural factors in examining the effects of culture on health behaviors (Betancourt & Flynn, 2009; Betancourt & Fuentes, 2001; Betancourt & López, 1993; Carrillo et al., 2001). It has been applied to Latino health issues such as continuance of health care (Betancourt, Flynn, & Ormseth, 2011), diabetes (McMillin-Williams, 2006), and cancer screening (Betancourt et al., 2011; Flynn, 2006). The model explicitly relates culture to health behavior by articulating the flow of health determinants starting from population categories, followed by cultural factors, then psychological processes, and ending at the health behavior. The model can be applied for the medical patient or the practitioner.



Figure 1. Betancourt's Model of Culture and Behavior (Flynn & Betancourt, 2011).

In the model, the three determinants of health—population categories, cultural factors, and psychological processes—are arranged from distal to proximal in relation to the health behavior (Betancourt & Flynn, 2009). This arrangement allows one to see how each determinant affects the next, and ultimately, the desired health behavior. The population categories serve as the source of culture, and indirectly affect the behavior through cultural factors. Culture influences the health behavior both directly and also indirectly through psychological factors. Finally, the psychological factors directly affect the health behavior (Betancourt & Flynn, 2009). By separating the population and culture categories, the model accentuates the effects of culture (not simply race or ethnicity) on health behavior. The model aids in understanding how culture impacts a health behavior by illustrating the paths through which it functions.

Each of these determinants contains particular components that affect the health behavior. First, the population category includes demographic factors such as ethnicity and race that represent the sources of cultural variation (Betancourt & Flynn, 2009). However, according to the model, this factor does not directly affect the health behavior. Instead the population category affects the health behavior indirectly though the cultural factors. For example, being of Latino ethnicity affects one's perception of family because the family is generally held in high regard in this population.

The cultural factors consist of values, beliefs, and norms socially shared among individuals in a determined population. In this study, the emphasis is on the value of family. The model puts forth that cultural factors directly and indirectly affect a health behavior. An example of how these paths might function can be seen in a study examining the cultural effects of fatalism on negative screening emotions, regarding mammography between 281 Latina and White women (Flynn et al., 2011). The structural models revealed a significant negative *indirect* relationship between fatalism and negative screening emotion for both groups. But, there was only a significant *direct* effect of fatalism on behavior in the Latina group (Flynn et al., 2011). Understanding how fatalism affects two groups differently can aid researchers and practitioners in developing interventions for cancer screening.

Lastly, the model shows the psychological processes, such as fear or motivation, as the most proximal to the health behavior (Betancourt & Flynn, 2009). The relevance of psychological constructs in this model is illustrated by a study on the perceptions of healthcare mistreatment and anger toward medical professionals (Betancourt et al., 2011). The researchers used reported feelings of anger and perceived maltreatment to predict the likelihood of Latino and Anglo Americans (n=313) to continue medical services at a clinic over time (Betancourt et al., 2011). They found that for both groups continuity of care was negatively associated with perceptions of mistreatment. However, for Latinos, the negative emotions more intensely

influenced the continuation of care—their perceptions of maltreatment were more strongly associated with discontinuing medical services (Betancourt et al., 2011). These findings highlight the importance of establishing culturally sensitive approaches in medical settings that do not discourage Latinos from seeking care or continuing care.

The present study will use the Betancourt Model as a guide to better understand how the cultural factor of familism affects negative screening emotions and the intention to get a colorectal cancer screening among Latinos (See Figure 2). The model extends the original model's concept by placing the cultural factor in a communication context and testing it with an experiment. As in the Betancourt model, this model maintains the categories that address specific determinant of the behavior—population categories, cultural factors, and psychological factors.



Figure 2. Theoretical model for the present study

The population category affects the cultural factor in two main ways. First, the study uses an all-Latino sample, and as research has shown familism is an important and relevant cultural factor to this population (Buki, Salazar, Pitton, 2009; Sabogal et al., 1987; Steidel & Contreras, 2003). Second, since language can be used as a proxy measure for acculturation (Clayman, et al., 2010; Dawson, Crano, & Burgoon, 1997; Stein & Fox, 1990), the model can help to understand how acculturation may affect familism. *Familism* is the cultural factor in the model, and has two possible effect paths. First, there is a direct path where familism increases intention to screen through direct concern for the family. Second, the indirect path goes through the psychological factor, and highlights the protective nature of *familism*. As seen in the literature, familism's ameliorating effects on mental health (Campos, et al., 2008; Peña, 2011) imply that it could produce a similar effect on negative screening emotions concerning colorectal cancer screening. If participants perceived lower negative emotions regarding the screening because they felt it was for the good of the family as well as themselves, they might be more likely to participate in a CRC screening.

Instead of explaining a health behavior, the present model will use the constructs of Betancourt's model to explore the intention to get a CRC screening. Behavioral intention has been consistently used as a valid proxy or predicating behavior when the actual behavior cannot be measured (Ajzen & Driver, 1992; Ajzen & Driver, 1991; Ajzen & Fishbein, 1969). The model allows for examination each of these paths individually and wholly. This will allow for explicit analysis of the paths of culture's effect on CRC screening. And though some studies have included cultural components or aspects in an intervention to increase CRC among Latinos (Fernández, Gonzales, Tortolero-Luna, Partida, & Bartholomew, 2005; Larkey, 2006), no studies have explained the paths of *how* culture works to increase CRC screening intention or behavior.

METHODS

The present study used a pre-test post-test randomized control group experimental design. The experimental group received messages and images concerning CRC screening that had familism content, while the control group received standard CRC screening messages (no familism content). The presence or absence of familism is the focus of the main research question:

RQ: How does the presence or absence of *familism* in CRC screening messages affect Latinos' intentions to get the screening?

The study followed the recommendation that *familism* can be made more salient in a message to make the information about CRC more relevant to the target audience. And since *familism* is a deep surface cultural component for Latinos, those exposed to a message with content emphasizing *familism* should respond more positively as opposed to those exposed to standard messages. The first hypothesis was:

H1: Participants who receive material with familism content will report higher intention to comply with CRC recommendations than those who receive material without *familism* content.

Kreuter & McClure (2004) discussed how using culture in health communication could aid in putting health information into a more relatable context for the intended audience. This implies that if one can appropriately implement relevant cultural factors that the information will ameliorate some of the effect of negative psychological factors (i.e. fears, worries) that may deter one from getting a cancer screening. The second hypothesis was:

H2: Screening emotions will mediate the effect between *attitudinal familism* and the intention to get a colorectal cancer screening.

Familism is a trait that can vary among Latino individuals. With this in mind, the study hypothesized that the familism content would increase the effect among those who possess higher levels of *attitudinal familism*. The final hypothesis was:

H3: The intention to obtain a CRC screening will be more pronounced among those who express higher *attitudinal familism* than those who do not.

Sample

The sample size for the analysis was determined by G*Power, a free power analysis program (Erdfelder, Faul, & Buchner, 1996). The model had 11 fixed-predictor variables, including the covariates. Given that the predictors are fixed, an *a priori* sample size was calculated using the fixed model, single regression coefficient test, using t as the test statistic. For a power of .95 using an alpha level of .05 with nine predictors, the necessary total sample size was determined to be 89 (df=77).

Data Collection

A non-probability convenience sample was recruited from various locations in Georgia including, clinics, local health departments, local churches, flea markets, or other places where Latino participants might be solicited. The sample was recruited by interception on location. Data was collected from the following organizations: The Athens Nurses Clinic, the Athens Clarke County Health Department, The Good News Clinic, and the Athens Latino Center for Education Services, as well as the J&J Flea Market, the Pendergrass Flea Market, Emory Latino Diabetes Education Program, St. Joseph's Catholic Church, and Sacred Heart Catholic Church.

Participants were approached at each location and asked to participate in the study. A \$5 Wal-Mart gift card was offered as an incentive. After agreeing and consenting to the experiment, participants were randomized to receive either the standard brochure or the experimental brochure. Randomization was conducted by first flipping a coin to assign the first individual to either the experimental or the standard materials. After the initial participant was randomized subsequent participants were assigned alternately to the standard or experimental brochure.

Inclusion criteria for participation were that participants must 1) self-identify as Latino, 2) be off-schedule for having a colorectal cancer screening, and 3) be between 49-75 years of age. An individual was considered as being "off-schedule" for having a colorectal cancer screening if he or she had not had a colonoscopy in the past 10 years, a sigmoidoscopy in the past 5 years, or a fecal occult blood test in the past year.

The Intervention

Before beginning the experiment all participants read and agreed to the consent form in either Spanish or English (See Attachment A). All participants then completed the pretest which included questions about whether the individual had ever had any CRC screening, intentions to get the screenings, emotions about CRC screening, familism, and demographic data. Next, individuals read the intervention brochure that contained general CRC information, its prevalence in the U.S. population, and risk factors, and either messages incorporating family (experimental group) or standard screening content (control) (See Appendix B). After exposure to the brochure, participants completed the post-test. The brochure was administered in English or Spanish as requested by each individual.

The content of the messages was adapted from the Centers for Disease Controls Screen for Life Campaign materials (i.e. descriptions of screening types, risk factors, and CRC facts).

Content for the experimental group consisted of information from the Screen For Life campaign and family-focused messages and images were added for the intervention (See Appendix B). Content for the control group was adapted, but did not include additional familism content (See Appendix B).

Message Evaluation and Manipulation Check

Prior to the experiment the researcher tested the message content by conducting cognitive interviews with a small sample representative of the target group. Five participants read and reviewed material and provided feedback on readability, comprehension, and appropriateness of the material.

The interviewees encouraged several changes to the materials related to information layout, grammatical corrections, and regionalisms and choice of Spanish words. One major issue identified was the layout of the information. Originally, the information was laid out in two pages, in paragraph form. Interviewees stated that the layout seemed overwhelming, it made the information appear difficult, and discouraged them from reading everything. To address this, the researcher formatted the messages into a 6-panel brochure. The individuals were presented the new layout, and liked the brochure layout better, agreed that it "felt better," was easier to understand and read.

Several corrections to the Spanish versions were made. These issues were minor and included consistency in the uses of the formal and informal subjects and verbs (*usted* vs. $t\hat{u}$), incorrect verb tenses, and misspellings.

Suggestions for wording more familiar to Spanish-speaking subjects were also suggested. For example, the phrase "to get a colonoscopy," translates directly to "*obtener una colonoscopía*." However, the more familiar phrase was *"hacerse una colonoscopía*."

Another suggestion was to include some words and phrases that would be more familiar to the majority of Latinos in the area (Mexican). For example, when asking if the CRC screening embarrassed an individual the standard *da verguënza* was used, and in parentheses the commonly used phrase among Mexicans "*da pena*" was included.

The interviewees all felt that the material was comprehensible, clearly stated, and straightforward. Interviewees from various education levels agreed that they understood the information, intent, and purpose of the brochure.

Measures

Participant Demographic information

Descriptive statistics were gathered to describe the sample and help control for certain factors during the analyses. Demographic information was collected on gender, age, education level, income, insurance status, household size, preferred language, and country of origin. *CRC screening behavior/Intention to get a CRC screening*

First individuals were assessed to determine if they were off-schedule for CRC screening. Being off-schedule was determined by the following questions: "Have you had a colonoscopy in the past 10 years?," "Have you had a sigmoidoscopy in the past 5 years?", or "Have you had an FOBT in the past year?" Participants were excluded if they were not determined to be offschedule for the screening.

Measures for intention to screen were taken from a study on using gain- and loss-frame messages for colorectal cancer, and consisted of a series of 7-items at pre- and post-test (Ferrer, Klein, Zajac, Land, & Ling, 2012). The items were: 1) I intend to get a colorectal cancer screening test sometime in the next 6 months (*strongly disagree* [1] to *strongly agree* [10]); 2) How likely is it that you will try to get screened for colorectal cancer in the next 6 months?

(*extremely unlikely* [1] to *extremely likely* [10]); 3) How likely is it that you will get screened for colorectal cancer in the next 6 months? (*extremely unlikely* [1] to *extremely likely* [10]); 4) How much effort are you prepared to exert in order to get screened for colorectal cancer in the next 6 months? (*not much effort* [1] to *a great deal of effort* [10]); 5) Do you feel that you have committed yourself to a definite course of action to get screened for colorectal cancer? (*not at all* [1] *to very much* [10]); 6) Do you feel that you have committed yourself to a definite course of action to get screened for colorectal cancer? (*not at all* [1] *to very much* [10]); 6) Do you feel that you have committed yourself to make use of any opportunity to get screened for colorectal cancer? (*not at all* [1] to *very much* [10]); and 7) How determined do you feel at this moment to get screened for colorectal cancer? (*not at all* [1] to *very much* [10]). The scale showed high reliability (α =.95) among the sample (Ferrer, Klein, Zajac, Land, & Ling, 2012). Higher scores on this scale indicate higher intention to obtain a colorectal cancer screening. The scores were averaged from the seven items to indicate overall intention to get a CRC screening within the next 6 months for each participant. This scale was given at both pre-and post-test (*pre-test screening intention* and *post-test screening intention*). *Post-test screening intention* will be used as the main dependent variable of interest.

Attitudinal Familism

Attitudinal familism refers to the normative commitment of family members to the family unit and to family relationships, which supersedes the individual (Luna et al., 1996). Attitudinal familism was measured using a 7-item scale developed to measure the trait, with attention to the importance of parents, other relatives and elders (Ramirez et al., 2004). The scale demonstrated internal consistency reliability in a 2004 study testing the associations of familism with drug abuse (Ramirez et al., 2004) (α =0.70). The items were measured on a 10-point Likert scale, and included: 1) I think about what is good for my family before thinking about what is good for me, 2) I expect my relatives to help me when I need them, 3) I owe it to my parents to do well in life,

4) My best guide to behavior is my parents' teachings, 5) Aging parents should live with their relatives, 6) All adults should be respected, and 7) Relatives are more important than friends.Higher scores on this scale indicate higher familistic attitudes. Responses from the individual items were averaged to create a mean score.

Negative Screening Emotions

Measures for negative screening emotions were adapted from a scale used to measure concerns about cervical and breast cancer screening (Betancourt, Flynn, Riggs, & Garberoglio, 2010). The scale was designed from qualitative interviews and tested among Latinas, showing high internal consistency among both English and Spanish-speaking Latinas (Englishalpha=0.932; Spanish alpha=0.922) (Betancourt et al., 2010). The items were rated on a 10-point Likert scale and included: 1) when I think about getting a colorectal cancer screening I get very scared, 2) colorectal cancer screenings are extremely embarrassing, and 3) thinking about getting a colorectal cancer screening makes me terribly anxious. The measure adapted for this study also consists of three items. A higher score on this index indicates that an individual has more negative feelings toward cancer screening. Responses from the individual items were averaged to create a mean score.

Analyses

Descriptive statistics were run to describe the participants' sex, age, education level, income, insurance status, household size, preferred language, and country of origin. The means and standard deviations were run for age and household size. Percentages were run for the variables—sex, education level, income, insurance status, preferred language, and country of origin. Chi-square tests were conducted for dichotomous variables to test for differences between the control and experimental groups regarding demographic factors.

Internal consistencies were measured for each of the four main scales: pre-test intention to screen, familism, negative screening emotion, and post-test intention to screen. An exploratory factor analysis was conducted to assess that each individual factor of the scale successfully contributes to the main factor. The Kaiser Meyer-Olkin measure of sampling indicates if the inter-item correlations were large enough to be sufficiently correlated (Meyers, Gamst, & Guarino, 2006), with a value of 0.70 or above being considered adequate (Kaiser, 1970, 1974). Bartlett's test of sphericity provides the null hypothesis that none of the variables are significantly correlated. The test should be significant at or below the 0.05 level to proceed with factor analysis (Meyers, Gamst, Guarino, 2006).

To check for multicollinearity, bivariate correlations were run and the variance intolerance factors (VIF) and tolerance of each factor was checked. High bivariate correlations (usually 0.90 or higher) between independent variables indicate multicollinearity (Tabachnick, Fidell, & Osterlind, 2001). A VIF of higher than five, and tolerance of less than 0.20 are also indicators of multicollinearity (O'Brien, 2007).

Prior to analysis of hypotheses, a manipulation check was done to check for the successful effect of the intervention on the post-intervention intention to screen for colorectal cancer. The manipulation check consisted of a paired t-test for the intervention group, which tested for a change in the means of the pre-test intention to screen to the post-test intention to screen. The desired outcome is a significant increase in the intention to screen from pre- to post-test. A p-value of 0.05 or less will confirm a significant change in the means.

Histograms were created and assessed to ascertain the normality of each of the variables. Ordinary least squares regression was employed to test the proposed hypotheses. Post-test intention to screen was regressed on pre-test intention to screen, being in the intervention or

control group, negative screening emotions, and attitudinal familism. The model also included covariates to control for age, insurance status, income, education level, and language preference. All variables were entered into the model, and non-significant variables (*p*-value higher than .05) removed using the backward selection method to create the final model. Each variable was removed one-by-one, in order of least significance. All hypotheses were tested in the same model simultaneously.

To indicate the main intervention effect within the regression model, (H1) dummy variables were created to indicate whether the individuals belonged to the control group or intervention group (0=control group, 1=intervention group). Using dummy variables is appropriate for this hypothesis to test the main effect of the intervention, as the results will give information on the difference between the two groups' means when adjusted for other predictors (Meyers, Gamst & Guarino, 2006). In this case, it will show the differences between the means of the control and intervention groups and their post-test intentions to screen for colorectal cancer.

To indicate the hypothesized mediation in the second hypothesis (that negative screening emotion will mediate the effect between attitudinal familism and the intention to get a colorectal cancer screening), in the regression analysis, bootstrapping was performed on the variables of attitudinal familism and negative screening emotion to determine whether there were mediation effects (Preacher & Hayes, 2004, 2008). Bootstrapping was chosen over other methods of mediation analyses (i.e. Baron and Kenny mediation tests) because of its use of the actual sampling distribution to test for indirect effects (Hayes, 2009). Bootstrapping measures indirect effects by creating a representation of the sample through a resampling technique that mimics the original sampling process during the analysis (Hayes, 2009). During bootstrapping, the original n

is replaced by a constructed resample. This resampling process is repeated k times (typically at least 1,000) to create some larger n that will be used to estimate the indirect effect of the variables of interest. This indirect effect is then estimated by making inferences created from the new k estimates of this indirect effect. Bootstrapping is done within the process of the regression model and does not require separate multiple regression models like the Barron and Kenny model. This process has proven more powerful than the other mediation processes, and functions as an empirical approximation of the distribution from which inferences can be made using confidence intervals along with test statistics and p-values (Hayes, 2009; Zhao, Lynch, & Chen, 2010).

To test the third hypothesis that those who express high levels of attitudinal familism would express higher intentions to screen than those with lower levels of the trait, an interaction variable was put into the regression model to test for interaction. To create the moderator variable, the attitudinal familism mean score was centered on zero. Centering was done by subtracting the value of the attitudinal familism variable from the overall mean of the attitudinal familism. This new centered value was then multiplied by the dichotomous intervention variable to create the moderator variable (attitudinal familism*intervention) and used in the full model. A significant interaction would indicate that there is a moderation effect of the intervention on individuals with high versus low familism on the post-intervention intention to screen.

Data was prepared and preliminary analyses conducting using SPSS 21 (Angele, 2013). This included determining scale reliabilities, exploratory factor analyses, bivariate correlations, and the manipulation check (t-test).

To test the hypotheses, the ordinary least squares regression analysis was run in M-Plus version 6 (Muthén, 1998-2011) since the program uses the maximum likelihood estimation for
missing data. Six participants did not answer any of the questions for the negative screening emotion scale, which were handled with the maximum likelihood estimation. Two participants did not answer any of the questions for the independent variable (post-test screening intentions), and M-plus handles missing independent variables using list-wise deletion. The final *N* for the regression analysis was 91.

Dummy Coding

To aid with interpretation of the two categorical variables, education and income, were dummy coded to dichotomous variables. Recoding categorical variables into dichotomous variables may be useful when the frequency of the categories is not distributed among the options (Stockburger, 1998). During the survey, participants indicated education as being primary school (6th grade), high school diploma (12th grade), some college, college graduate, or graduate education. The education variable was dummy coded to indicate either having a primary school education (0) or above primary school (1). This decision reflects the high frequency of responses in the first two categories: primary school (44%), high school diploma (28%), some college (13%), college graduate (2%), or graduate education (2%).

During the survey, participants indicated income in ordinal income ranges indicating annual salaries of: less than \$10,000; \$10,000- \$29,999; \$30,000-\$49,999; \$50,000-\$69,999, or above \$70,000 per year. These ordinal income categories were dummy coded into the dichotomous variables of less than \$10K (0) or above \$10K (1) per year. This decision also reflects the fact that the responses were skewed in the first two categories \$29,999 per year: \$10,000 (35%); \$10,000- \$29,999 (33%); \$30,000-\$49,999 (5%); \$50,000-\$69,999 (3%), or above \$70,000 (2%).

RESULTS

Descriptive Statistics

Data collection was carried out from April 3, 2013 to November 18, 2013 and completed by 93 participants (control=46, intervention=47). Sample characteristics are shown in Table 1. Ages of the participants ranged from 49 to 86 years old (M=57; SD=7.5). More than half of the sample was female (59%). There were no significant differences between the control and intervention groups regarding gender (df=1; X²=0.007; *p*-value=0.931) (See Table 1).

Most participants were uninsured (58.8%); had higher than a primary education (56.5%); and made less than \$10,000 per year (55.9%) (See Table 1). The overwhelming majority of participants preferred Spanish to English (88.2% versus 11.8%). This was the only demographic trait that was significantly different between the control and intervention groups (df=1; X^2 =8.134; *p*-value=0.004) (See Table 1). Participants came from 10 countries, with just under half reporting origins in Mexico (49.4%) (See Table 2). Household size ranged from one to nine total individuals in the household (M=3.6; SD=1.74).

Participants reported high levels of attitudinal familism ranging from 3.6 to 10 on the 10point scale (M=8.23; SD=1.83). Over two-thirds (67%) of the participants scored an eight or higher on the familism scale. Participants reported levels of negative screening emotion concerning colorectal cancer screenings ranging from 1 to 10 (M=4.72; SD=3.05). At pre-test participants reported levels of intention from 1 to 10 (M=4.79; SD=2.91). Post-test intentions also ranged from 1 to 10 (M=5.4.; SD=2.9) (See Table 3).

Characteristics	Intervention	Control	X^2	<i>p</i> -value	
Total	47	46			
Gender					
Female	28	27	0.007	0.931	
Male	19	19			
Insurance Status					
Insured	17	18			
Uninsured	28	22	0.499	0.456	
Language					
Spanish	37	45	8.134	0.004	
English	10	1			
	22	10	0.424	0.51	
Below Primary	22	18	0.434	0.51	
Above Primary	25	27			
Less than \$10K	28	22	0.517	0.472	
Above \$10K	19	24			

Table 1. Sample Characteristics

Table 2. Participant Countries of Origins

Country	n
Mexico	46
Peru	10
Not reported	10
El Salvador	7
Honduras	6
United States	5
Colombia	4
Puerto Rico	2
Chile	1
Guatemala	1
Uruguay	1

Internal Consistencies

Internal consistencies were measured for each of the four main scales: pre-test intention to screen, familism, negative screening emotion, and post-test intention to screen. The internal

consistencies demonstrated by two of the scales were excellent: intention to obtain a colorectal cancer screening had high internal consistency at both pre- and post-test measures (α =0.934 and α =0.96, respectively). Internal consistencies for the other two scales were acceptable: attitudinal familism (α =0.814); and negative screening emotion scale (α =0.891).

	Mean	sd
Attitudinal Familism	8.23	1.83
Negative Emotion	4.72	3.05
Pre-test Intention	4.79	2.91
Post-test Intention	5.4	2.9

Table 3. Dependent & Independent Variables with Means and Standard Deviations

Table 4. Variables with Kaiser-Meyer-Olkin and Bartlett's test of sphericity

5				1 2	
Variable	KMO	X^2	df	<i>p</i> -value	Eigenvalue
	i				
Pre-test screening intention	0.83	494.923	21	<.001	5.035
Attitudinal familism F1.	0.777	229.389	21	<.001	3.488
Attitudinal Familism F2.					1.065
Negative screening emotion	0.748	139.169	3	<.001	2.463
Post-test screening intention	0.837	715.629	21	<.001	5.647

Table 5. Factor Loadings Estimates for Indicator Variables.

Factor/Variables	Factor
	Loading

	Pre-test Screening Intention	
	I intend to get a colorectal cancer screening test sometime in the next 6	
V1.	months	0.864
	How likely is it that you will try to get screened for colorectal cancer in the	
V2.	next 6 months?	0.876
	How likely is it that you will get screened for colorectal cancer in the next	
V3.	6 months?	0.886
	How much effort are you prepared to exert in order to get screened for	
V4.	colorectal cancer in the next 6 months?	0.872
V5.	Do you feel that you have committed yourself to a definite course of action	0.757

	to get screened for colorectal cancer?	Ì
	Do you feel that you have committed yourself to make use of any	
V6.	opportunity to get screened for colorectal cancer?	0.852
	How determined do you feel at this moment to get screened for colorectal	
V7.	cancer?	0.823
	Attitudinal Familism	
	I think about what is good for my family before thinking about what is	
V1.	good for me	0.705
V2.	I expect my relatives to help me when I need them	0.645
V3.	I owe it to my parents to do well in life	0.796
V4.	My best guide to behavior is my parents' teachings	0.837
V5.	Aging parents should live with their relatives	0.494
V6.	All adults should be respected	0.681
V7.	Relatives are more important than friends	0.729
	Negative Screening Emotion	
V1.	When I think about getting a colorectal cancer screening I get very scared	0.913
V2.	Colorectal cancer screenings are extremely embarrassing	0.897
	Thinking about getting a colorectal cancer screening makes me terribly	
V3.	anxious	0.909
	Post-test Screening Intention	
	I intend to get a colorectal cancer screening test sometime in the next 6	
<u>V1.</u>	months	0.933
	How likely is it that you will try to get screened for colorectal cancer in the	0.000
V2.	next 6 months?	0.938
1/2	How likely is it that you will get screened for colorectal cancer in the next	0.005
V3.	6 months?	0.905
V/A	How much effort are you prepared to exert in order to get screened for	0.975
V4.	Do you feel that you have committed yourself to a definite course of action	0.875
V5	to get screened for colorectal cancer?	0.886
• 5.	Do you feel that you have committed yourself to make use of any	0.000
V6	opportunity to get screened for colorectal cancer?	0 894
	How determined do you feel at this moment to get screened for colorectal	0.071
V7.	cancer?	0.853

A Kaiser-Meyer-Olkin (KMO) correlation of 0.70 was used to indicate if a factor analysis was warranted. Bartlett's test of sphericity was used to determine adequacy of the relationships

between the variables. Each latent variable had high KMO correlations and each variable's Bartlett's test was significant (See Table 4). An exploratory factor analysis was conducted with the four scales (pre-test intention to screen, familism, negative screening emotion, and post-test intention to screen) to assess how each item contributed to the variables (See Table 5). Results showed that for pre-test screening intention 72% of the variance was explained by a one-factor solution. For attitudinal familism, 50% of the variance was explained by one factor, and 65% was explained by a two-factor solution. For negative screening emotion, 82% of the variance was explained by a one-factor solution. For post-test screening emotion, 80% of the variance was explained by one factor.

Multicollinearity Statistics

To check for multicollinearity, the data was examined for high bivariate correlations (0.90 or higher) between independent variables, and the VIF (5 or higher) and tolerance (less than 0.20) were also examined. There were no high bivariate correlations (See Table 6). The VIF and tolerance statistics also indicated the absence of multicollinearity (See Table 7). Multicollinearity was determined not to be an issue in the data analysis.

	Age	Edu	Income	Int group	Spanish
Age	1				
Education	-0.123	1			
Income	0.175	0.001	1		
Intervention	-0.008	0.069	0.075	1	
Spanish	-0.096	-0.12	-0.144	.296**	1
Familism	-0.032	0.002	-0.155	0.067	0.192
Negative Emotion	-0.119	-0.155	-0.166	0.132	-0.016
Post-test					
Intervention	-0.099	-0.022	-0.116	-0.022	.214*
Pre-test					
Intervention	-0.103	0.005	-0.113	0.009	0.142

 Table 6. Bivariate correlations between variables

Notes: *Correlations significant at the 0.05 level; **Correlations significant at the 0.001 level.

			Post-test	
	Atti. Fam	Neg Emo	Int.	Pre-Test
Age Education				
Income Intervention Spanish				
Familism	1			
Negative Emotion	0.203	1		
Post-test Intervention	.310**	.303**	1	
Pre-test Intervention	.280**	.302**	.844**	1

Table 6 (cont). Bivariate correlations statistics.

Notes: *Correlations significant at the 0.05 level; **Correlations significant at the 0.001 level.

Variable	Tolerance	VIF
Intervention Group	0.826	1.2
Pre-test intention	0.811	1.2
Attitudinal Familism	0.836	1.2
Negative Screening Emotion	0.812	1.2
Female	0.801	1.25
Spanish	0.712	1.4
Education (Above 6th)	0.863	1.2
Income (Above \$10,000)	0.763	1.3
Has Insurance	0.814	1.2
Age	0.801	1.3
Familism*Intervention	0.864	1.157

Table 7. Tolerance and VIF Statistics

Manipulation Check

Before conducting the full analysis, a t-test was preformed to evaluate the effect of the intervention on the variable outcome of interest, post-test intention to screen for colorectal cancer. The t-test indicated that the intervention group (N=47) had a significant increase from 4.76 to 5.47 in intention to screen from pre-test to post-test (MD=0.705; S.D.=1.72; p-value <0.001). A t-test for the control group also indicated an increase in intention to screen from pre-test to post-test, from 4.79 to 5.43 (MD=0.551; S.D.=1.54; p-value =0.021). The manipulation check indicated that the intervention was successful in increasing participant intention to screen for colorectal cancer.

Hypotheses

H1: Participants who receive material with familism content will report higher intention to comply with CRC recommendations than those who receive material without familism content.

An ordinary least squares regression was used to test this hypothesis, which looked for an overall effect of the intervention. A model was run with all 11 variables (including the

moderation interaction term) entered into the model. The initial model revealed that there was no significant effect for the intervention variable (β =-0.352; S.E.=0.338; *p*-value=0.298).

Subsequent one-by-one backwards removal of non-significant variables in the model also did not include a significant intervention variable. The results of the regression revealed that including familism in the print messages did not increase the intervention group's intention to screen for CRC over the standard messages read by the control group. The first hypothesis was not supported (See Table 7).

H2: Screening emotions will mediate the effect between attitudinal familism and the intention to get a colorectal cancer screening.

This hypothesis inquired about the possible mediation effect of the psychological factor (negative screening emotions) between the cultural factor (attitudinal familism) and the health outcome (intention to get a CRC screening), as conceptualized in Betancourt's Model of Culture. To test this hypothesis a bootstrapping command was included during testing of the regression model to test for a significant indirect path between familism, negative screening emotions, and post-test screening intention. The results indicated that no significant indirect effect was present (β =0.0; C.I= (-0.017, 0.248) *p*-value=1.0). The *p*-value, along with a confidence interval that contains zero, indicated that there was no indirect effect between familism and negative screening emotion. The second hypothesis was not supported.

H3: The intention to obtain a CRC screening will be more pronounced among those who express higher *attitudinal familism* than those who do not.

This hypothesis tested the theory that high and low levels of attitudinal familism would serve as a moderator for the intention to screen for colorectal cancer. This was investigated by testing for the significance of an interaction term in the regression model. The interaction

variable tested was not significant in the model (β =-0.136; S.E.=0.174; *p*-value=0.436). The third hypothesis was not supported.

After using backwards selection, removing the least significant variable each time to obtain the final model, the only remaining significant predictor was pre-test intention to screen for CRC (β =0.835; S.E.= 0.055; *p*-value <0.001) (See Table 8). This was not a hypothesis put forth in the study, but is of interest since intention has been found to be a predictor of health behavior. The results of the regression model with all variables entered also shows two other variables, preference of Spanish and having insurance, that were approaching the 0.05 significance-level (See Table 7). Though these variables were not significant predictors in the final model, the approaching significance and direction of their estimators of each may still provide insight for how each might affect intentions to get a CRC screening among a group in which language and access to care are very important to consider.

Variable	β	SE	<i>p</i> -value
Post-test intention ON			
Intervention Group	0.352	0.338	0.298
Pre-test intention	0.806	0.059	<.001
Attitudinal Familism	0.057	0.088	0.517
Negative Screening Emotion	0.058	0.062	0.343
Female	-0.018	0.341	0.957
Spanish	1.029	0.547	0.060
Education (Above 6th)	-0.124	0.352	0.725
Income (Above \$10,000)	0.120	0.357	0.737
Has Insurance	-0.625	0.350	0.074
Age	0.015	0.024	0.544
Familism*Intervention	0.136	0.174	0.436

Table 7. Regression outcomes with all variables entered

Table 8. Final Regression Model						
Variable	β	SE	<i>p</i> -value			
Pre-test intention	0.806	0.059	<.001			

DISCUSSION

This study employed a pre-test post-test control randomized experimental group design to test the effectiveness of using the cultural factor of familism in CRC screening messages. Specifically, the study examined how using familism in print messages might contribute to Latino's intention to obtain a colorectal cancer screening. Results did not show significant differences between the intervention and control groups in post-test intention to screen for CRC. However, the intention to screen did significantly increase from pre-test to post-test for the both groups. The results also did not support the hypothesis that screening emotions served as a mediator between attitudinal familism and the intention to screen for colorectal cancer. Finally, there was no significant evidence that individuals with higher levels of attitudinal familism expressed higher intentions to get a colorectal cancer screening.

Implications of hypotheses testing

Both the intervention and control groups increased the intention to screen from pre-test to post-test. Even though, not significant in the regression model, this significant increase in both groups shows that overall this type of communication intervention can have a positive effect on Latino's intention to get the screening. Additionally, the larger increase among the intervention group implied that use of familism does enhance the message effects over standard materials. Overall, this hints that this type of culturally based intervention may be more effective than standard or translated messages.

The difficulties with testing message exposure may be some of the reason that the intervention did not produce a main effect. Message effects can be difficult to detect, and do not

always influence the receiver of the messages as the sender intends (Katz, & Lazarsfeld, 1970). Often the effects from the intervention are too small to detect, especially after controlling for other factors that contribute to the intention to screen for the cancer. Also, message effects rely on "sufficient" exposure to the media. The questions of sufficient exposure to media and how much is enough can pose issues for interventions like this (Katz, & Lazarsfeld, 1970). For example, some of the recruitment locations had distractions and could have taken away focused time for exposure to the intervention material. The distractions or shorted time may have limited the necessary exposure to the intervention and any effects that might have taken place were there "sufficient" exposure. And even if some sort of maximum exposure to the information could have been reached, simple media exposure is not always guaranteed to affect behavioral outcomes (Katz, & Lazarsfeld, 1970).

The issue of low-literacy and lack of familiarity with surveys may have affected how participants answered some of the questions. There were a small number of participants to whom the researcher read through the materials, and some participants commented on how long or how difficult the survey was to read. Additionally, the investigator had to explain the Likert scale to some participants and as noted previously, Latinos have been found to choose extremes when completing these scales (Steidel & Contreras, 2003).

Familism did not seem to affect how participants felt about CRC screenings, with no relationship between how the participants felt about family and negative emotions concerning CRC screening. This may have implications for the theoretical model proposed in the study. One implication is that particular cultural factors may be more connected to some psychological factors than others. In the Flynn (2011) study, fatalism directly affected the negative perceptions of getting a mammogram among Latinas in the sample. Fatalism is cultural concept with a

negative affect, encompassing the lack of control and fear that negatively affects health outcomes. Conversely, familism is a cultural concept with a positive affect related to social support and assistance that positively affects health outcomes. In the Flynn study, the negative concept of fatalism was connected to the negative concept of negative screening emotion. So, it may have been more appropriate to connect the positive concept of familism to another positive psychological concept.

The present study does support what other research has found on attitudinal familism being high among the Latino population, with over two-thirds of the sample reporting averages of 8 or above (out of 10) on the Likert-scale. These high scores indicate a ceiling effect taking place for this trait and may be the reason no moderation effect was found. Overall, levels of familism among the participants may have been so high that there were not sufficient low-levels with which to compare it. Theoretically, a communication intervention activating the trait of family should affect individuals that possess more of the trait. However, if a majority of the sample scores high on this scale, it may not be an appropriate indicator to conceptualize as high and low.

Other findings

There were other findings in the study that were of interest for future research aiming to harness cultural factors like familism in cancer screening messages for Latinos. The high reliabilities of the measurement scales and implications of some of the results from the regression analysis could be useful in continuing to address the importance of incorporating culture in cancer screening messages.

The study showed that the scales used to measure the latent variables were reliable measures of what they intended to measure among this population. The study supported the

reliability of two scales previously used for Latinos (familism and negative screening emotions), and supported the use of a scale that had never been used with this audience (intention to screen for CRC). The familism scale developed by Ramirez et al. (2004), showed strong internal consistency. In the present study, the relatively short measure using 7-items was as reliable as a scale that had 18-items (Steidel, et al., 2003). This has implications for parsimony in survey design and research, which could prove useful when dealing with audiences such as older Latinos who may have lower-literacy levels and more may experience survey fatigue.

The scale measuring negative emotions about CRC was adapted from a measure that explicitly sought to measure negative screening emotions about breast cancer among Latina women (Betancourt, Glynn, Riggs & Garberoglio, 2010). The adequate reliability of the scale in this study may be useful for futures studies among male and female Latinos in measuring negative screening emotions regarding CRC, and could be possibility adapted for other types of cancer screenings.

The measure used to assess intention to obtain a CRC screening had not been previously validated with Latino audiences. The 7-item scale was taken from a previous study that showed very high reliability among a predominately White sample (n=67), and was just as high at preand post-test among the Latino sample in the present study. Currently, there is no specific scale that has been designed or validated for Latino audiences to measure intention to screen for colorectal cancer. Neither is there such a scale validated for Spanish speakers. The high reliability scores on this scale have implications for its use among Spanish-speaking U.S. Latinos. This will be useful as the population continues to grow, age, and require more CRC screenings.

Other findings of interest emerge from the results of the final model. The fact that the final model consisted of the pre-test screening intention as a significant predictor of post-test screening intention is no surprise. It makes sense that an individual that expresses higher intentions to screen at pre-test, would express higher intentions at post-test measures. Intention is one of the closest predictors of behavior, and future research should seek to link this intention to a behavioral outcome.

Among the sample, preferring Spanish to English was not a statistically significant predictor of intention to screen, however the fact that it was approaching significance warrants attention. In the study, preference for Spanish language can serve as a proxy for acculturation (i.e. those who preferred Spanish are less acculturated than those who prefer English). In the model, preference for Spanish materials indicated (again, not significant) higher post-test screening intentions than those who preferred English materials. This finding has implications for how other cultural attributes may come into play with this health issue. The trend toward higher intention among those who prefer Spanish material may be related to the cultural factor of respeto, or respect. Respect as a cultural factor in the Latino community has been defined as "deferment to authority to some [medical] authority" (Buki, et. al., 2009). Expressions of this respect often include the tendency to over-agree with recommendations without question or consideration for other factors. At times, such high respect for authority has been found to interfere with medical treatment or recommendations. For example, studies have shown that in medical encounters Latinos are prone to state that they understand when they actually may not (Ashtel, 2002; Mathews-Juarez & Weinberg, 2004). In the case of the present study, the less acculturated Spanish-speaking participants may have been more likely to agree that they intend

to get the CRC screening out of respect for the individual administering the survey, who would have been considered an authority figure.

Having insurance was another variable that was not a significant predictor of the post-test intention to screen. But the positive direction of the estimator and approaching significance made it worth examining. More than half of the participants did not have health insurance, but in the model having insurance was negatively associated with post-test intention to screen. In other words, being insured meant lower intention to screen than being uninsured. This trend seems to contradict the notion that access to health care is one of the main predictors of using medical services like cancer screenings. However, at least one other study examining Latinos and CRC screening found that having insurance was not a significant predictor of getting the screening (Walsh, et al., 2004). The study found that instead, factors such as fear and embarrassment about the testing were significant negative predictors (Walsh, et al., 2004). This reiterates how important it is to address cultural factors in addition to access issues when trying to encourage CRC screening among Latinos. The fact that some Latinos have access to a CRC screening through insurance does not mean that they are automatically inclined to get it.

Limitations

This study has some limitations. A larger sample size would have provided more power with which to perform higher-level analyses. An analysis such as a structural equation model may have been more appropriate for analyzing latent variables. Though the sample size here was adequate for ordinary least squares regression, an SEM analysis would have been useful in accounting for the measurement error that occurs when measuring latent variables.

A second limitation of the study is related to dose of the intervention or exposure. Some of the locations where the researcher collected data provided less than ideal conditions for

participants to focus on the materials and the survey. This could have contributed to participants not completing the reading material or rushing to finish it. For example, participants taking the survey at a flea market location were usually with family or children, and often times appeared to be distracted. Other locations may have provided more ideal settings.

Another limitation of this study is that the findings may not be generalizable to all Latinos. Though a large percent of the sample came from Mexico, not all of the Latino had Mexican roots. It is important to realize the differences between various Latino countries and cultures.

Recommendations and Future Research

The public health issues facing Latinos remain important to address in the United States. Consideration should be made for differences between the distinct generations of Latinos. The need for this consideration manifested itself in dealing with the issue of CRC cancer screening, since the messages target older populations. The educational and literacy gaps for older generations of Latinos may be much larger than expected. Serious consideration for readability, literacy, and education level should be accounted for in the design of all communication materials geared toward an older Latino population. Study designs should strive to be as parsimonious as possible, only gathering essential data, so as not to contribute to survey fatigue.

There are several recommendations for recruitment in studies like this. Location of recruitment should be primarily considered. Recruitment was most effective in health settings (i.e. doctor's offices, clinics). The fact that the experiment dealt with health issues and the fact that potential participants were waiting for up to a half an hour, most likely contributed to the success of these facilities for participation. Indeed, individuals may have been primed due to the

medical setting. Other locations were not as successful in recruiting participants. While locations such as churches or flea markets contained numerous possible participants, often individuals were not interested in participating. At a flea market, individuals stated task-specific reasons (i.e. "I'm still shopping") or distraction (i.e. "The kids are with me") as reasons not to participate in the study. Many individuals at churches were leaving to have dinner with family or had other activities. It is recommended that recruitment take place at health-related locations such as clinics or doctors' offices waiting rooms, where individuals are in a health-related mindset and are waiting to been seen by a health professional. Here individuals were more likely to participate and engage in sustained conversation with the investigator on the health topic.

In recruiting Latino participants, it is important to be connected to a trusted name (such as the health professional) (Buki, et al., 2009; Antshel, 2002). Many individuals were happy to participate knowing that the investigator had the support of someone they already knew and trusted. Trust can also be fostered if the investigator makes sure to introduce him or herself, share some personal information, and ask the participant some preliminary questions about him or herself. This was a direct statement from some participants early on in the study, and improved recruitment toward the end of the study. This recommendation makes sense seeing as how culturally trust, respect, and personal relationships carry enormous weight among Latinos.

Future research should investigate the effectiveness of media other than print. For example, one study found that educational videos about CRC were effective in increasing CRC knowledge among low-literacy patients (Meade, 1994). A non-text presentation of the information might increase comprehension and might also provide more explicit opportunities for modeling the behavior.

Future research should also investigate the use of family-based messages with other cancers. Breast cancer has been much more extensively studied among Latina women and may be a health issue that is more familiar to the Latino community. Also, familism may be more salient with the issue of breast cancer since it is a women's issue that is generally more discussed in the public than colorectal cancer.

Future research guided by Betancourt's model of culture should consider how cultural factors and psychological factors are conceptually related. Perhaps, investigating a positive cultural factor such as familism would have more relevance to a positive concept such as personal motivation to be healthy instead of negative screening emotions. Other constructs to investigate might include self-efficacy, readiness to get the screening, or locus of control that can be borrowed from other theories.

Finally, an experiment looking for distinct effects of high and low levels of familism may be more successful examining the differences in Latinos versus Anglo Americans on the trait. The differences in the levels familism between these two groups would have been more readily perceived, and may provide a better mechanism through which to study how the concept of familism is most effective.

Conclusions

Including cultural factors such as familism in health communication messages is a viable, effective, and recommended way to enhance colorectal cancer screening messages for Latinos. If health communication scientists could learn to better harness culture through understanding its path to behavior, they could have a valuable tool with which to reach this target population regarding cancer and other diseases. Though there are many external factors that contribute to whether a Latino completes the behavior of getting the screening, culturally enhanced messages

may increase the message's ability to draw awareness and contextualize the problem. This increased attention and understanding can serve as a first step for following through with a recommendation. Health communication researchers and practitioners should strive to make all cancer education materials and messages as culturally relevant as possible.

WORKS CITED

- Afable-Munsuz, A., Liang, S. Y., Ponce, N. A., & Walsh, J. M. E. (2009). Acculturation and colorectal cancer screening among older Latino adults: differential associations by national origin. *Journal of General Internal Medicine*, 24(8), 963-970.
- Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*.
- Ajzen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure Sciences*, *13*(3), 185-204.
- Ajzen, I., & Fishbein, M. (1969). The prediction of behavioral intentions in a choice situation. Journal of Experimental Social Psychology, 5(4), 400-416.
- Almeida, J., Molnar, B. E., Kawachi, I., & Subramanian, S. V. (2009). Ethnicity and nativity status as determinants of perceived social support: testing the concept of familism. *Social Science and Medicine*, 68(10), 1852-1858.
- Anderson, J. C., & Gerbing, D. W. (1991). Predicting the performance of measures in a confirmatory factor analysis with a pretest assessment of their substantive validities. *Journal of Applied Psychology*, 76(5), 732.

Angele, G. (2013). SPSS Statistics 21.

Antshel, K. M. (2002). Integrating culture as a means of improving treatment adherence in the Latino population. *Psychology, Health & Medicine, 7*(4), 435-449.

Balcazar, H., Peterson, G. W., & Krull, J. L. (1997). Acculturation and family cohesiveness in

Mexican American pregnant women: Social and health implications. *Family and Community Health*, 20, 16-31.

- Baquet, C. R., & Hunter, C. P. (1995). Patterns in minorities and special populations. *Cancer Prevention and Control. New York, NY: Marcel Dekker*, 23-86.
- Berkowitz, Z., Hawkins, N. A., Peipins, L. A., White, M. C., & Nadel, M. R. (2008). Beliefs, risk perceptions, and gaps in knowledge as barriers to colorectal cancer screening in older adults. *Journal of the American Geriatrics Society*, 56(2), 307-314.
- Betancourt, H., & Flynn, P. M. (2009). The Psychology of Health: Physical Health and the Role of Culture and Behavior. *Handbook of U.S. Latino Psychology: Developmental and Community-Based Perspectives (Ed)*. Thousand Oaks: California: Sage.
- Betancourt, H., Flynn, P. M., & Ormseth, S. R. (2011). Healthcare mistreatment and continuity of cancer screening among Latino and Anglo American women in southern California. *Women and Health*, 51(1), 1-24.
- Betancourt, H., Flynn, P. M., Riggs, M., & Garberoglio, C. (2010). A cultural research approach to instrument development: the case of breast and cervical cancer screening among Latino and Anglo women. *Health Education Research*, 25(6), 991-1007.
- Betancourt, H., & Fuentes, J. L. (2001). Culture and Latino issues in health psychology *Handobook of cutural health pschology (Ed)*. San Diego: Academic Press.
- Betancourt, H., & López, S. R. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist*, *48*(6), 629.
- Blackhall, L. J., Murphy, S. T., Frank, G., Michel, V., & Azen, S. (1995). Ethnicity and attitudes toward patient autonomy. *JAMA: the journal of the American Medical Association*, 274(10), 820-825.

Brown, T. A. (2006). Confirmatory factor analysis for applied research: Guilford Press.

- Buki, L. P., Salazar, S.I., & Pitton, V. O. (2009). Design elements for the development of cancer education print materials for a Latina/o audience. *Health Promotion Practice*, 10(4), 564-572.
- Cameron, K. A., Francis, L., Wolf, M. S., Baker, D. W., & Makoul, G. (2007). Investigating Hispanic/Latino perceptions about colorectal cancer screening: a community-based approach to effective message design. *Patient Education and Counseling*, 68(2), 145-152.
- Campos, B., Schetter, C. D., Abdou, C. M., Hobel, C. J., Glynn, L. M., & Sandman, C. A. (2008).
 Familialism, social support, and stress: Positive implications for pregnant Latinas.
 Cultural Diversity and Ethnic Minority Psychology, 14(2), 155-162.
- Carrasquillo, O., Orav, E. J., Brennan, T. A., & Burstin, H. R. (1999). Impact of language barriers on patient satisfaction in an emergency department. *Journal of General Internal Medicine*, 14(2), 82-87.
- Carrillo, J. E., Treviño, F. M., Betancourt, J. R., & Coustasse, A. (2001). Latino access to health care: The role of insurance, managed care and institution. *Health issues in the Latino community (Ed)*. San Francisco: Jossey-Bass.
- Centers for Disease Control and Prevention. (2012). Cancer screening United States, 2010. MMWR. Morbidity and Mortality Weekly Report, 61(3), 41-45.
- Cheong, P. H. (2007). Health communication resources for uninsured and insured Hispanics. *Health Communication*, *21*(2), 153-163.
- Clayman, M. L., Manganello, J. A., Viswanath, K., Hesse, Bradford W., & Arora, N. K. (2010).
 Providing Health Messages to Hispanics/Latinos: Understanding the Importance of Language, Trust in Health Information Sources, and Media Use. *Journal of Health*

Communication, 15, 252-263.

- Dawson, E.J., Crano, W.D., & Burgoon, M. (1997). Refining the meaning and measurement of acculturation: Revisiting a novel methodological approach. *International Journal of Intercultural Relations*, 20(1), 97-114.
- Delgado, E. A., & Canabal, M. E. (2006). Factors associated with negative spillover from job to home among Latinos in the United States. *Journal of family and economic issues*, 27(1), 92-112.
- Desmond, M., & Turley, R. L. (2009). The Role of Familism in Explaining the Hispanic-White College Application Gap. *Social Problems*, *56*(2), 311-334.
- Diaz, J. A., Griffith, R. A., Ng, J. J., Reinert, S. E., Friedmann, P. D., & Moulton, A. W. (2002).
 Patients' use of the Internet for medical information. [Research Support, U.S. Gov't,
 P.H.S.]. *Journal of General Internal Medicine*, *17*(3), 180-185.
- Documet, P. I., & Sharma, R. K. (2004). Latinos' health care access: financial and cultural barriers. *Journal of Immigrant Health*, *6*(1), 5-13.
- Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Ross, J., Hawkins, J., Chyen, D. (2010). Youth risk behavior surveillance-United States, 2009. MMWR. Surveillance Summaries, 59(5), 1-142.
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior research methods, 28*(1), 1-11.
- Fernández, M. E., Gonzales, A., Tortolero-Luna, G., Partida, S., & Bartholomew, L. K. (2005).
 Using intervention mapping to develop a breast and cervical cancer screening program for Hispanic farmworkers: Cultivando La Salud. *Health Promotion Practice*, 6(4), 394-404.

- Ferrer, R. A., Klein, W. M., Zajac, L. E., Land, S. R., & Ling, B. S. (2012). An affective booster moderates the effect of gain- and loss-framed messages on behavioral intentions for colorectal cancer screening. *Journal of Behavioral Medicine*, 35(4), 452-461.
- Flynn, P. M. (2006). Motivated breast cancer screening behavior and its cultural antecedents: Loma Linda University.
- Flynn, P. M., Betancourt, H., & Ormseth, S. R. (2011). Culture, emotion, and cancer screening: an integrative framework for investigating health behavior. *Annals Of Behavioral Medicine: A Publication Of The Society Of Behavioral Medicine, 42*(1), 79-90.
- Franzini, L., Ribble, J.C., & Keddie, A.M. (2001). Understanding the Hispanic paradox. *Ethnicity and Disease*, *11*(3), 496.
- Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development*, 70, 1030-1044.
- Gaines, S. O., Jr., Marelich, W. D., Bledsoe, K. L., Steers, W. N., Henderson, M. C., Granrose, C. S., Page, M. S. (1997). Links between race/ethnicity and cultural values as mediated by racial/ethnic identity and moderated by gender. *Journal of Personality and Social Psychology*, *72*(6), 1460-1476.
- Gil, A. G., Wagner, E. F., & Vega, W. A. (2000). Acculturation, familism, and alcohol use among Latino adolescent males: Longitudinal relations. *Journal of Community Psychology*, 28(4), 443-458.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408-420.

Huerta, E. E. (2003). Cancer statistics for Hispanics, 2003: good news, bad news, and the need

for a health system paradigm change. *CA: A Cancer Journal for Clinicians, 53*(4), 205-207.

- Jaccard, J, & Wan, C. (1996). LISREL analyses of interaction effects in multiple regression. Newbury Park: Sage.
- Jandorf, L., Ellison, J., Villagra, C., Winkel, G., Varela, A., Quintero-Canetti, Z., DuHamel, K.
 (2010). Understanding the barriers and facilitators of colorectal cancer screening among low income immigrant Hispanics. *Journal of Immigrant and Minority Health*, 12(4), 462-469.
- Kaiser, H. F. (1970). A second generation little jiffy. Psychometrika, 35(4), 401-415.
- Kaiser, H. F. (1974). An index of factorial simplicity. Psychometrika, 39(1), 31-36.
- Katz, & Lazarsfeld. (1970). Personal Influence, The part played by people in the flow of mass communications: Transaction Publishers.
- Klabunde, C. N., Cronin, K. A., Breen, N., Waldron, W. R., Ambs, A. H., & Nadel, M. R. (2011).
 Trends in colorectal cancer test use among vulnerable populations in the United States.
 Cancer Epidemiology Biomarkers & Prevention, 20(8), 1611.
- Kline, M. V., & Huff, R. M. (2008). Health promotion in multicultural populations: a handbook for practitioners and students: Sage Publications, Inc.
- Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches. *Health Education and Behavior*, 30(2), 133-146.
- Kreuter, M. W., & McClure, S. M. (2004). The role of culture in health communication. *Annual Review of Public Health*, 25, 439-455.

Ku, L., & Waidmann, T. (2003). How race/ethnicity, immigration status and language affect

health insurance coverage, access to care and quality of care among the low-income population: Kaiser Commission on Medicaid and the Uninsured.

- Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., & Bautista, D. E. (2005). ACCULTURATION AND LATINO HEALTH IN THE UNITED STATES: A Review of the Literature and its Sociopolitical Context. *Annual Review of Public Health, 26*(1), 367-397.
- Larkey, L. (2006). Las mujeres saludables: reaching Latinas for breast, cervical and colorectal cancer prevention and screening. *Journal of Community Health*, *31*(1), 69-77.
- Losada, A., Knight, B., Márquez-González, M., Montorio, I., Etxeberría, I., & Penacoba, C. (2008). Confirmatory factor analysis of the familism scale in a sample of dementia caregivers. *Aging and Mental Health*, 12(4), 504-508.
- MacCallum, R., Browne, M., & Sugawara, H. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, *1*(2), 130.
- Magaña, S. M. (1999). Puerto Rican families caring for an adult with mental retardation: Role of familism. *American Journal on Mental Retardation*, *104*(5), 466-482.
- Manos, M., Leyden, W.A., Resendez, C.I., Klein, E.G., Wilson, T.L., & Bauer, H.M. (2001). A community-based collaboration to assess and improve medical insurance status and access to health care of Latino children. *Public Health Reports*, *116*(6), 575.

Marin, G., & Marin, B.V.O. (1991). Research with Hispanic populations: Sage Publications, Inc.

Marks, J. P., Reed, W., Colby, K., & Ibrahim, S.A. (2004). A culturally competent approach to cancer news and education in an inner city community: focus group findings. *Journal of Health Communication*, 9(2), 143-157.

Matthews-Juarez, P., & Weinberg, A. D. (2004). Cultural Competence in Cancer Care: A Health

Professional's Passport: Office of Minority Health, US Department of Health & Human Services.

- McMillin-Williams, K. (2006). Culture and psychological influences on diabetes prevention: Loma Linda University.
- Meade, C. D., McKinney, W. P., & Barnas, G.P. (1994). Educating patients with limited literacy skills: the effectiveness of printed and videotaped materials about colon cancer. *American Journal of Public Health*, 84(1), 119-121.
- Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, *58*(4), 525-543.
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). Applied multivariate research: Design and interpretation: Sage Publications, Incorporated.
- Mindel, C. H. (1980). Extended familism among urban Mexican Americans, Anglos, and Blacks. *Hispanic Journal of Behavioral Sciences*.
- Moore, J. W. (1993). In the barrios: Latinos and the underclass debate: Russell Sage Foundation Publications.
- Muthén, L. K., & Muthén, B. O. (1998-2011). Mplus User's Guide. Los Angeles, CA: Muthén & Muthén.
- Neuhauser, L., & Kreps, G. L. (2003). Rethinking communication in the e-health era. *Journal of Health Psychology*, 8(1), 7-23.
- Niemeyer, A. E., Wong, M.M., & Westerhaus, K. J. (2009). Parental involvement, familismo, and academic performance in Hispanic and Caucasian adolescents. *North American Journal of Psychology*, 11(3), 613-632.

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. Quality

& Quantity, 41(5), 673-690.

- Passel, J. S., Cohn, D., & Lopez, M. H. (2011). Hispanics account for more than half of nation's growth in past decade. *Pew Hispanic Center. Retrieved August*, 4, 2011.
- Peña, J. B., Kuhlberg, J. A., Zayas, L. H., Baumann, A. A., Gulbas, L., Hausmann-Stabile, C., & Nolle, A. P. (2011). Familism, family environment, and suicide attempts among Latina youth. *Suicide and Life-Threatening Behavior*, 41(3), 330-341.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers,* 36(4), 717-731.
- Preacher, K. J, & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891.
- Prochaska, J. O., & DiClemente, C. C. (1986). Towards a Comprehensive Model of Change, chapter in Miller WR & Heather N (Eds) Treating Addictive Behaviours: processes of change: New York: Plenum.
- Ramirez, A. G., Suarez, L., Laufman, L., Barroso, C., & Chalela, P. (2000). Hispanic women's breast and cervical cancer knowledge, attitudes, and screening behaviors. *American Journal of Health Promotion*, 14(5), 292-300.
- Ramirez, J. R., Crano, W. D., Quist, R., Burgoon, M., Alvaro, E. M., & Grandpre, J. (2004).
 Acculturation, familism, parental monitoring, and knowledge as predictors of marijuana and inhalant use in adolescents. *Psychology of Addictive Behaviors, 18*(1), 3.
- Resnicow, K., Baranowski, T., Ahluwalia, J. S., & Braithwaite, R. L. (1999). Cultural sensitivity in public health: defined and demystified. *Ethnicity and Disease*, *9*(1), 10-21.

- Sabogal, F., Marín, G., Otero-Sabogal, R., Marín, B. V., & Perez-Stable, Eliseo J. (1987).
 Hispanic Familism and Acculturation: What Changes and What Doesn't? *Hispanic Journal of Behavioral Sciences*, 9(4), 397-412.
- Sheinfeld G., S., & Heck, J. E. (2005). Cancer screening among Latino subgroups in the United States. *Preventive Medicine*, *40*(5), 515-526.
- Siegel, R., Naishadham, D., & Jemal, A. (2012). Cancer statistics, 2012. *CA: A Cancer Journal for Clinicians*.
- Steidel, A. G. L., & Contreras, J. M. (2003). A new familism scale for use with Latino populations. *Hispanic Journal of Behavioral Sciences*, 25(3), 312-330.
- Stein, J. A., & Fox, S. A. (1990). Language preference as an indicator of mammography use among Hispanic women. *Journal of the National Cancer Institute*, *82*(21), 1715-1716.
- Steinwachs, D., Allen, J. D., Barlow, W. E., Duncan, R. P., Egede, L. E., Friedman, L. S., Virnig, B. A. (2010). National Institutes of Health state-of-the-science conference statement: Enhancing use and quality of colorectal cancer screening. *Annals of Internal Medicine, 152*(10), 663-667.
- Stockburger, D. W. (1998). Multivariate statistics: concepts, models, and applications: David W. Stockburger.
- Templin, J. (2012, January 25, 2012). Introduction to Maximum Likelihood and Missing Data.
- Theuer, C. P., Wagner, J. L., Taylor, T. H., R Brewster, W., Tran, D., E Mclaren, C., & Anton-Culver, H. (2001). Racial and ethnic colorectal cancer patterns affect the costeffectiveness of colorectal cancer screening in the United States. *Gastroenterology*, *120*(4), 848-856.
- U.S. Preventive Services Task Force. (2010). Guide to Clinical Preventive Services Rockville,

MD: Retrieved from http://www.ahrq.gov/clinic/pocketgd.htm.

- U.S. Bureau of the Census. (May 2011). The Hispanic Population, Census 2010 Brief.
- Vega, W. A. (1990). Hispanic families in the 1980s: A decade of research. *Journal of Marriage and the Family*, 52(4), 1015-1024.
- Vega, W. A., & Gil, A. G. (1998). A model for explaining drug use behavior among Hispanic adolescents. *Drugs & society*, 14(1-2), 57-74.
- Weinberg, D. S., Miller, S., Rodoletz, M., Egleston, B., Fleisher, L., Buzaglo, J., & Bieber, E.
 (2009). Colorectal cancer knowledge is not associated with screening compliance or intention. *Journal of Cancer Education*, 24(3), 225-232.
- Tabachnick, B. G, Fidell, L. S, & Osterlind, S. J. (2001). Using multivariate statistics. 6th ed. Boston : Allyn and Bacon.
- Walsh, J. M., Kaplan, C. P, Nguyen, B., Gildengorin, G., McPhee, S. J., & Pérez-Stable, E. J.
 (2004). Barriers to colorectal cancer screening in Latino and Vietnamese Americans. *Journal of General Internal Medicine*, 19(2), 156-166.
- Zhao, X., Lynch, J. G, & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197-206.

APPENDICES

Appendix A

Consent Form in Spanish

Querido participante:

Gracias por participar en el estudio titulado, **When Translation Isn't Enough: Testing the Effects of Culturally Targeted Colorectal Cancer Screening Messages for the Latino Population** (Cuando no es suficiente la traducción: Probando los efectos de mensajes de la prueba de detección de cáncer colorrectal para los Latinos) que se dirige Dr. Mark Wilson de la University of Georgia. Everett Long, (Candidato doctoral al UGA College of Public Health) es el co-director del estudio.

El propósito del estudio es para investigar si los mensajes con proponentes culturales pueden aumentar las intenciones de los latinos para obtener de la prueba de detección de cáncer colorrectal. Varios sitios elegidos participará en el noroeste de Georgia.

Participación en el estudio es completamente voluntaria y en cualquier momento puede elegir no participar o terminar, sin pérdida de los beneficios que le ofrece. Recibirá un incentivo de una tarjeta de regalo \$5 para su participación. Todos los participantes firmará una recibo como prueba de haber recibido el incentivo. Esta información se compartirá con la oficina financiero del University of Georgia College of Public Health para reembolosos para el investiagor.

Como un voluntario del estudio hará un encuesta en una ocasión. Contestará preguntas sobre de la prueba de detección de cáncer colorrectal. Debe te tomar 20 minutos para completar. Es importante que conteste todas las preguntas. Sin embargo, si hay pregunta que prefiere no contestar, la puede dejar en blanco y pasar a la pregunta siguiente.

Los beneficios de participar en este estudio son que obtendrá información sobre la prueba de detección de cáncer colorrectal y recursos para obtener más información. No espera ninguna incomodidad, estrés, ni riesgo en este estudio. Ni completar ni no completar esta encuesta afectará su posición como cliente en el sitio donde Ud. está participando. **TODAS LAS ENCUESTAS SON ANONIMOS.** No coleccionará ningún tipo de información de identificación (nombre, dirección, fecha de nacimiento) para este estudio.

Si usted tiene cualquier pregunta sobre este proyecto, favor de llamarme al (706) 542-1221 mandar un e-mail a mwilson@uga.edu. Preguntas o preocupaciones sobre sus derechos como un participante de investigación, se dirige a: The Chairperson, University of Georgia Institutional Review Board, 629 Boyd GSRC, Athens, Georgia 30602-7411; teléfono (706) 542-3199; email irb@uga.edu.

Por completar el encuesta, asiente participare en el estudio.

Gracias por su tiempo y cooperación en está encuesta.

Sinceramente, Mark Wilson *Consent form in English* Dear Participant:

Thank you for participating in the research study titled, **When Translation Isn't Enough: Testing the Effects of Culturally Targeted Colorectal Cancer Screening Messages for the Latino Population** that is being conducted under Mark Wilson, Ph.D, at the university of Georgia. Everett Long, (Ph.D Candidate in the UGA College of Public Health) is the Co-Principal Investigator on this study.

The purpose of the study is to see whether culturally enhanced messages can increase the intentions of Latinos to participate in colorectal cancer screenings. Selected sites in Northeast Georgia will participate in the experiment.

Participation in the study is strictly voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. You will receive an incentive of a \$5 gift card for your participation. All participants will sign a receipt to prove obtaining the incentive. This information will be shared with the UGA College of Public Health business office for reimbursements for the researcher.

As a volunteer in this study, you will complete the participant questionnaire on one occasion. You will briefly answer questions about your past colorectal cancer screening behavior, your feelings about colorectal cancer screenings, your feelings about the role of family in your life, and your intentions to get screened in the future for colorectal cancer. This should only take about 20 minutes to complete. It is important that you answer all questions. However, if there is a question you would rather not answer, you may skip it and go on to the next question.

The benefits of participating in this study are that you will gain knowledge about colorectal cancer screening recommendations and be provided with resources to get additional information. No discomforts, stresses, or risks are foreseen and completing or not completing this questionnaire will not affect your standing as a client at the location where you are participating. **All questionnaires are anonymous.** No identifying information (name, birthday) will be collected for this study.

If you have any questions about this research project, please feel free to call me at (706) 542-4364 or send an e-mail to mwilson@uga.edu. Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, 629 Boyd GSRC, Athens, Georgia 30602-7411; telephone (706) 542-3199; email address irb@uga.edu.

By completing, you are agreeing to participate in the above described research project. Thank you for your time and cooperation in completing this survey.

Sincerely,

Mark Wilson

Appendix B

Experimental Group Brochure in Spanish (Inside Panels)



Entre los tipos de cáncer que afectan tanto a

hombres como a mujeres, el cáncer colorrectal es la segunda causa de muerte por cáncer en los Estados Unidos.

Pero si todas las personas de 50 años o mayores se hicieran las pruebas de detección con regularidad, por lo menos un 60% de las muertes causadas por este cáncer podrían evitarse.



Hágalo para usted mismo, hágalo para su familia

• La prueba de detección le ayudará descubrir y remover cánceres, y le dará más tiempo con los que son los más importante para usted.

 Tomarse tiempo para hacerle la prueba. Si soportando su familia es importante para usted, una prueba del cáncer colorrectal le puede dar más tiempo para el proveedor de la familia.

Priorice la prueba de detección de cáncer colorrectal para usted mismo y para tu familia. Asegurele a su familia que estará para las cosa importante tal como el cumpleaños de su nieta, la graduación de su sobrino o la boda de su ahijado.



Si tiene 50 años o más, hacerse una prueba de cáncer colorrectal puede asegurarle y su familia que esté sano. Si usted tiene un pariente que tiene más que 50 años, debe de animarlos para que se hagan la prueba de detección de cáncer colorrectal.

Preginteles a los parientes que se le han hecho la prueba de detección de cáncer colorrectal, sobre su experiencia. Puede que ellos le den un punto de vista personal sobre como la prueba les ayudo prevenir el cáncer, referirle a un médico para hacer una cita para la prueba, o darles consejos en como prepararle para la prueba.

Cómo saber si me debería. hacer la prueba:

Usted debe hacerse la prueba de cáncer colorrectal si :

- 1. Tiene mas de 50 años
- 2. Usted es afroamericano
- Tiene padres, hermano/as o hijo/as con pólipos
- Tiene una enfermedad del sistema digestivo tal como Crohn

¿Por qué me debo hacer la prueba?

• Las pruebas se realizan rápido y con poca incomodidad.

• Las pruebas de detección pueden detectar protuberancias llamadas pólipos, para que se las extriagan *antes* de que se transformen en cáncer.

• Las pruebas de detección pueden detectar el cáncer a tiempo cuando hay buena oportunidad para curarlo.

• Un resultado negativo le puede asegurar que no tiene cáncer colorrectal.

• Quitar los pólipos puede prolongar su vida y contribuir a una mejor calidad de la vida.
Experimental Group Brochure in Spanish (Outside Panels)

¿Qué es el CANCER COLORRECTAL?

El cáncer es una enfermedad que provoca el crecimiento descontrolado de las células. El cáncer colorrectal es un cáncer que aparece en el colon o er



El colon es el intestino grueso. El recto es el conducto que conecta el colon con el ano.

Entre los tipos de cáncer que afectan tanto a hombres como a mujeres, el cáncer colorrectal es la segunda causa de muerte por cáncer en los Estados Unidos.

Pero si todas las personas de 50 años o mayores se hicieran las pruebas de detección con regularidad, por lo menos un 60% de las muertes causadas por este cáncer podrían evitarse.



Hágalo para usted mismo, hágalo para su familia

• La prueba de detección le ayudará descubrir y remover cánceres, y le dará más tiempo con los que son los más importante para usted.

 Tomarse tiempo para hacerle la prueba. Si soportando su familia es importante para usted, una prueba del cáncer colorrectal le puede dar más tiempo para el proveedor de la familia.

Priorice la prueba de detección de cáncer colorrectal para usted mismo y para tu familia. Asegúrele a su familia que estará para las cosa importante tal como el cumpleaños de su nieta, la graduación de su sobrino o la boda de su ahijado.



Si tiene 50 años o más, hacerse una prueba de cáncer colorrectal puede asegurarle y su familia que esté sano. Si usted tiene un pariente que tiene más que 50 años, debe de animarlos para que se hagan la prueba de detección de cáncer colorrectal.

Pregúnteles a los parientes que se le han hecho la prueba de detección de cáncer colorrectal, sobre su experiencia. Puede que ellos le den un punto de vista personal sobre como la prueba les ayudo prevenir el cáncer, referirle a un médico para hacer una cita para la prueba, o darle consejos en como prepararle para la prueba.

Cómo saber si me debería. hacer la prueba:

Usted debe hacerse la prueba de cáncer colorrectal si :

- 1. Tiene mas de 50 años
- 2. Usted es afroamericano
- Tiene padres, hermano/as o hijo/as con pólipos
- Tiene una enfermedad del sistema digestivo tal como Crohn

¿Por qué me debo hacer la prueba?

• Las pruebas se realizan rápido y con poca incomodidad.

• Las pruebas de detección pueden detectar protuberancias llamadas pólipos, para que se las extriagan *antes* de que se transformen en cáncer.

• Las pruebas de detección pueden detectar el cáncer a tiempo cuando hay buena oportunidad para curarlo.

• Un resultado negativo le puede asegurar que no tiene cáncer colorrectal.

• Quitar los pólipos puede prolongar su vida y contribuir a una mejor calidad de la vida.

Experimental Group Brochure in English (Inside Panels)

Hay 3 tipos de pruebas de detección

FOBT de alta sensibilidad (análisis de material fecal) Frecuencia: Una vez cada año

 Esta prueba detecta sangre en la materia fecal.
 En su casa, usted utiliza un palillo o pincel para obtener una pequeña muestra de materia fecal.

 Luego, lleva la muestra al médico o al laboratorio, donde son examinadas para detectar cualquier anomalía.

• Si se encuentra pólipos, puede ser que haga falta una colonoscopia para removerlos.

\diamond

Sigmoidoscpopia flexible Frecuencia: Una vez cada5 años

 El médico le introduce por el recto un tubo corto, delgado, flexible con una luz y busca pólipos o cáncer en el recto y en el tercio inferior del colon.

 Si encuentra pólipos, puede ser que haga falta una colonoscopía para removerlos.

Colonscopia

Frecuencia: Una vez cada 10 años • Esta prueba es parecida a la sigmoidoscopia flexible. La diferencia consiste en que el médico utiliza un tubo más lago, delgado, flexible y con una luz para buscar pólipos o cáncer en el recto y en todo el colon.

 Durante la prueba puede encontrar y extragar la mayoría de los pólipos y algunos cánceres. Recursos Para obtener más información, viste <u>www.cdc.gov/spanish/cancer/colorectal/sff</u> o llame al 1-800-CDC-INFO (1-800-232-4636—oprima 2 para español). Si tiene problemas de audición, llame

al 1-888-232-6348.

Para obtener más información sobre la cobertura de Medicare, Llame al 1-800-MEDICARE (1-800-633-4227—oprima 2 para español) o visite www.meidcare.gov/Spanish/ Overiview.asp LAS PRUEBAS DE DETECCION DE CANCER COLORRECTAL PUEDEN SALVAR SU VIDA Y LAS DE SU FAMILIA



Experimental Group Brochure in English (Outside Panels)



How Often: Every 10 years. • This is similar to flexible sigmoidoscopy, except the doctor uses a longer, thin, flexible, lighted tube to check for polyps or cancer inside the rectum and the ENTIRE colon.

• During the test, the doctor can find and remove most polyps and some cancers.

Resources For more information, visit www.cdc.gov/screenforlife or call 1-800-CDC-INFO (1-800-232-4636).

For TTY, call 1-888-232-6348. To find out about Medicare coverage, call 1-800-MEDICARE 1800-633-4227 OR VISIT WWW.MEDICARE.GOV COLORECTAL CANCER SCREENINGS CAN SAVE YOU & YOUR FAMILIES' LIVES



Control Group Brochure in Spanish (Inside Panel)





Control Group Brochure in Spanish (Outside Panel)

Hay 3 tipos de pruebas de detección

FOBT de alta sensibilidad (análisis de material fecal) Frecuencia: Una vez cada año

 Esta prueba detecta sangre en la materia fecal.
 En su casa, usted utiliza un palillo o pincel para obtener una pequeña muestra de materia fecal.

 Luego, lleva la muestra al médico o al laboratorio, donde son examinadas para detectar cualquier anomalía.

• Si se encuentra pólipos, puede ser que haga falta una colonoscopia para removerlos.

Sigmoidoscpopia flexible

Frecuencia: Una vez cada5 años

 El médico le introduce por el recto un tubo corto, delgado, flexible con una luz y busca pólipos o cáncer en el recto y en el tercio inferior del colon.

• Si encuentra pólipos, puede ser que haga falta una colonoscopía para removerlos.



Colonscopia

Frecuencia: Una vez cada 10 años Esta prueba es parecida a la sigmoidoscopia flexible. La diferencia consiste en que el médico utiliza un tubo más lago, delgado, flexible y con una luz para buscar pólipos o cáncer en el recto y en todo el colon.

 Durante la prueba puede encontrar y extragar la mayoría de los pólipos y algunos cánceres. Recursos Para obtener más información, viste www.cdc.gov/spanish/cancer/colorectal/sff o llame al 1-800-CDC-INFO (1-800-232-4636—oprima 2 para español). Si tiene problemas de audición, llame al 1-888-232-6348.

Para obtener más información sobre la cobertura de Medicare, Llame al 1-800-MEDICARE (1-800-633-4227—oprima 2 para español) o visite www.meidcare.gov/Spanish/ _____Overiview.asp

LAS PRUEBAS DE DETECCION DE CANCER COLORRECTAL SALVAN VIDAS



Control Group Brochure in English (Inside Panels)



Control Group Brochure in English (Outside Panels)

There are 3 Types of Screening Tests: Fecal Occult Blood Test (FOBT) How Often: Once a year. • This test looks for blood in the stool (poop). You receive a test kit from your health care provider and do the test at home. • At home, you use a stick to put a small amount of stool on the test paper. • You return the kit to the doctor or a lab, where stool samples are checked for anything unusual. • If polyps are found, you may need a colonoscopy at a later time to remove them. \diamond Flexible Sigmoidoscopy How Often: Every 5 years. • The doctor uses a short, thin, flexible, lighted tube to check for polyps inside the rectum and LOWER THIRD of the colon. · If polyps are found, you may need a colonoscopy at a later time to remove them. \diamond Colonoscopy How Often: Every 10 years.

• This is similar to flexible sigmoidoscopy, except the doctor uses a longer, thin, flexible, lighted tube to check for polyps or cancer inside the rectum and the ENTIRE colon.

• During the test, the doctor can find and remove most polyps and some cancers.

Resources For more information, visit www.cdc.gov/screenforlife or call 1-800-CDC-INFO (1-800-232-4636).

For TTY, call 1-888-232-6348. To find out about Medicare coverage, call 1-800-MEDICARE 1800-633-4227 OR VISIT WWW.MEDICARE.GOV

COLORECTAL CANCER SCREENINGS CAN SAVE LIVES



Appendix C Instruments for Experiment

Instrument in Spanish

Indique SI o NO a las preguntas siguientes:

1. ¿Ha usted tenido una colonoscopia en lo últimos 10 años? SI NO

2.¿ Ha tenido una sigmoidoscopia flexible en los últimos 5 años? SI NO

3. ¿Ha tenido un FOBT/ (análisis de material fecal)? SI NO

Aquí indique en una escala de 1-10 su intención de hacerse una prueba de cáncer colorrectal. Favor de leer cada pregunta con cuidado porque las repuestas podrían ser diferentes. Encerrar la respuesta en un circulo.

¿Que tan probable es que usted se haga una colonoscopia dentro de 6 meses? 1 Probable No muv Muv Probable Probable ¿Oue tan probable es que usted se haga una sigmodoscopia flexible dentro de 6 meses? 2. 1------2-----3-----4------5-----6-----7-----8------9-----10 No muy Muv Probable Probable Probable 3. ¿Que tan probable es que usted se haga una FOBT (análisis de materia fecal) dentro de 6 meses? No muy Muy Probable Probable Probable **Intento hacerme** una prueba de detección de cáncer colorrectal dentro de 6 meses. 4. Totalmente en Ni de acuerdo. Muy de Desacuerdo ni en des acuerdo Acuerdo ¿Que tan probable es que Ud. intentará a hacerse una prueba de detección de cáncer 5. colorrectal dentro de 6 meses?

12		5	-67	8	9	-10
No muy						Muy
Probable	I	robable				Probable

 6. ¿Qué probabilidades hay que Ud. SI, vaya a hacerse una prueba de detección de cáncer colorrectal dentro de 6 meses

 1-----2-----3-----4-----5-----6-----7----8-----9-----10

 No muy
 Muy

 Probable
 Probable

7. ¿Está Ud. preparado **hacer un esfuerzo** para que se haga una prueba de detección de cáncer colorrectal dentro de 6 meses?

12	35	7	8	910
Ningún	Algo de	2		Mucho
Esfuerzo	esfuerz	0		Esfuerzo

8. ¿Se siente Ud. comprometido que tiene un plan de acción definitivo para hacerse la prueba de detección de cáncer colorrectal?

12	3	4	5	6	7	8	9	10
No muy	-		Probable	;		-	-	Muy
Probable								2

9. ¿Se siente Ud. comprometido que usará cualquier oportunidad para que se haga una prueba de detección de cáncer colorrectal?

12	36	710
Definitivamente	Indeciso	Definitivamente Sí
No		

10. ¿En este momento se siente decidido realizar una prueba de detección de cáncer colorrectal?1-----2-----3------5-----6------7-----8------9-----10DefinitivamenteIndecisoDefinitivamente Sí

Aquí indique en una escala de 1-10 sobre sus percepciones con respecto al obtener una prueba de cáncer colorrectal. Favor de leer cada pregunta con cuidado porque las repuestas podrían ser diferentes. Encerrar la respuesta en un circulo.

1. Pensar en la	pruebas de o	detección de	e cáncer co	olorrecta	l me da i	niedo.	
12		! 5	6	7	8	9	10
Totalmente en		Ni de acu	erdo,				Muy de
Desacuerdo		ni en desa	acuerdo				Acuerdo

2. Las pruebas	de detección	de cáncer	colorrect	al me da	n vergüen	za.	
12	4	5	6	7	8	9	10
Totalmente en		Ni de acu	uerdo,			Mu	y de
Desacuerdo		ni e	en desacu	erdo			Acuerdo

3. Al pensar en una pruebas de detección de cáncer colorrectal me pongo muy ansioso.

12		5	67	8	910
Totalmente en	5	Ni de acuerdo),	0	Muy de
Desacuerdo		ni en de	sacuerdo		Acuerdo

Aquí indique en una escala de 1-10 sobre sus percepciones sobre la familia. Favor de leer cada pregunta con cuidado porque las repuestas podrían ser diferentes. Encerrar la respuesta en un circulo.

1. Pienso en lo que es buena para mi familia antes de que pienso en lo que es bueno para mí mismo.

12	5	10
Totalmente en	Ni de acuerdo,	Muy de
Desacuerdo	ni en desacuerdo	Acuerdo

2. Espero ayuda	de mis parientes cuando les necesito	
12	378-	10
Totalmente en	Ni de acuerdo,	Muy de
Desacuerdo	ni en desacuerdo	Acuerdo

3. Les debo a	mis padres tener mucho éxito en m	ni vida		
12	366	78	9	10
Totalmente en	Ni de acuerdo,			Muy de
Desacuerdo	ni en desacuerdo			Acuerdo

4. El mejor e	jemplo de comportamiento viene de mis padres	
12	378	10
Totalmente en	Ni de acuerdo,	Muy de
Desacuerdo	ni en desacuerdo	Acuerdo

5. Los padres	mayores de edad deben vivir con sus hijos	
12	378	10
Totalmente en	Ni de acuerdo,	Muy de
Desacuerdo	ni en desacuerdo	Acuerdo

6. Los adultos	s deben de ser respetad	dos		
12	3	6	78	10
Totalmente en	Ni de a	cuerdo,		Muy de
Desacuerdo	ni en de	esacuerdo		Acuerdo

7. La familia	es más in	nportan	ite que l	los amigo)S			
12	3	4	5	6	7	8	9	10
Totalmente en		N	li de aci	uerdo,				Muy de
Desacuerdo		N	li de acu	uerdo,				Acuerdo

- ¿Cuántos años tiene Ud? _____
 Incluyéndose a Ud. mismo, ¿cuántas personas viven en su casa? ______
 ¿De cúal país viene su familia? ______
- 4. ¿Cuál es el nivel más alta de educación que tiene?

La primaria (6to)

Segundaria (no completo el bachillerato)

El bachillerato/completo la preparatoria

Algo de la universidad

Título universitario

Posgrado

Indique su salario anual?

Menos de \$10,000 \$10,000- \$29,999 \$30,000-\$49,999 \$50,000-\$69,999 Más de \$70,000

Actualmente, tiene seguro médico? Enrodear con circulo

Si o NO

Instrument in English

Please indicate YES or NO for the following questions:

- 1. Have you had a colonoscopy in the past 10 years? YES/NO
- 2. Have you had a flexible sigmoidoscopy in the past 5 years? YES/NO
- 3. Have you had an FOBT in the past year? YES/NO

In this section you will indicate on a scale of 1-10 concerning your intention to get a colorectal cancer screening. Please read each question and response carefully, as they may be different. Please circle your response.

1. How likely are you to get a **colonoscopy** in the next 6 months?

12	36	8	10
Extremely	Somewhat		Extremely
Unlikely	likely		Likely

2. How likely are you to get a **flexible sigmoidoscopy**, in the next 6 months?

14-		89	10
Extremely	Somewhat		Extremely
Unlikely	likely		Likely

3. How likely are you to get a **fecal occult blood (poop) test** in the next 6 months?"

12	-3666666	78	10
Extremely	Somewhat		Extremely
Unlikely	likely		Likely

4. I intend to get a colorectal cancer screening test sometime in the next 6 months1-----2-----3-----4-----5-----6-----7-----8------9-----10StronglySomewhatDisagreeAgree

5. How likely is it that you will **TRY** to get screened for colorectal cancer in the next 6

months

14-		10
Extremely	Somewhat	Extremely
Unlikely	likely	Likely

6. How likely is it that you WILL get screened for colorectal cancer in the next 6 months?

13	56	8	-910
Extremely	Somewhat		Extremely
Unlikely	likely		Likely
7. How much effort the next 6 months.	t are you prepared to exe	ert in order to get scree	ned for colorectal cancer in
13		8	-910
Extremely	Somewhat		Extremely
Unlikely	likely		Likely
8. Do you t screened for colorec	feel that you have commi tal cancer?	t ted yourself to a defin	ite course of action to get
Not at	Somowhat		Vory much
All	Somewhat		very much
9. Do you feel th screened for colorec	at you have committed y tal cancer?	ourself to make use of	any opportunity to get
13		88	-910
Not at all	Somewhat		Very much
10. How determin	ed do you feel at this mo	ment to get screened for	or colorectal cancer?
13		78	.910
Not at	Somewhat	/ <u>0</u> -	Very much
all	Somewhat		very much

In this section you will indicate on a scale of 1-10 concerning your feelings about getting a colorectal cancer screening. Please read each question and response carefully, and circle the response that best describes how you feel.

1.When I think about getting	a colorectal cancer screening I get very scare	ed
134	56789	10
Strongly	Somewhat	Strongly
Disagree	agree	Agree
	· , , , .	
2. Colorectal cancer screen	ings are extremely embarrassing.	
14	56789	10
Strongly	Somewhat	Strongly
Disagree	agree	Agree

3.	Thinki	ng abou	t getting	a colore	ectal can	cer scree	ning mal	kes me t	erribly anx	ious.
1	2	3	4	5	6	7	8	9	10	
Strongl	у		Sc	mewha	t				Strongly	
Disagre	ee		ag	ree					Agree	

In this section you will indicate on a scale of 1-10 concerning your feelings about family. Please read each question and response carefully, and circle the response that best describes how you feel.

1. I think about	what is good for 1	my family befo	ore thinking abo	out what is good for me
12	34	56	78	10
Strongly	Som	newhat		Strongly
Disagree	agre	ee		Agree

2. I expect my rel	latives to help	o me when I	I need th	em			
12	-34	5	6	7	8	9	10
Strongly	S	omewhat	-		-	-	Strongly
Disagree	а	gree					Agree

3. I owe it to my parents to do well in life

12		45	6	7	8	9	10
Strongly	5	Somewhat	Ũ	,	0	,	Strongly
Disagree		agree					Agree

4. My best guide to behavior is my parents' teachings								
12	3	4	-5(6	7	8	9	10
Strongly		Som	newhat					Strongly
Disagree		agre	ee					Agree

5. Aging parent	ts should liv	e with their re	elatives				
12		! 5	6	7	8	9	10
Strongly		Somewhat					Strongly
Disagree		agree					Agree

6. All adults should be respected								
12	3	-45	6	7	8	9	10	
Strongly		Somewhat					Strongly	
Disagree		agree					Agree	

7. Relatives are more important than friends

12	 5	6	7	8	9	10
Strongly	Somewhat	Ū.	·	-	2	Strongly
Disagree	agree					Agree

What is your gender? Male Female

What is your current age?

Including yourself how many people live in your house?

Circle the highest level of education you have completed:

Primary school (6th grade) High school diploma (12th grade) Some College College Degree Graduate education

Do you currently have health insurance? YES/NO

Please indicate the range of your household yearly annual salary: Less than \$10,000 per year \$10,000- \$29,999 per year \$30,000-\$49,999 per year \$50,000-\$69,999 per year Above \$70,000 per year