

UC Berkeley

UC Berkeley Electronic Theses and Dissertations

Title

Evaluating a Telenovela: The Safety of Latino Construction Workers

Permalink

<https://escholarship.org/uc/item/1cj6d90r>

Author

Castaneda, Diego Emiliano

Publication Date

2011

Peer reviewed|Thesis/dissertation

**Evaluating a Telenovela Intervention:
The Safety of Latino Construction Workers**

by

Diego E Castaneda

A dissertation submitted in partial satisfaction of the
requirements for the degree of

Doctor of Public Health

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor S. Leonard Syme, Chair

Professor Linda Neuhauser

Professor Kurt Organista

Spring 2011

Abstract

Evaluating a Telenovela Intervention: The Safety of Latino Construction Workers

by

Diego E Castaneda

Doctor of Public Health

University of California, Berkeley

Professor S. Leonard Syme, Chair

Latino-Hispanic construction workers in the United States are at significantly higher risks for injuries and fatalities at construction worksites than their White and African-American counterparts. Currently the main mode of dissemination of workplace safety information is through direct translation of work safety material delivered at the worksite. Current research, however, suggests that even when translated into Spanish, many of these materials are not culturally or linguistically effective modes of preventable risk education and persuasion.

One promising method for far-reaching, cost-effective, and culturally relevant education may be found in the Entertainment-Education (EE) health communication strategy. EE leverages popular entertainment media – such as movies, television shows, music, theater and/or radio – by embedding specific health messages within a storyline and using the power of narrative to stimulate positive health choices. Spanish-language soap operas (*telenovelas*) are an entertainment media format culturally embraced by Latino Spanish-speaking audiences and have been effectively utilized by health educators and public health officials to promote changes in knowledge, attitudes, and behaviors for a variety of health issues.

The Centers for Disease Control/National Institute of Occupational Safety and Health (CDC/NIOSH) worked with two public health partners and the Spanish language TV chain Telemundo to develop and implement an entertainment education intervention that utilized a telenovela embedded with construction worksite safety information. A statistical analysis of audience survey data collected both before and after the airing of the workplace storyline showed improvements in knowledge outcomes but not in changes in perceptions or behavioral intention outcomes. Detailed analyses revealed that survey respondents who reported recognition of the telenovela workplace storyline were more likely to identify key safety messages embedded within the storyline than respondents who did not recognize the storyline.

In addition to the quantitative data, semi-structured key informant interviews were conducted with eight (8) individuals associated with the intervention project. The objective of these interviews was to explore how the partnership between public health institutions and media organizations affected the development, implementation, and evaluation of this project. Project stakeholders voiced challenges which stemmed from the chaotic nature of network television, tensions between developing entertaining vs. accurate educational messaging, and difficulty in communicating actionable messages that would be effective in changing workplace behaviors. Despite these challenges partners felt confident that future endeavors using an EE strategy

should be made in communicating other workplace safety issues to Latino and other vulnerable populations.

Improved collaboration between entertainment media writers/producers and public health experts is needed to create interventions with the power to change viewers behaviors over time. In addition, more refined research methods are needed to examine EE intervention development and outcomes.

Dedication

This dissertation is dedicated to all future Doctor of Public Health students. May they see that the process of getting this degree is just as valuable as the outcome of the letters behind the name.

Contents

Dedication	i
Acknowledgements	iv
Introduction	1
U.S. Construction Workers and Latino Demographics	1
Public Health Significance	2
Barriers and Challenges to Latino Workplace Safety Interventions	2
Strengthening Interventions: The Social Ecological Model Perspective	4
Review of Relevant Literature	5
Entertainment Education (EE)	5
Social structural influences and mediated communication	6
Television reach in immigrant households	8
Latino Health Communication	8
Limitations to effectiveness	9
General Criticisms	10
Gaps in the Research	11
Collaboration and Partnership	11
Telenovela Intervention on Ladder Safety in Construction Sites	12
Contributions to Knowledge Gaps	13
Theoretical Frameworks	14
Media Studies Framework: An Overall Perspective	14
Frameworks Guiding Research Questions and Methods	15
Critical Ecological Inquiry	17
Purpose of Current Study	17
Research Questions	18
Effectiveness Study	18
Explorative Qualitative Study	18
Methods	19
Quantitative Study Design	19
Participants	19
Procedures	20
Measures	22

Key demographic and Telemundo audience information variables	22
Primary Outcome Variables	23
Workplace Safety Exposure Variables	24
Analysis of Quantitative Data	24
Quantitative Study Limitations	27
Explorative Qualitative Study Design.....	27
Participants	28
Procedures	28
Interview Guide	28
Analysis of Qualitative Data	29
Qualitative Study Limitations	30
Results 31	
Quantitative Study.....	31
Key demographic variables and Telemundo audience characteristics	31
Research Question #1: Knowledge of Workplace Safety Outcomes	32
Research Question #2: Perceptions of Construction Workplace Safety Risks.....	37
Research Question #3: Behavioral Intentions	37
Explorative Qualitative Study	37
Research Question #4: Partnership influence on EE intervention process.....	37
Project Roles and Previous EE Experience	38
Partnership characteristics	38
Organizational characteristics.....	39
Project Stages	40
Discussion 44	
Implications for Research and Practice.....	46
Limitations	46
References 48	
Appendix 54	
A. Survey items measuring primary independent and dependent variables	54
B. Interview guide used in qualitative interviews.....	55

Acknowledgements

I would not have been able to start or complete this dissertation without the invaluable help from the following wonderful people in my life. In no way is this list in the order of importance. I wish to say thank you to my parents and my sister who have stuck with me through all my struggles and especially my mother who has sacrificed her own sleep to help me finish projects since the 6th grade. My lovely partner Rachel Lewin was with me when I first applied to the SDSU Graduate School of Public Health, which in reality represented the beginning of this doctoral pursuit. My list of mentors who have guided me throughout this process is long but I would be remiss if I did not mention the invaluable help of Dr. John Elder who served as my first advisor and mentor as I worked through my Masters degree. Throughout my career at UC Berkeley, I have received invaluable expert advice from a number of excellent faculty. Dr. Linda Neuhauser, my mentor and a great supporter of all students pursuing their doctorates, was responsible for getting me to come to Berkeley in the first place. She was always available when I needed her even if I sometimes didn't know it myself. Dr. Kurt Organista, my outside committee member, has helped me understand the process of constructing a dissertation and without his editorial and content critique I would not have been able to complete this, nor gain the valuable thinking skills he imparted. To Len Syme, my chair, I wish to offer my gratitude for his direct and excellent communication about how to improve my approach to public health and to life in general. I wish to thank Dr. Lia Fernald for her excellent facilitation of the proposal defense and for agreeing to serve on my prospectus defense committee even though my work was outside of her field of interest. Ellie Schindelman has made me a better teacher and person. Dr. Lori Dorfman has instilled in me the value of concise and crisp communication, which this acknowledgement is surely in violation.

I have to reserve a special and heartfelt thank you to my entire UC Berkeley Dr PH cohort, especially Dr. Marty Martinson, Dr. Jennifer Lachance, and Dr. Sarah Roberts, who formed the “dissertation writers groups”-a group that was part writing help and part support group. Most importantly these three ladies offered unconditional support and have literally carried me through this process. Each one of them in their own way has been my personal “champion” and I couldn't have done this without them. They kept me going even when I thought I couldn't. Special thanks to Dr. Caricia Catalani and Catherine Cella for their excellent brainstorming, editing and support sessions. Every DrPH student who has given me advice on this project and on the program deserves credit for the part they have played. Dr. Suzy Martinez, my great friend from SDSU SPH merits a special mention for consistently harassing me to finish.

I also wish to thank the great people who I have worked with from NIOSH, CPWR, HHS and Telemundo. Thank you for agreeing to work with me and share your perspectives on this interesting project.

Dr. John Lore, Dr. Niel Fiore, and Dr. Stephen Halpert have all helped me see the true value of this degree and what it truly is in the service of.

Finally, to all the great teachers whom I've had over the years, thank you for allowing me to see the importance of lifelong learning and discovery that this doctorate is really about.

Introduction

The first section of this introductory chapter describes the relevant background information and provides the rationale for this dissertation research. This includes 1) Background on construction work in the U.S. within the context of Latino construction workers and the existing challenges public health advocates have in ensuring safety and prevention within this population, 2) Benefits of viewing public health through a social ecological model of health, 3) Description of the health communication strategy known as entertainment-education within the context of the social ecological framework of health interventions, 4) Leveraging of Spanish language media to transmit relevant health messages, and 5) Rationale for using an entertainment-education strategy in construction workplace safety interventions targeted to Latinos. A review of the literature relevant to this intervention follows this background.

U.S. Construction Workers and Latino Demographics

Between 2005 and 2007, construction workers made up nearly 7% of the nation's workforce. During this time, the construction industry added \$630 billion to the U.S. Gross Domestic Product (GDP), making it a significant driving force in the U.S. economy (National Center for Construction Education and Research, 2007)

Making up 15% of the U.S. population, Latinos are the largest minority population in the nation (Dockterman, 2007). They are also the fastest growing population group in the U.S., with a 13% population growth rate that outpaces the 3% national U.S. average (U.S. Census Bureau News, 2008). Estimates are that the population of persons self-identifying as Latinos in the U.S. will reach 30 % by 2050 (Dockterman, 2007).

Although, Latino construction workers are estimated to make up around 20% of the total U.S. construction workforce (BLS, 2008a), in the states of New York, Virginia, New Mexico, Texas, California, and Arizona this number is no lower than 40% (The Center for Construction Research and Training, 2007 [CPWR]). In contrast, Latinos are less than 13% of workers in all other occupations (BLS, 2008a). Job losses in 2007 and 2008 decreased the number of jobs in construction (Koschhar, 2008), yet over 2.7 million native and foreign born Latinos continued to work in construction in the first quarter of 2008 (Koschhar, 2008), representing an increase of over 150% since 1990 (CPWR, 2007). There is evidence linking this increase to an influx of recent immigrants from Mexico and Latin America. Currently, 74% of all Latino construction workers are non-native born, with nearly 40% reportedly arriving since 2000 (Koschhar, 2008).

In 2008, native and foreign Latino construction workers found most of their work as roofers, painters, general laborers, concrete workers, and drywall installers (BLS, 2008). Considered entry way jobs (Brunette, 2004), these jobs are readily available for inexperienced workers because they require less training. Data from the BLS and the Occupational Safety and Health Administration [OSHA] indicate that these occupations are also some of the most hazardous within construction, putting workers at a high risk for injury and fatality (Goodrum & Jiukun, 2005; State Building and Construction Trades Council, 2008).

Public Health Significance

In 2007, one in five fatal accidents reported to the U.S. Bureau of Labor and Safety (BLS, 2008b) occurred in construction-related occupations. This is disproportional to the total number of construction work incidents. Even though less than 7% of the total U.S. workforce is employed in construction, construction workers represent 20% of all occupational injuries requiring significant time off from work (BLS, 2008a; 2008b).

From 1995 to 2000, among all the risks involved from construction work, 20% of all deaths and 26% of all injuries in construction were due to falls. (BLS, 2008b; BLS, 2008c). This rate remains virtually unchanged in 2007. Most of these fatalities and injuries occur while workers perform normal job activities required while working on roofs, scaffolds or when using ladders (Hsiao & Simeonov, 2001).

Latino construction workers appear to be more severely impacted by accidents on the job. In California, the number of Latinos killed in construction accidents grew by over 70 % between 2003-2006 (Franklin, 2008). These accidents also place a particularly serious financial burden on Latinos compared to other populations. A 2007 study examining the financial hardships resulting from construction work injuries found that Latino workers are 57% more likely to have medical conditions resulting from construction work but 48% less likely to receive Medicaid payments or worker compensation (Dong, Ringen, Men, & Fujimoto, 2007) when compared to White and Black workers similarly affected.

Day laborers in construction are one group in particular that are highly impacted by injuries (Anderson, Hunting, & Welch, 2000). In 2006, 22% of Latino day laborers injured on the job missed at least 30 days of work or more compared to 15 % of their White and Black counterparts (Dong et al., 2007). Other research with day laborers, indicates that 68% and 54% reported working in pain and failing to receive care after injury, respectively (Valenzuela, Theodore, Meléndez, & Gonzalez, 2006).

Barriers and Challenges to Latino Workplace Safety Interventions

The number of fatalities and injuries are likely underestimated because they mainly occur among undocumented workers working in temporary, contract work positions (Schneider, 2006). Estimates show that undocumented migrants represented about 14% of the labor at U.S. construction jobs compared to a 5 % average for all other trades (Passel & Cohn, 2008). Fear of losing important work and/or being deported is likely to keep Latino undocumented workers from reporting injuries in an official capacity (Labor Occupational Health Program, 2007). Additionally, contractors are often given bonuses for accident-free projects, thereby discouraging an official reporting of incidents (Lipscomb, Dale, Kaskutas, Sherman-Voellinger, & Evanoff, 2008).

Although literature specifically addressing fall prevention targeting Latino construction workers is limited, reviewing and amalgamating the research examining fall prevention and general safety in construction work (Bobick, 2004; Derr, Forst, Chen, & Conroy, 2001; Gillen, Faucett, Beaumont, & McLoughlin, 1997; Hsiao & Simeonov, 2001; Lipscomb, Li, & Dement, 2003; Rivara & Thompson, 2000; Schulte, 2006) with research specifically exploring Latino construction worker safety (ASSE & OSHA, 2004; Anderson et al., 2000; Brunette, 2004; Dong

& Platner, 2004; Dong et al., 2007; Goodrum & Jiukun, 2005; Richardson, Loomis, Bena, & Bailer, 2004) gives a general picture of the challenges facing worksite safety promotion efforts.

Language and literacy challenges exist in working with this population. For example, in 2000, the North Carolina Occupational and Safety and Health Project analyzed the language capabilities of immigrant job seekers and found that nearly 70% of clients had little or no English speaking ability(O'Connor, 2003). When materials in Spanish exist, they also may not be appropriate. One study found that 40% of immigrant workers reported not understanding translated materials in Spanish (Labor Occupational Health Program, 2007). Other research shows that instructional material is written at a high reading level and likely surpasses the literacy levels of entry-level immigrant workers (O'Connor, 2003), possibly creating a disparity in knowledge and awareness about safety risks between Latino Spanish speakers and their White and Black counterparts.

Another barrier to prevention is the difficulty of outreach to the multitude of transitioning and informal workers who operate within a diffuse and dynamic industry. For example, 80% of the 750,000 contractors in U.S. have fewer than ten employees (Sokas, Nickels, Rankin, Gittleman, & Trahan, 2007) many of whom are self-employed temporary workers. Adding to their vulnerability, a majority of day laborers and temporary workers (most of whom are also Latino) (Schneider, 2006; Sokas et al., 2007) also populate the most hazardous and lowly regulated construction sites (Valenzuela et al., 2006).

Other research indicates that undocumented Latino immigrants have workplace safety beliefs and behaviors that make them more vulnerable to injury and death. Research by the Pew Center (2007) estimated that upwards of 14% of the total construction workforce are undocumented workers. Interview data suggest that immigrant status affects beliefs about workplace safety and behaviors. Pew Center interviews with construction work union officials found that threats of deportation were one of the reasons for a worker not reporting injury or not complaining about safety. Thus, even if unsafe conditions occur at work, workers are unlikely to report hazards. Although laws exist that protect workers from being fired or deported due to reporting injury or complaining about safety, fears about deportation or losing one's job are sometimes exploited by unscrupulous contractors who hire these workers (Flynn, 2009).

The existing research and data show that Latino construction workers, particularly recent immigrants are at a higher risk for fatality and injury at their worksites. These are often preventable fatalities and injuries that place a particularly heavy burden on those who have the fewest economic and social resources (Dong et al., 2007). Past workplace safety interventions have often focused on regulation and policy interventions that force employers to eliminate hazards at the workplace or change workplace design to make it safer (Emmons, 2000). These laws have been very effective in lowering rates of injury in certain workplace sectors (Emmons, 2000) and have had a certain impact on construction safety records over the last forty years. For Latino/Hispanic workers, however, construction work place regulation and policy measures are often difficult to enforce due to social-cultural factors such as language and literacy barriers, dissemination of basic safety information, and workplace safety beliefs held by workers (Brunette, 2004, 2005; de Castro, Fujishiro, Sweitzer, & Oliva, 2006; Dong, Entzel, Men, Chowdhury, & Schneider, 2004; Goodrum & Jiukun, 2005).

Strengthening Interventions: The Social Ecological Model Perspective

Scholars in this area believe strengthening communication and outreach to these at-risk populations should form part of a future research agenda (Brunette, 2004; O'Connor, 2003). Traditional methods to communicate workplace safety messages such as written documents or even workplace trainings, however, often fall short of their intended goals (de Castro et al., 2006). In 2000, the Institute of Medicine (IOM) issued a report calling for social and behavioral health intervention efforts to engage populations at multiple levels of influence by using a more holistic perspective of health behavior when designing interventions (Smedley & Syme, 2000). In particular, they recommend using the Social Ecological Model (SEM) of health (pioneered by Strecher and Rosenstock (1997) to frame health issues (Glanz, Lewis, & Rimer, 1997). With this view, determinants of health at the intrapersonal, interpersonal, community, institutional and policy levels emerge giving a perspective that enables multiple leverage points for intervention. For example, previous workplace safety efforts have intervened at the policy level by advocating for laws and regulations (laws and regulations being the determinant) to bring about safer workplaces (Emmons, 2000). By contrast, workplace safety interventions using individual level behavior change factors have used onsite safety training programs to promote individual determinants such as awareness and knowledge changes to bring about safer workplaces (Dong et al., 2004).

With multiple societal levels available for possible influence through this holistic perspective, a sensible intervention would attempt to leverage determinants of health that cut across the multiple levels proposed by the social ecological model (Emmons, 2000; Smedley & Syme, 2000). Policy level changes that advocate structural changes at work such as mandatory workplace safety equipment or the enforcement of existing safety regulations are arguably the most effective means of achieving workplace safety. Given the time needed for such changes and the informal sectors where most Latino's work this method of intervention should be complemented with other means at our disposal.

Recent work in the social sciences and public health is demonstrating that using culturally cognizant strategies can be an effective mode to create health interventions that work on multiple levels of the social ecological spectrum (Freimuth & Quinn, 2004; Institute of Medicine, 2002; Skaff, Chesla, de los Santos, & Lawrence Fisher, 2002) (Kreuter & McClure, 2004; Pierson, 1996). For construction workplace intervention efforts targeting Latinos, occupational health experts suggest using the cultural capabilities of the population to create the most effective workplace safety programs (Brunette, 2004, 2005; O'Connor, 2003).

An example of this was a safety-training intervention for and with immigrant industrial workers (including Latinas) in Santa Clara County, California (Pellow & Sun-Hee Park, 2003). These training sessions were developed so that they "were grounded in the culture of the participants" (O'Connor, 2003, p. 98) and used multi-media channels, [and] primarily oral narratives to properly communicate health safety messages (Pellow & Sun-Hee Park, 2003). Though lacking formal evaluation, this program reported effectively training and guiding over two hundred workers by using a culturally cognizant strategy that leveraged individual, interpersonal, and community level determinants to teach workplace safety issues (Pellow & Sun-Hee Park, 2003).

While not strictly a media intervention, the Santa Clara program was innovative in its use of communicating health messages through cultural narratives. More importantly, it offers

insight into the kinds of health communication programs that are most likely to be effective for workplace safety- those that leverage existing cultural beliefs to communicate the specific health messages.

The following sections describes how health communication interventions can work within a social ecological model of health and how the health communication strategy known as entertainment-education can be used as an effective tool in construction work safety efforts.

Review of Relevant Literature

Health communication is officially described in the 2000 edition of the Healthy People 2010 objectives:

“the study and use of communication strategies to inform and influence individual and community decisions that enhance health. ...The scope of health communication includes disease prevention, health promotion, health care policy...as well as enhancement of the quality of life and health at the individual and community level.” (U.S. Department of Health and Human Services, 2000)

Parrot (2004) notes that this description inherently takes an ecological perspective of society and health, a perspective that the Institute of Medicine (IOM), in the publication “Promoting Health”, is needed to balance a field heavily laden with interventions focused on changing clinical outcomes (Smedley & Syme, 2000). The 21 recommendations for new intervention strategies that are proposed share a common thread. Namely, that new interventions focused on social behavioral changes be constructed using a multi-level view of the influences on health. This is explicitly stated in one of two overarching recommendations; “interventions...should link multiple levels of influence (i.e. individual, interpersonal, institutional, community, and policy levels” (Smedley & Syme, 2000, p. 7).

Entertainment Education (EE)

Research indicates that the health communication strategy, Entertainment-Education (EE) may offer a method for providing far reaching and culturally relevant health education (Singhal, Cody, Rogers, & Sabido, 2004). In 1970, a Peruvian telenovela ¹ “*Simplemente Maria*” (*Simply Mary*) featured a heroine earning her independence by attending literacy classes and acquiring a Singer brand sewing machine to make money mending clothes. While unintended by the producers of this soap opera, the broadcast resulted in increases in Peruvian women enrolling in literacy classes and sale increases of Singer brand sewing machines (Pointdexter, 2004). As the soap opera progressed through other Latin American countries, anecdotal, yet intriguing evidence emerged. In each of the countries where the telenovela was shown, enrollment in

¹ *The telenovela differs from the U.S. day time soap opera in that telenovelas have closed ended storylines (Bielby & Harrington, 2005).*

literacy classes increased at the same time as Singer brand sewing machines (Henry J. Kaiser Foundation, 1994; Obregon, 1999; Pointdexter, 2004).

Formal evaluative methods were not conducted to show the degree of association between the telenovela and the societal changes, however, Mexican television producer, Miguel Sabido noted these changes and deconstructed the storyline to develop what he believed could be an effective health communication tool (Pointdexter, 2004; Sabido, 2004). Sabido would seek theoretical guidance from Albert Bandura, a pioneer in the development of social cognitive learning models, while also incorporating theoretical concepts from drama. Sabido coined his new idea Entertainment Education, which also became known as EE or Ent-Edu². Eventually, he would use these concepts to create, implement and evaluate a soap opera called “*Acompañame*”, (Follow Me), that tackled literacy, family planning and population concerns in Mexico (Pointdexter, 2004; Sabido, 2004). Within one year, Mexico’s population growth dropped from 3.1% to 2.7%, while enrollment in family planning clinics increased by 33% compared to the preceding year (Pointdexter, 2004). Unfortunately formal evaluation was not done to verify how much of these changes were a product of other secular and simultaneous changes in Mexican society, and which were the result of the novel health communication (Pointdexter, 2004). Given that many of these institutional and historical changes had been going on well before “*Acompañame*” started and ended, however, the increased utilization of family planning clinics in Mexico stimulated world interest in the idea of EE as a health communication strategy for other public health issues

EE is now generally recognized as a strategy or “process of purposely designing and implementing media messages to both entertain and educate, in order to increase audience members’ knowledge about an educational issue, create favorable attitudes, shift social norms, and change overt behavior” (Singhal & Rogers, 2004, p. 20). These messages are formatted and distributed via theatre (movie and stage), print, radio, video, internet, and possibly new technologies such as podcasts. They range from Public Service Announcements (PSA’s) delivered via television, movie theatres or broadcast radio; prime time TV programming; radio soap operas; internet video vignettes; video game programs; improvisational street theatre; and popular music. Some are produced with a national or regional scope while others are more localized. Some utilize extensive formative audience research employing human communication and behavioral theories to plan and create a storyline while others are created intuitively with less attention to framework and formative research (Singhal & Rogers, 2004).

Social structural influences and mediated communication

Serial dramas in the form of television and radio soap operas appear to hold considerable promise due to episode format that allows for a gradual mixing of health messaging via the build-up of a storyline (Beck, 2004). In Albert Bandura’s view, dramatic serials embedded with health messages build upon meanings that we attach to experiences. “Media representations gain influence because people’s social construction of reality depends heavily on what they see, hear, and read rather than on what they experience directly” (2004, p. 78). Bandura’s theory is also

² Other names used include *pro-social entertainment, pro-development entertainment, edutainment, and also the process of ‘enter-educating’.*(Singhal et al, 2004)

predicated by the perspective of the transactional or reciprocally deterministic model of human behavior, where “people are producers as well as products of their social environments”, (Bandura, 2004, p. 45). The primary way of motivating someone is to improve their self belief that they can control their life and make necessary changes. The construct of self-efficacy (personal agency), is influenced by social structural influences, which include an individual’s social and interpersonal networks, or what Bandura aptly describes as the “social milieu” (2004, p. 45). Therefore, health communication via a media intervention may influence self-efficacy via dual paths, 1) a direct pathway that communicates information straight to the individual audience member and 2) a socially mediated pathway wherein information is communicated via the individual’s social and interpersonal networks. Due to the transactional nature of information sharing and doing between individuals, the latter pathway is often more instrumental for influencing changes in behavior.

A 1999 Center for Disease Control (CDC) Health Styles survey of U.S. audiences found that 60% of regular soap opera viewers who watched two or more episodes per week, reported learning health messages from viewing a soap opera and 50% reported being persuaded to take some kind of action based on these messages (Pollard & Beck, 2000).

Further evidence of this direct effect was seen in a collaboration effort by the CDC and network television to promote HIV awareness. In several episodes of the “The Bold and the Beautiful”, a star character reveals his HIV status by confronting the disease and educating others in his life in an emotional, yet calm manner. In the days following the airing of the episode where the character first reveals his HIV status, a CDC AIDS hotline supplied in Public Service Announcements (PSA’s) aired during the show, reported call levels “1000 times higher” in the B&B time slot than for the next highest call level (Kennedy, O’Leary, Beck, Pollard, & Simpson, 2002). Researchers were able to control for other possible exposures via strategic questioning and control of confounder variables.

In another example, the popular daytime soap opera, “The Young and the Restless” featured EE messages about breast cancer screening, diagnosis and, treatment. Researchers from the National Cancer Institute (NCI) conducted 211 interviews with a sample of callers who had called a toll free number promoted via a PSA. Callers who called in reaction to the PSA were significantly different in several important areas compared to regular callers to the NCI. Callers moved by the television show and subsequent PSA were more likely to not have cancer, and more likely to be seeking information about prevention rather than help for a current cancer condition (Beck, 2004). Additionally, these callers were more likely to be African American and Latino, traditionally hard to reach populations for the NCI. According to Vicki Beck, the director of Hollywood, Health and Society³, this significant increase in callers seeking health information shows that “information-seeking can be substantially stimulated when a health message is tied to an ongoing storyline” (Beck, 2004, p. 210).

In “Promoting Health”, the IOM recommends that social contexts should be leveraged to build individual and collective self-efficacy for behavioral change (Smedley & Syme, 2000). These social contexts include an individual’s social support networks such as family members

3 HHS serves as an academic and professional liaison between media and public sector organizations who seek to embed messages within entertainment media (usually programming). It is part of the Norman Lear Annenberg School of Communication at the University of Southern California.

and peers. This is consistent with the use of EE to influence behavior change via socially mediated pathways. Outside of the US, several investigators have found that exposure to a dramatic serial drama with embedded health messages is significantly likely to spur outside interpersonal communication with peers and family about included health information (Papa et al., 2000; Sood, 2002). Further research is needed, however, to understand the factors that determine how and why viewers communicate information within their social network and what this means for behavior changes at the population level (Murphy & Cody, 2003; Sood, 2002; Wilkin et al., 2007).

Television reach in immigrant households

Research data estimates that there are currently 12.6 million Latino/Hispanic-American television households who represent a large majority of the total Latino US population (Nielsen Company, 2008). While the degree of saturation (i.e., the number of choices available to audiences) in English language television has made promoting health messages via entertainment television more of a challenge (Sherry, 2002), viewers of Spanish language television have fewer options. Nielsen media interviews with large samples of Latino households showed that Latino TV viewers are more likely to choose Spanish language television as their primary viewing option (Encuesta, 2006) vs. English language TV. Given this latter data and census data showing that the majority of immigrants living in this country (documented and undocumented) are of Latin American origin (Passel & Cohn, 2008), television offers an excellent medium to potentially deliver health messages to a hard to reach population.

Health promotion efforts targeting Latino construction workers are laden with unique socio-cultural barriers. As outlined in various publications (Institute of Medicine, 2002), (Dutta & Basnyat, 2008; Freimuth & Quinn, 2004; Kreuter & McClure, 2004) health communication strategies using culture have the potential to address and overcome some of these barriers by acknowledging the interconnectedness between individual, interpersonal and socio-cultural influences, a strategy that is consistent with the social ecological model.

An EE health communication intervention via Spanish language telenovelas targets the individual by communicating safety via cultural contexts at the intrapersonal, interpersonal, and community levels. Spanish language soap operas with embedded safety messages offer promise as a vehicle for improving Latino construction worker safety because use culturally familiar and popular mediums to reach potentially large audiences.

Latino Health Communication

Spanish language soap operas on television, known as telenovelas, are an imported source of entertainment frequently watched by millions of U.S. Latinos on the domestic Spanish language TV chains (Telemundo or Univision) (Downey, 2006a). In her research on the relationship between telenovelas and Latino cultural identity, de la Casas Perez explains that telenovelas in Mexico and Latin America are used by many individuals to “help shape the world [they] live in...and help viewers relate to social situations” (2005, p. 407). In the context of cognitive learning, EE strategies using telenovelas embeds key messages in the storyline to

motivate individuals by modeling behaviors vicariously via positive and negative representations, dramatically showing the benefits and costs to the individual (Bandura, 2004).

Researchers working to promote awareness of home care options for Mexican-American elders used an eight minute dramatized telenovela to improve awareness and attitudes around home care options. Participants attending discussion groups after viewing the telenovela reported that they identified with the storyline and characters and that the video facilitated communication around home care service and “opened up learning” about home care services (Crist, 2005).

LaLonde, Rabinowitz, Shefsky & Washienko (1997) used a dramatic telenovela to promote awareness about alcohol abuse to improve communication between Latino youth and their families. Using extensive formative research in the community, his team created a culturally appropriate storyline that involved six 22-minute telenovela episodes. The telenovela, produced in English, featured a storyline embedded with Latino cultural values and themes to help communicate educational concepts such as emphasizing the need for parental guidance, youth decision making, and interpersonal communication between families. Pre- and post-test results among middle and high school aged students showed an improvement in attitudes towards alcohol in female participants, those who spoke English well, and those who viewed more than three of the six episodes. A majority of students reported that they would think about the program next time they were in a situation with alcohol. Over 80% of teachers who were involved with the showing of the telenovela reported that it was the best alcohol education intervention they had ever been part of (Lalonde et al., 1997)

The 2006 Telemundo telenovela *‘Ladron de Corazones’* (Thief of Hearts), featured breast cancer education messages. Researchers measured viewers knowledge and beliefs about breast cancer, the degree of information seeking due to a PSA linked with the program, and their behavioral intentions to get or encourage others to have a mammogram (Wilkin et al., 2007). Results showed that knowledge and beliefs relating to two key messages were significantly increased after watching the telenovela. Results also suggested that promoting a toll free number in a PSA “after a dramatic plot point” (p. 464) produced significantly higher call rates compared to providing the number before the dramatic plot point. The authors felt that this suggested that the storyline may have had an impact in motivating audience members. Additionally a national telephone survey (n=2438), showed that regular viewers and non-regular viewers were both more likely to retell someone about the storyline if they identified with the character.

Limitations to effectiveness

While research interventions employing EE strategies show effectiveness in changing and improving certain outcomes, other outcomes appear to be dependent on specific audience characteristics. For example, in the breast cancer storyline research (2007), the authors found that the storyline was effective at improving male behavioral intentions to encourage women to have mammograms, but was not able to significantly increase these behavioral intentions in women. The authors postulate that because the telenovela was targeted at men (it had an action oriented theme), women may not have been as engaged even though the target storyline dealt with breast cancer. The authors also indicated that high knowledge and behavioral intentions at baseline among women may have muted behavioral intention gains. Men, on the other hand, were being exposed to new material, possibly making it more likely for them to retain the new information and relate it to other women later.

Similarly, in the La Esperanza study described previously (Lalonde et al., 1997), male high school students who watched the novella did not show improved attitudes towards alcohol even though female students did see significant improvements. While the authors did not offer any explanation for this result, these differential outcomes indicate there is more to learn about how EE can be most effective in reaching intended audiences through direct or mediated pathways.

It is also not clear how long the effects of an EE program last after the EE program is over. All the studies examined for this review measured effects immediately after the EE program had ended, necessitating study on whether any resulting changes (assuming they are due to the EE program) are sustainable over the long term.

Additionally, although a major premise of EE is that it works to socially mediate communication about a given health behavior, little research exists that show what exactly determines these effects or whether this produces any effects in individuals not exposed to the EE program.

General Criticisms

Beyond questions of effectiveness, there are a number of criticisms about the EE approach to health promotion, particularly as to how EE programs are developed and implemented. In critiquing the Radio Nepal Project which used a radio novella in Nepal to promote family planning in rural areas (Jacobsen & Storey, 2004; Storey, Boulay, Karchi, & Heckert, 1999). Dutta & Basnyat (2008) describes EE strategy as too focused on individual behavior change, rather than taking into account the social, political and physical contextual factors of the Nepalese community. Alluding to the relative simplicity of using entertainment narrative to describe difficult and complex health problems, they also note that EE is often used in a one way model where participatory and community based solutions are not utilized. In describing the Nepal project, he also submits that the intervention is dependent on a mass media run by the dominant political elites. Therefore, solutions proposing the necessary policy changes are often ignored in favor of more politically appeasing messages which place more of a burden on the individual without taking into account their contextual and cultural realities. Additionally, EE programming that relies on commercial TV, also subjects viewers to advertisements that sometimes run contrary to the public health mission. While Dutta's criticisms are debatable⁴, they are not without merit in noticing that there is a need for a critical look at the way EE program's messages are developed and delivered especially in regards to health communication to traditionally marginalized populations (Lalatendu, 2008; U.S.C, 2003).

Bouman's (2002) work exploring how the individual and organizational partnerships influence development, implementation, and evaluation of EE programs on TV may offer qualified, yet potentially instructive lessons in regards to the latter critique. By conducting interviews with the stakeholders from public health and media professions who were involved in

⁴ *Jacobsen and Storey's research documents where participatory techniques were used and admits that it was far from perfect given the political climate manifested in Nepal during the RNP.*

12 separate EE productions⁵ shown in the Netherlands, she offers insight on EE development and implementation and suggests that a major challenge to collaboration exists between public health officials and media professionals because of extremely differing organizational contexts, or “frames of reference” (Bouman, 2002, p. 238). Public health officials (described by media professionals as turtles due to their perceived slowness in taking action) often viewed EE productions through a non-profit lens and described success by whether specific public health outcomes such as knowledge or behavior change had been gained. In contrast, media professionals (described by public health officials as peacocks due to a perceived arrogant and artificial style) viewed audience members through a profit oriented lens where “viewer satisfaction” (2002, p. 239) is a primary measure of success. Though these differing lenses may seem obvious, this lack of understanding for the different points of reference often created a high level of tension between groups in this sample. Ultimately, each groups attempt at power and control became the project’s primary drivers, what Bouman would eventually label, “steering power” (2004, p. 232)

According to Bouman, stakeholders engaging in collaboration must be made aware from the beginning that, “designing an EE TV program means collaborating in a high-risk context” and that, “jointly construct(ing) a new frame of reference” (2002, p. 238) is a key ingredient in producing desired outcomes. She acknowledges that finding a new reference point and common ground between non-profit and profit making worlds will only be possible if both groups view EE productions as an entirely new genre of media. In this new media, a new paradigm evaluates effectiveness by both “established creative and pro-social goals” (p. 241) and that, “health organizations must become more television literate, [while] television organizations must recognize that commercial interests can go with social accountability” (p. 241).

Gaps in the Research

Over the last thirty years EE programs have proven that they can be effective in influencing various health outcomes in diverse populations (Singhal et al., 2004). Findings in several recent studies show that an EE strategy may be useful when promoting health to Latino Spanish speakers (Crist, 2005; Lalonde et al., 1997; Wilkin et al., 2007). It still remains unclear, however, why some EE messages resonate while others remain ineffective. Very little evaluation exists on EE programs that target U.S. Latino Spanish speaking populations (Murphy & Cody, 2003), specifically regarding how recognition of a character and the dramatic timing within the storyline influences knowledge, intended attitudinal and behavioral intention change (Wilkin et al., 2007). Furthermore, more research is needed around the interpersonal effects of an EE intervention.

Collaboration and Partnership

Previously mentioned work by Bouman on entertainment media/public health collaborations and more recent non-peer reviewed publications (Brailsford & Goodman, 2006;

5 Health issues ranged from nutrition, smoking, medical care, and low fat intake. Television shows included comedies, dramas, and variety talk shows.

Murphy & Cody, 2003) offer suggestions for forming successful partnerships with media institutions, particularly television. Peer reviewed publications about EE interventions, however, rarely discuss the practical nature of the collaborative process, though there are some exceptions (Bouman, 2004; Bouman, Maas, & Kok, 1998). New examinations relating to the specific transactions that occur between different stakeholders would be useful for future collaborations.

For instance, Bouman's work with Dutch programming, was instrumental in providing insight and recommendations about EE collaborative efforts, but may not be applicable to all EE collaborations, especially those that involve media organizations whose audience base is from a minority culture. It may be that cultural as well as organizational differences impede the suggestions offered in Bouman's research. If so, what are these differences and how can future collaborations mitigate these?

Telenovela Intervention on Ladder Safety in Construction Sites

Pecados Ajenos ("Sins of Another"), a telenovela produced by the Spanish language TV chain Telemundo, featured an entertainment-education storyline that aired over a two-week period from April 1st to April 14th, 2008. The storyline centered on Tere and Hector, two well developed (though not central) characters in the telenovela. Tere, Hector's undocumented immigrant girlfriend, is severely injured after falling from a ladder at her newly acquired job on a construction site. The main event of the storyline was written to include three key messages pertaining to ladder safety in the workplace:

1. *Choose the right ladder for the job.*
2. *Always secure an extension ladder at the top & bottom before climbing the ladder.*
3. *Never carry tools or anything else in your hands as you climb a ladder.*

Ladder safety messages were chosen because of the high frequency of preventable falls in the workplace (described in background). The storyline was developed with joint collaboration from four separate entities, the National Institute of Occupational Safety and Health (NIOSH), the Center for Construction Research and Training (CPWR)⁶, Hollywood, Health and Society (HHS)⁷ and Telemundo.

Additionally, several other media approaches were utilized to reach the audience with ladder safety messages. A news feature about the importance of workplace safety was produced and shown on the evening news on some Telemundo local affiliate stations the evening before the storyline began. NIOSH and CPWR also helped Telemundo prepare a web feature on construction safety that appeared on the *Pecados Ajenos* website for approximately one week during the airing of the storyline. This website also featured a gallery of pictures featuring stills from the filming of the construction workplace storyline. Additionally, NIOSH and CPWR worked in partnership with Telemundo to write a script for a 30-second Public Service Announcement (PSA), which Telemundo produced and aired 10 times in the two weeks

⁶ CPWR's mission is to provide up to date safety information related to construction worker safety and is made up of Union members working in construction related jobs

⁷ HHS's mission is to serve as a liaison between the entertainment industry and public health organizations.

following the airing of the storyline during the *Pecados Ajenos* time slot. This PSA also directed viewers to a CPWR produced website www.mitrabajoseguro.org ('*my safe workplace*'), which featured ladder safety information related to the *Pecados Ajenos* storyline, downloadable information and the option to watch the PSA.

Contributions to Knowledge Gaps

The majority of effective workplace safety interventions in the past have focused on changing existing safety policy related to hazard reduction, job design, and organizational decision making (Emmons, 2000). EE and health communication scholars acknowledge that even the most effective health communication at the mass media level is often limited by messages focused on individual behavioral change (Institute of Medicine, 2002; Singhal et al., 2004). For Latino construction workers this may be especially true due to socio-cultural circumstances such as beliefs related to documentation status or lack of basic workplace equipment (Dong, 2005; Dong & Platner, 2004; Franklin, 2008).

Health communication programs that use culturally relevant themes via popular mediums may be an effective way to begin to create awareness about workplace safety in the overall Latino population and socio-cultural barriers. Awareness about specific messages, however, may not be enough to affect behavioral change in the target population and ultimately policy and organizational changes are likely needed to place an increased responsibility for employee safety and health on the businesses who hire these workers.

With these caveats in mind, a multi-level approach to behavior change takes the perspective that behavioral health interventions use complementary methods to achieve objectives. For example, to achieve a decrease in fatalities and injuries from falls, future policy changes may mandate safe ladder practices or expand the ability of safety inspectors to enforce existing regulation at all levels of construction worksites. Renowned health communication scholar Robert Hornik discusses the important influences that media can have on changing social norms, which he believes often influence policy makers to enact policy change (Hornik, 2002). It is this author's opinion that the probability that these changes are developed and implemented successfully is dependent on our ability to effectively communicate the reasons for these possible changes to the target populations most affected by these changes. Emmons, (2000) implicitly concurs in her discussion on why an understanding of how to create better linkages between individual and population level interventions should be a top priority for social scientists. Likewise, Smedley and Syme (2000) agree that multi-level approaches need to be researched and practiced.

The survey data collected in the aforementioned telenovela workplace intervention provides an opportunity to research relevant questions about the ability to communicate individual level health and safety messages targeted to Latino audiences through a population level medium. It is within the context of integrating multiple level interventions that we should seek to understand whether a culturally contextual system of dissemination (telenovela narrative) can be successful in reaching viewers and if so what mechanisms of delivery promoted audience awareness of specific messages. Also within this context are questions focused on assessing the ability of this method of risk communication to stimulate the socially mediated communication pathway that Bandura (2004) theorizes can strongly affect individuals.

Furthermore, (to this author's knowledge) this intervention is the only intervention that has been developed, implemented, and evaluated via a collaboration between a government public health institution, a construction worker safety advocacy group, a for profit entertainment mass media corporation, and an academically based liaison organization specializing in EE collaborations. A qualitative study exploring this partnership and collaboration contributes to our understanding of the important effects that public-private collaborations can have on health interventions and our ability to "develop an infrastructure for disseminating effective interventions...and to form effective partnerships with key organizations and corporations that share common goals" (Emmons, 2000, p. 290). This exploration also investigates the capacity that multi-disciplinary approaches have on the design, implementation, and evaluation of health interventions (Neuhauser, Richardson, Mackenzie, & Minkler, 2007). The specific questions are listed below.

Theoretical Frameworks

With the premise that "no single theory explains and predicts all communication effects" (Finnegan Jr. & Visawanth, 1997, p. 315), this section describes the theoretical frameworks that support and inform the proposal's main thesis. Namely, that attitudes towards risky behaviors can be changed or significantly influenced through a media communication intervention that uses carefully constructed narratives. These frameworks and models described here frame the questions and methodological strategies that will be used to answer the research questions in this dissertation project.

Media Studies Framework: An Overall Perspective

A media studies framework proposed by Visawanth and Finnegan (1997)⁸ takes the perspective that health communication is best viewed by defining three specific and different levels for study. These different levels or more accurately, "branches", consist of, 1) The study of how human beings assign meaning to symbols to make language, 2) The study of how communication can be used to persuade and influence others, and 3) The study of how communication is used by institutional organizations and systems.

Within the context of how communication and language affect our world, each of these branches can be split into various micro and macro behavioral levels. Similarly to the SEM, these levels invite a perspective at 1) the individual level and the interpersonal level (2 people), 2) the group or organization level, and 3) the societal, cultural and community levels. Figure 1 is a schematic representation of how these branches coincide with the micro and macro levels of study.

8 with influences from noted communication scholars George Gebner

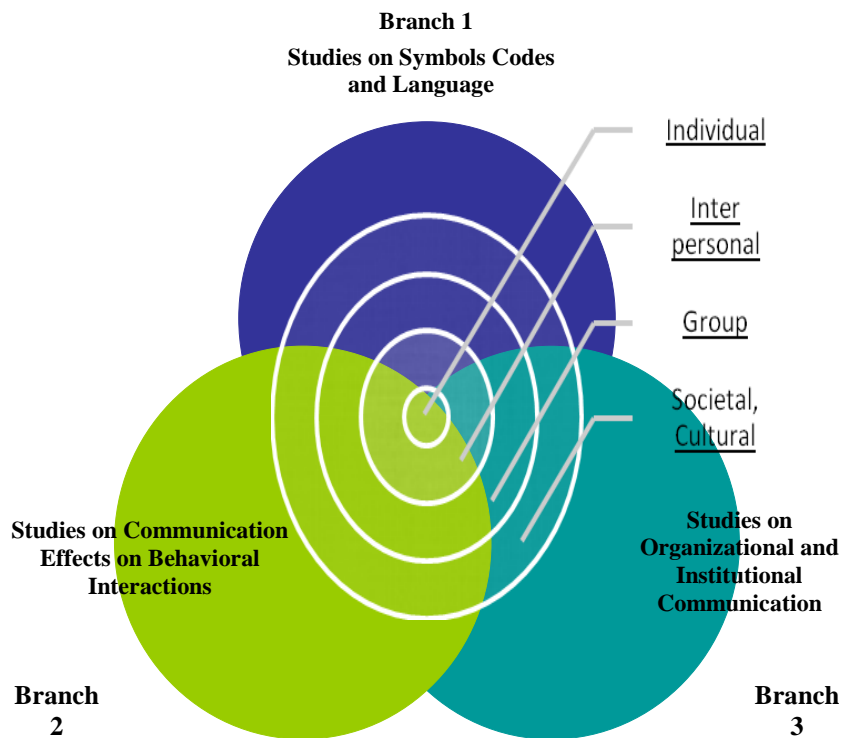


Figure 1. Visual representation of overlapping three branches involved in communication studies and the different levels of analysis possible within each of these. Adapted from Finnegan Jr & Visawanth (1997)

Research questions that involve understanding the effectiveness of a communication intervention are usually focused at the individual and interpersonal levels of change within branch two. In the case of the *Pecados Ajenos* telenovela intervention, described in the previous section, these include research questions that test any changes in knowledge, awareness, and behavioral intentions related to ladder safety. It is also instructive to explore the process involved in the creation, development, and implementation of a health communication intervention. Specifically for the ladder safety telenovela intervention, research questions should be formulated that explore the collaboration and motivations needed between public health organizations, labor safety organizations and the private for profit entertainment media industry. Branch three (studies on organizational and institutional communication) provides a context, within the larger health communication studies framework, in forming research questions exploring collaborations between differing organizational structures

Frameworks Guiding Research Questions and Methods

Two theoretical frameworks, the Health Belief Model (Bandura, 2004; Strecher & Rosenstock, 1997) and Albert Bandura’s Social Cognitive Theory (Bandura, 2004) are both

robust and help develop the most precise research questions and ensuing strategies for measuring the individual and interpersonal factors believed to be involved in the changes expected from this intervention.

Health Belief Model: Individual Value Expectations

The Health Belief Model (HBM) is known as a value expectancy theory because it describes individuals' motivations towards a particular behavioral action or message in the context of the individual's perceived values towards the health issue in question.

This framework offers a lens to examine the possible individual changes that would ideally occur following exposure to EE programs. For example, EE programs provide a dramatic narrative that shows the positive and negative consequences of a health behavior (Sood, Menard, & Witte, 2004), transmitting knowledge and awareness of a given health issue or in the vernacular of the HBM, cues to action. Ideally increased knowledge and awareness induces audiences to dynamically examine their own attitudes and beliefs towards a health issue and a proposed behavior. In other words, EE interventions that are effective spur the individual to examine their perceptions of susceptibility towards an impacting health issue, while also self-evaluating the perceived barriers and perceived benefits involved with the proposed behavior. These attitudinal changes will ideally result in an increased likelihood of action.

For the *Pecados Ajenos* intervention, the HBM predicts that individuals who recognize the embedded storyline will exhibit increased levels of knowledge and awareness about ladder safety prevention leading them to have a changed sense of the perceived barriers and risks (attitudes and beliefs) associated with ladder use. These changes are theoretically predicted to influence subsequent behavioral intentions to seek out more information on construction work safety, interpersonally communicate this awareness. For construction workers who recognize the storyline, behavioral intentions around actual preventable safety actions should emerge.

Social Cognitive Theory: Social Structural Influences

Discussed in the previous section, Albert Bandura's Social Cognitive Theory (SCT) is based on the perspective of the transactional or reciprocally deterministic model of human behavior, where "people are producers as well as products of their social environments", (Bandura, 2004, p. 45). The primary way of motivating someone is to improve their self belief that they can control their life and make necessary changes. The construct of self-efficacy (personal agency), is influenced by social structural influences, which include an individual's social and interpersonal networks, or what he aptly describes as the "social milieu" (2004, p. 45). Therefore, health communication via a media intervention may influence self-efficacy via dual paths 1) a direct pathway that communicates information straight to the individual audience member and 2) a socially mediated pathway wherein information is communicated via the individual's social and interpersonal networks. Due to the transactional nature of information sharing and doing between individuals, the latter pathway is often more instrumental for influencing changes in behavior.

In this view, proper evaluation of an EE program should assess whether or not the intervention increased information seeking and interpersonal communication about the

embedded health message or behavior (Bandura, 2004). In the context of a telenovela with ladder safety messages, recognition of the storyline will result in an individual reporting increased probability of information seeking and interpersonal communication about ladder safety.

Critical Ecological Inquiry

Examining the complexities involved in the development, implementation, and evaluation of an EE intervention at the various partnership levels also requires a more subjective interpretation of the process. Critical ecological inquiry is a research paradigm⁹ that seeks to understand a given phenomenon or situation in the context of the overall system in which the phenomenon is taking place (Crabtree & Miller, 1999). In the case of cross collaborations between differing entities, particularly public health and media organizations, this research paradigm provides a larger lens to look at both the interpersonal and larger systemic institutional factors involved in EE productions.

Purpose of Current Study

In recognizing that Spanish-language TV programming is considered a trusted and enjoyed source of information for Latino Spanish speaking audiences living in the U.S. (Downey, 2006b; Encuesta Americanos Poll, 2006), the Centers for Disease Control/National Institute of Occupational Safety and Health (CDC/NIOSH) worked with several partners including Spanish language TV chain Telemundo to develop and implement an intervention featuring a mass media telenovela embedded with safety and health information about construction worksite safety.

This dissertation aims to answer research questions about the effectiveness of this method of communication by a secondary data analysis of online audience survey data collected both before and after the airing of the workplace storyline. Research questions are answered about the effectiveness of the intervention regarding knowledge, perceptions, and behavioral intentions related to construction worksite safety information. An additional research objective of this dissertation is to provide a greater understanding of how the process of developing, implementing, and evaluating an EE intervention is influenced by the necessary working partnerships between public health institutions and media organizations. In-depth semi-structured interviews with individuals from both the public health and entertainment media organizations that worked on this project were conducted to qualitatively explore this research objective.

⁹ According to Crabtree and Miller, “ a research paradigm represents..assumptions concerning reality..knowledge of that reality..and particular ways of knowing about that reality.” (Crabtree & Miller, 1999, p. 8)

Research Questions

Effectiveness Study

Q1. Was the telenovela intervention associated with increases in knowledge of ladder fall prevention strategies?

Q2. Was the telenovela intervention associated with increased changes in the perceptions towards construction workplace risks on the part of family and friends of construction workers?

Q3. Was the telenovela intervention associated with increases in behavioral intentions to seek information and to engage in interpersonal communication about fall prevention?

Explorative Qualitative Study

Q4. How did the partnerships between public health organizations and a Spanish language entertainment media organization influence the development, production, and implementation of a workplace safety entertainment-education intervention?

Methods

This dissertation used quantitative and qualitative methods to explore the *Pecados Ajenos* (“Sins of Others”) telenovela intervention project. Quantitative analysis of survey data was used to measure the effectiveness of the telenovela (described first) in changing knowledge and perceptions of workplace safety, and behavioral intentions to seek information and engage in interpersonal communication. Qualitative methods (described in the latter half of this section) were used to explore how the partnership between public health and entertainment media organizations influenced the development, implementation, and evaluation of the intervention.

Quantitative Study Design

The *Pecados Ajenos* workplace safety intervention employed a pre/post-test cross sectional equivalent group design. Participants answered questions via an online survey tool (described later in this section) before and after the airing of the *Pecados Ajenos* telenovela worker safety storyline. For this dissertation, a secondary statistical data analysis of the pre and post-test on-line survey data was utilized to evaluate the effectiveness of the *Pecados Ajenos* telenovela intervention.

Participants

The sampling population came from the entire contingent of members of the “*Foro Pecados Ajenos*” (*Pecados Ajenos* Forum) (N = 1100), a Telemundo online fan user group for viewers of the *Pecados Ajenos* Telenovela. Due to the high proportion of Latinos, and particularly Spanish-speaking immigrants, who work in construction (Labor Occupational Health Program, 2007), it was assumed that among these *Pecados Ajenos* fans, there were likely to be a significant number of friends and family members of construction workers who would have interest in and identify with the storyline. This was a key study group because research objectives asked whether participants would be likely to share and seek information about construction workplace safety

Because the key messages were targeted at a Spanish-speaking audience, the surveys were available only in Spanish. Only adults with a self-reported age of 18 years or over were included in the sample because children are considered special populations and require additional IRB approval. Internet Provider (IP) addresses found to be duplicated within each test (in either the pre or post-test but not across surveys) were also excluded because this indicated a repeated completion of the survey. Preliminary descriptive data showed that the majority (90%) of the post-test survey responses occurred within two months from the time of posting. Due to a significant drop in response rates and significant differences in completion rates among those who took the survey after 60 days, only data from participants who completed the post-test within 60 days were included in the results. Both the pre and post-test surveys achieved a robust response (N=743 and N=669, respectively) from the email blasts that recruited members of the *Pecados Ajenos* fan group. After excluding participants based on age considerations the final sample size for the pre-test was (N=712), while the final number for the post-test was (N=645).

An Internal Review Board (IRB) application was submitted and approved by the Human Subjects Office at the University of Georgia well in advance of the survey posting. An informed consent message appeared prior to starting the online survey and stated that participation in the survey was voluntary and subjects could withdraw at any time. Survey participants were not required to provide personally identifying data, nor were there any personal interactions with the participants by any of the persons working on this project. Therefore this data analysis did not meet the threshold definition of human subjects and did not fall under the scope of the UCB Institutional Review Board. Additionally, SurveyMonkey provides a secured server and does not store any personally identifying data. Survey Monkey is an automated website that allows users to create and host surveys (SurveyMonkey Inc., Boston, Massachusetts). No incentives were offered for participating in the survey.

Procedures

This EE intervention involved three components: 1) a storyline focused on construction safety in the prime time telenovela *Pecados Ajenos*, 2) a Public Service Announcement (PSA); and 3) an educational construction safety website, www.mitrabajoseguro.org.

Ladder safety was chosen as the storyline topic because of the high frequency of preventable falls from heights in construction workplaces (as described above) and the existence of prevention measures that could be expressed clearly and briefly and could be acted on by individual workers. Through a partnership agreement between Telemundo, NIOSH and CPWR and additional support from Hollywood, Health & Society, three specific messages were developed regarding the amount of information that could be effectively communicated through the telenovela medium. The three messages embedded in this storyline were, “*Choose the right ladder for the job*”, “*Always secure an extension ladder at the top & bottom before climbing the ladder*”, and “*Never carry tools or anything else in your hands as you climb a ladder*”.

The Telemundo produced telenovela, *Pecados Ajenos* aired the EE storyline over a two-week period from April 1st to 14th, 2008. In the storyline, Ramon is a construction worker who finds out his girlfriend Tere is pregnant. To earn some extra money before the baby is born, Tere decides to get a job at Ramon’s construction site. On her first day, as the workers are given ladder safety training in English, Tere, who speaks only Spanish, is unable to understand the instructions. Ramon summarizes them for her, but later a colleague advises her to ignore the information because it makes the work take longer. Tere falls from a ladder and loses her baby. Due to Tere being undocumented and unable to pay her hospital bills, she and Ramon are forced to flee to Mexico.

In addition to the storyline, NIOSH and CPWR worked in partnership with Telemundo to write a script for a 30-second PSA, which Telemundo produced and aired 10 times during the *Pecados Ajenos* time slot in the two weeks following the airing of the storyline. The PSA reiterated the ladder safety messages and acted as the link between the two media (television and Internet) by advertising the URL of the construction safety website and encouraging viewers to seek more information there. The PSA featured a short clip of Tere falling, as well as the actor who played Ramon giving a brief testimonial in which he discusses the preventable nature of deaths and injuries from construction falls and the importance of sharing this life-saving

information with others. At the end of the PSA, he also provides the URL for the construction worker safety website.

The intervention also utilized several web-based components; the “Mi Trabajo Seguro” (My Safe Workplace) website (www.mitrabajoseguro.org) was produced by CPWR and featured Flash-animated ladder safety information related to the *Pecados Ajenos* storyline, downloadable and printable information, and the option to watch the PSA. The Flash-animation described seven key steps to ladder safety, including the three main messages from the storyline. Upon viewing the animated feature, users were offered additional resource links. The website also encouraged viewers to email the website link to a friend.

In addition to the website, NIOSH and CPWR also helped Telemundo prepare a web feature on construction safety that appeared on the *Pecados Ajenos* website for approximately one week during the airing of the storyline. This web feature, accessed via a web link, included a picture gallery of stills from the filming of the construction workplace storyline as well as basic statistics on the numbers of workers who die every year from falls. Website visitors were also encouraged to share this information with others. The NIOSH and CDC websites also had short web features on their portals that announced the storyline, provided background information on construction falls and the three ladder safety messages, and linked to www.mitrabajoseguro.org and other web-based construction safety resources. These features encouraged readers to both watch the show and visit the website.

Because a lack of resources made a population-based evaluation of this intervention impossible, Telemundo’s interactive message boards that exist on the websites of each show were used to capture interactivity data. Upon registering, these popular messages boards allow viewers of a particular show to post threads, make comments, and create online user groups. Telemundo is able to send email to all registered viewers and communicate with registered and non-registered members of this group by posting threads on the message board. This novel method of communicating with the show’s viewers provided a mechanism by which a sample was recruited to complete two online surveys. In addition, because the PSA directed viewers to the Mi Trabajo Seguro website, web tracking software was utilized to evaluate activity on the website that could be correlated with the airing of the storyline.

On March 25, 2008, members of the Telemundo *Pecados Ajenos* online user group were sent an initial recruitment email asking them to give their opinion and views about the show. The subject heading of this initial recruitment email read “Greetings *Pecados Ajenos* fans-tell us what you think.” A reminder email was sent three days later with similar language. Ten days after the airing of the final episode featuring the storyline, members of the online user group were emailed again and asked to fill out another audience opinion survey. Similar language was used in both the pre-test and post-test recruitment phases, although the post-test email blasts added language that advised respondents that they could take the survey again even if they had previously done so. The words “pre and post-test” were not used in the recruitment emails. No mention of the workplace safety storyline was made in either the pre or post-test recruitment emails. Each of the recruitment emails contained a link to the aforementioned SurveyMonkey survey.

Measures

Both the pre and post-test survey instruments incorporated simple to read and follow instructions in Spanish. The surveys were designed to take approximately 20-30 minutes to complete. The pre-test survey, conducted March 25-April 1, 2008, included 26 questions. The post-test survey, which opened on April 25th, 2008 and closed on June 25, 2008, included 34 questions. Twenty-six (26) of these questions were similar to those on the pre-test survey. The eight additional questions on the post-test related specifically to the telenovela storyline and characters, use of the Mi Trabajo Seguro website, and exposure to workplace safety message from other sources. Table 1 summarizes the measures that were collected in the surveys. Below is a description of the key variables used to analyze the effectiveness of the telenovela. Detailed information about each of these key variables can be found in Appendix A.

Table 1. Key variables in the *Pecados Ajenos* workplace safety online survey.

Primary Independent Variable	Primary Dependent Variables	Other Information Collected in the Survey		
		Demographic	Media and Telenovela Viewing Characteristics	Exposure to Workplace Safety Messages
<ul style="list-style-type: none"> • Recognition of storyline 	<ul style="list-style-type: none"> • Knowledge workplace safety messages • Perceptions (attitudes and beliefs) about workplace safety • Behavioral intentions to communicate and/or seek workplace safety information 	<ul style="list-style-type: none"> • Age • Gender • Language used in home • Educational level • Ethnicity or race • Income level • Relationship to construction work 	<ul style="list-style-type: none"> • Frequency and type of media use • Degree of trust in sources of health information • Frequency of telenovela viewing • Recognition of <i>Pecados Ajenos</i> Characters • Believability of ladder safety storyline 	<ul style="list-style-type: none"> • Public Service Announcement (PSA) seen on TV • Someone they knew • Newscast • MitrabajoSeguro website • Telenovela viewing

Key demographic and Telemundo audience information variables

Demographic data collected in both pre and post-tests included questions asking participants *age, gender, income, education, primary language spoken in the home, and race/ethnicity*. Relationship of viewer to construction work was captured by a series of yes/no questions asking the respondent to choose their level of relationship, “*past or present construction worker*”, “*family and/or friend of a construction worker*”, and “*no relationship at all to construction work*”.

Nine Likert scale items collected information about the frequency of use (*never, once a month, three times a week, and every day*) for Spanish and English language media including television, radio, print, internet, and the *Telemundo* website. Additionally, nine Likert scaled items asked respondents about their degree of trust (*none at all, a little, don’t know, some, a lot*) about health information when presented through various Spanish language media including:

newscasts, websites, telenovelas, talk shows, radio programming, and print media. Questions on both the pre and post-test surveys collected information about viewing various Spanish language telenovelas, including *Pecados Ajenos*. Respondents to the post-test were also asked about their recognition of several *Pecados Ajenos* characters (including the characters involved in the workplace safety storyline). Post-test respondents were also asked a question about the believability (*very probable, probable, neutral, not probable, not at all probable*) of the construction worker storyline in the telenovela as applied to themselves or someone they knew.

Primary Outcome Variables

For this project, the primary independent variable was “*recognition of storyline*”, while the primary dependent variables were “*knowledge of workplace safety messages*”, “*perceptions (attitudes and beliefs) towards construction workplace risks*”, and “*intentions to seek information or engage in interpersonal communication*”.

Recognition of storyline

Respondents taking the post-test were asked (prior to any questions about construction work and ladder safety) to answer questions about their recognition of *Pecados Ajenos* storylines. Respondents were given a choice of five narratives (one of which was false) and asked to select the ones they recognized. The ladder safety storyline answer choice was given as, “*Tere falls off a ladder at work.*”

Knowledge of workplace safety messages

Both pre and post-test surveys featured one question with six specific knowledge questions about ways to reduce the risk of falling at work. Three dichotomous yes/no questions asked about participants’ knowledge of the three ladder safety messages embedded in the storyline “*use the right ladder for the job*”, “*tie off ladders at both ends*”, and “*do not carry tools or materials in your hands when climbing a ladder*”. Knowledge items were analyzed separately and compositely. An index of the composite scores of these three items was created to form the “*knowledge of specific messages*” dependent outcome.

Perceptions towards construction workplace risks

Both pre and post-test asked a question with eleven items to measure participants’ perceptions (attitudes and beliefs) of construction workplace risks for their family member or friend who worked in construction. Likert scale scoring was used to measure respondents’ perceptions. The composite score from these eleven items formed this primary dependent outcome. Examples of perceptions assessed included attitudes about the risk of death and injury for their family members and/or friends at construction worksites, beliefs about the usefulness of protective equipment at a worksite, and ability to prevent injury at a construction worksite among others. (see Appendix A)

Behavioral intentions

The pre and post-test also featured an item with Likert scale scoring to measure the likelihood that in the next six months a participant would communicate workplace safety information to a friend or family member working in construction. The composite score of these seven items formed the “*behavioral intentions to seek information and engage in interpersonal communication*” primary dependent outcome variable.

Workplace Safety Exposure Variables

Respondents taking the post-test were asked to answer questions related to the following: exposures in the past month to construction worker safety messages via a 1) *Public Service Announcement referring them to the mitrabajoseguro.org website*, 2) *a telenovela*, 3) *an article in the newspaper*, 4) *a radio program*, 5) *an email*, 6) *the Pecados Ajenos website*. An additional question asked respondents if they had visited the www.mitrabajoseguro.org in the past month.

Analysis of Quantitative Data

After exportation of an Excel (2007, Microsoft Corp., Washington) data file containing the participant data from the SurveyMonkey website, data was cleaned managed and analyzed using SPSS version 17.0 (2008, SPSS Inc., Illinois). Information from the pre and post-tests allowed for descriptive statistical analyses for demographic data, media use (including frequency of telenovela viewing), and degree of trust in media for health information. Data collected from the post-test survey allowed for descriptive statistical information for the Mi Trabajo Seguro website visits, the recognition of telenovela characters and workplace safety storylines, and exposure to workplace safety messages.

Contrasts between pre and post-test data were conducted using independent sample t-tests for ordinal data while all categorical data was analyzed with chi-square tests. Pearson chi-square values are reported where appropriate. Contrasts between individuals who reported recognition of the storyline and non-recognition of the storyline were also analyzed using similar statistical methods.

Bivariate statistical analyses were conducted to test research questions related to the relationship between what was considered the primary independent and dependent variables, sometimes referred to as the “focal variables”(Anashensel, 2002). Figure 2 is a Directed Acyclic Graph (DAG) (Jewell, 2002) showing the relationships between the primary independent and dependent variables; recognition of the storyline, knowledge of ladder safety messages, perceptions towards workplace risks, and behavioral intentions to seek information and to engage in interpersonal communication For this model, the convention of two arrows pointing from one variable to two other variables indicates the presence of a potential moderating effect. For example, the arrows pointing from the specific knowledge box to both the perceptions and behavioral intention boxes, indicates that perceptions may moderate the effect between specific knowledge and behavioral intention. Although recognition and behavioral intentions are not directly linked, knowledge and perceptions changes are directly linked to recognition are theoretically predicted to mediate behavioral intentions.



Figure 2. Conceptual model of relationship between recognition of story line and intentions to seek information and interpersonal communication with possible mediating and moderating factors.

The relationship between these primary independent and dependent variables was initially assessed for significant association using simple bivariate analyses. These include t-tests of independent samples for continuous data (composite knowledge, perceptions, and behavioral intention scores) Significant associations were assessed at the $p=0.05$ level.

The first bivariate analysis assessed the association of storyline recognition (the dependent variable) with the first independent variable of interest, the composite score representing “knowledge of the three ladder safety messages.”

$$Y_1 = \beta_0 + \beta_1 X_1$$

In the above equation, X_1 represents recognition of the storyline (yes or no), and Y_1 represents the continuous composite knowledge outcome scores for the three ladder safety messages. The null hypothesis is that the composite knowledge scores are the same across respondents who did and did not recognize the storyline ($H_0: \beta_1 = 0$).

The second bivariate analysis assessed the association of storyline recognition (the dependent variable) with the second primary independent variable of interest, the composite score from the eleven items measuring perceptions towards construction work risks and safety.

$$Y_2 = \beta_0 + \beta_1 X_1$$

In the above equation, X_1 represents recognition of the storyline (yes or no) while Y_2 represents the continuous composite “perceptions towards construction work risks and safety” score. The null hypothesis is that composite “perception” score are the same across respondents who did and did not recognize the storyline ($H_0: \beta_1 = 0$).

The third bivariate analysis assessed the association of storyline recognition (the dependent variable) with the third primary dependent variable of interest, the composite score from the seven items measuring “behavioral intentions to seek information and to engage in interpersonal communication”. As predicted by the psychosocial theories used in this intervention, even though a direct relationship does not exist between recognition and behavioral intentions, a significant association should still be found between them.

$$Y_3 = \beta_0 + \beta_1 X_1$$

In the above equation, X_1 represents recognition of the storyline (yes or no) while Y_3 represents the continuous composite score measuring “behavioral intentions” score. The null hypothesis is that composite “behavioral intentions” scores are the same across respondents who did and did not recognize the storyline ($H_0: \beta_1 = 0$).

The DAG in figure 2 indicates that knowledge of messages could act as a mediator between recognition and behavioral intentions. Likewise, perception changes may also mediate the relationship between recognition and behavioral intentions. Both of these pathways can be tested with the following models, respectively:

$$Y_4 = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

$$Y_4 = \beta_0 + \beta_1 X_1 + \beta_3 X_3$$

In these models, X_1 represents recognition of storyline, X_2 represents knowledge scores, X_3 represents perceptions, and Y_4 represents the behavioral intention outcome. The null hypothesis for model (1) is that any significant relationship between behavioral intentions scores and recognition status will not vary across specific knowledge scores ($H_0: \beta_1 = \beta_2 = 0$). The null hypothesis for model (2) is that any significant relationship between behavioral intentions scores and recognition status will not vary across perception scores $H_0: \beta_1 = \beta_3 = 0$.

The model also predicts that changes in knowledge mediate the relationship between recognition and perceptions.

$$Y_3 = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

In this model, X_1 represents recognition, X_2 represents knowledge, and Y_3 represents perceptions. The null hypothesis is that any significant relationship between recognition and perception scores will not vary across knowledge scores ($H_0: \beta_1 = \beta_2 = 0$).

The full model showing the relationship between recognition, knowledge, perceptions, and behavioral intentions is:

$$Y_4 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

The null hypothesis is that a significant relationship between recognition and behavioral intention scores will not vary when the knowledge and perception variables are included in the model ($H_0: \beta_1 = \beta_2 = \beta_3 = 0$).

The statistical analysis described above serves to answer the main research questions listed in the previous sections and follow the conceptual framework outlined in Figure 2. Apart from the independent and dependent variable analysis, key demographic as well as other control variables were also examined to rule out and/or provide alternative explanations for the statistical analysis tests (Anashensel, 2002).

An analysis of the sample data using the Missing Value Analysis tool in the SPSS software was employed to identify whether any significant patterns exist in questions with greater than 10% of the sample missing (accounting for survey skip patterns).

Quantitative Study Limitations

Validity, according to Shadish, Cook, and Maxwell (2002) is defined as “the approximate truth of an inference or knowledge claim” (p. 32) when designing, implementing, and evaluating a research experiment. Certain concerns or threats may exist that potentially invalidate or influence validity. Though the researcher can never eliminate all of the possible threats to validity, identifying these threats plays an important role in anticipating the likely criticisms to one’s interpretations and if necessary using statistical manipulation to mitigate their effects (Shadish et al., 2002).

In assessing validity in quasi-experimental study designs that use quantitative data, four types of validity are generally considered: 1) statistical conclusion validity, 2) internal validity, 3) external validity, and 4) construct validity (Shadish et al., 2002). The most salient and relevant threats to validity for this work are threats posed to the construct, internal, and external validity.

For constructs to be valid, they must be measured and defined accurately by the questions on the survey (Shadish, Cook, Campbell, 2002). To mitigate possible misinterpretations, multiple items used in previous studies were used to operationalize the main outcomes. These constructs were collected completely via self-report, which may produce a systematic error due to response bias (Hulley, 2001). However, because data collection in both pre and post surveys were done the same way, this particular response bias should be the same for both groups and should therefore have a similar impact on the outcomes of interest

The main threats to the internal validity of the current study are expected to influence the degree to which we can ascertain causality to the intervention (Shadish, Cook, Campbell, 2002). Most notably, the cross-sectional survey poses issues with temporal, historical, maturation, and testing threats to the validity of our inferences. Steps that can be taken to mitigate these threats include assessment of all possible exposures to workplace safety messages prior to and during the intervention. Data was collected on these exposures and where appropriate is included in the analysis.

External validity is used to explain how well we can generalize these results to other populations outside of the study sample (Trochim and Donnelly, 2007), particularly other telenovela audiences and/or the typical Spanish language TV audience. For example, these individuals who took the survey had access to the internet, thereby possibly differentiating them from other viewers (Livingston, 2010). Additionally, health literacy skills were not measured in the survey and these are likely to be strong predictors of knowledge gains, perception changes, and behavioral intentions. Socio economic data and media use as well as data collected about the degree of trust individuals have in health information stemming from several media source was collected, however, and this may be used to extrapolate how generalizable this sample was to other viewers.

Explorative Qualitative Study Design

Semi-structured key informant interviews were conducted to obtain data relevant to the stated research objectives. Semi-structured in-depth interviews are “guided, concentrated, focused, and open-ended communication events that are co-created by the investigator and interviewee” (Crabtree & Miller, 1999, p. 19). These kinds of interviews were suitable for this

project because they provided thick, rich descriptions of the collaborative process and allowed for focus on the specific issues most pertinent to exploring the intervention processes, yet were flexible enough to permit interpretation and probing of new emergent ideas. Interviews were audio taped for immediate transcription analysis by the researcher.

Participants

Potential interviewees were formally contacted via email to ask them to take part in one sixty-minute phone interview. These interview requests provided a description of the project, the purpose of the research, the potential risks and benefits of participating, as well as the researcher's contact information for further information. When necessary, email requests for interviews were followed up with a telephone call from the researcher to ascertain the person's interest in participating in the research. Data gathering was conducted in one primary interview with each of the selected individuals. Follow-up conversations via telephone were conducted to clarify specific points of inquiry when necessary. Interviewees were assured that their comments would be kept confidential.

A stratified purposive sampling technique was used to explore and contrast key differences within the sample (Crabtree & Miller, 1999); in this case the stakeholders' perspectives of how the partnerships influenced the development, implementation, and evaluation stages in this project. The sample therefore involved individuals working for all the organizations associated with the intervention. These included 2 participants at the National Institute of Occupational Safety and Health (NIOSH), 2 from the Center for Construction Research and Training (CPWR), 3 from Hollywood Health and Society (HHS), and 1 from Telemundo (TM) for a total of N=8 qualitative interviews. The roles of these individuals ranged in levels of seniority, however, participants had to have worked on the workplace safety telenovela campaign at some point in order to be eligible.

Procedures

Interview Guide

Bouman (2002) conducted a series of semi-structured interviews with individuals collaborating on various EE projects. In this project she interviewed public health officials and entertainment industry personnel to explore the individual, interpersonal, and organizational process factors most influential in the collaboration of these EE projects. Theories from organizational literature, sociology, intercultural communication, and media production concepts such as "cultural differences", "professional standards", "personal traits", and "selection criteria" were used to begin conversations with health and entertainment industry professionals that were then analyzed to answer the research questions.

In a similar vein, interview questions (see Appendix B) for this project were developed to elicit discussion around the collaboration process at three different levels of influence (individual, interpersonal, organizational/institutional) and how this process interacted and shaped the different phases of the project (development, implementation, and evaluation). Figure 3 shows a 3 x 3 matrix depicting a potential mechanism of the collaborative process at differing

levels of influence in the context of the project phases. Potential thematic areas can be expanded based on level of influence and project phase. These thematic areas can then be used to create questions and elicit relevant conversation aimed at answering the main research question related to the collaborative process.

		INFLUENCE ON THE PROCESS OF COLLABORATION		
		Individual Level	Interpersonal Level	Organizational/ Institutional Level
COLLABORATION	Development	<ul style="list-style-type: none"> • Personal/ Biographical Characteristics • Position and role in organization <ul style="list-style-type: none"> • Job duties during this phase 	<ul style="list-style-type: none"> • Intra/Inter organizational communication channels • Selection and decision making processes 	<ul style="list-style-type: none"> • Perceived characteristics of organization • Mission • Agendas • Size • Previous history with EE interventions/ collaborations • Work culture
	Implementation	«»	«»	«»
	Evaluation	«»	«»	«»

Figure 3. Potential thematic areas grouped by level of influence and phase of project which guided development of interview questions.

In order to refine and develop the interview guide for both length and content, field tests of questions developed from the aforementioned thematic areas was conducted with several doctoral student colleagues who had experience in administering semi-structured key informant interviews. In addition to feedback from these colleagues, feedback was solicited from at least one health communication scholar with previous experience working in entertainment-education programs. The final interview guide was designed so that the semi-structured interviews took between 45-60 minutes.

An Internal Review Board (IRB) application was submitted and approved by the University of California at Berkeley's Committee for Protection of Human Subjects (Protocol #2010-04-1294) to conduct this research and adhered to all required research guidelines.

Analysis of Qualitative Data

All 8 interviews were conducted via telephone at a time and location designated by the participant. After participant consent to record the conversation, interviews were recorded using a digital recorder. Upon completion of the interviews, the audio file (.mp3) data was transferred to a password-protected computer. From these audio files, interviews and field notes were

digitally transcribed verbatim after interview completion (Schatzman & Strauss, 1973) by the primary investigator. Field notes were examined after every interview. These notes were used to refine questions in future interviews.

In addition to the transcribed interviews, several interviewees voluntarily submitted email records and notes from various conference calls they had had at various times throughout the project. These documents provided important contextual and temporal background information that aided in the overall analysis of the transcriptions.

Analysis of the interview data was done using an *immersion/crystallization* approach that allows for effective and meaningful interpretations of qualitative data through inductive reasoning (Crabtree & Miller, 1999). This process involved entering all the fully transcribed interviews as primary documents into qualitative analysis software (Atlas TI, REF). The initial analysis used codes that were developed and defined from the themes in the interview guide and from interview notes. Upon this first analysis of all the interviews, several other codes that were thought to be important emerged. A second analysis of the transcribed interviews was then done with the newly developed codes. Upon this final analysis, quotations from each of these codes were printed out. The primary investigator was able to go through each of them and merge similar codes into larger categories to capture key themes emerging from the data. Only the primary investigator analyzed and coded these interviews.

Qualitative Study Limitations

Similar to the quantitative study, qualitative data analysis is subject to validity threats. However, the subjective nature of qualitative work suggests validity threats must be addressed using different strategies than those used for quantitative research. Crabtree (1999) compares the context of qualitative analytical data collection to quantitative data collection;

“Qualitative analytical methods rarely have the luxury of deductive universal categories, numerical proofs...the fact that qualitative research is conducted by human beings tied to particular contexts has raised the specter that such work is by nature...non-objective” (1999, p. 193)

To address these validity issues, Crabtree and Miller (2002) suggest five separate but interrelated “tacks to [help] make assertions of validity” (p. 193) 1) Depth of description of the data and phenomenon, 2) Accuracy in data collection, 3) Rigor in the context of “tirelessly recording...and interpreting the data” (p. 194), 4) Intellectual honesty in terms of searching and seeking out alternative explanations, and 5) Reflexivity in continuously reflecting on how one’s own biases may be influencing design, data collection and interpretation. These strategies will be used throughout the data collection, analysis and writing processes. In particular, the researcher will keep theoretical, methodological and personal memos to explore various interpretations and alternative explanations of the data, as well as to articulate any biases and perspectives that may influence interpretations.

Results

This results chapter is organized into two subsections. The first section presents the results from the secondary analysis of the pre and post-test survey data and answers research questions about the effectiveness of the telenovela. Demographic information and Telemundo audience characteristics are first presented to provide background and contextual audience information from the pre and post-test samples prior to answering the research questions (Wilkin et al., 2007). Following this, results of analysis addressing the three research questions is addressed, followed by supplemental analyses that probe deeper into the results of the effectiveness of the telenovela in increasing knowledge.

The second section of this chapter addresses the final research question in this dissertation that explores the partnership influences on the intervention. Contextual information is first presented about the individuals involved in the project followed by the emergent themes that address the proposed research question.

Quantitative Study

Key demographic variables and Telemundo audience characteristics

Table 2 shows key demographic and Telemundo audience information demonstrating that the two samples shared key similarities. The two samples also were equivalent along almost all of the key demographic variables. Even though significantly more females responded to the post-test than the pre-test (pre-test=80%, post-test=87%); $\chi^2(1)=8.52$, $p<0.01$), gender was not found to be a significant factor for any of the conclusions and results relating to research questions. No significant differences were found for age, income, education, race, language, and relationship to construction work between the pre and post-test samples.

The survey also collected important audience viewing characteristics from each of the samples. Both samples reported watching Spanish language television daily (Pre-test 90%, Post-test 93%) and the *Pecados Ajenos* telenovela at least three times per week at equally high levels (Pre-test 90%, Post-test 93%).

Table 2. Sample Demographics and Media Use.

	Pre-test	Post-test
Sample Size	712	645
Ethnic identification		
Hispanic/Latino	86%	88%
White/Anglo-Saxon	7%	4%
Language spoken at home		
Only Spanish	24%	25%
Mainly Spanish and some English	44%	40%
Socio-economic status		
Household income less than \$50,000	55%	54%
Graduated high school	49%	53%
Some college or technical school	27%	24%
Relationship to construction work		
Current or past construction worker	9%	7%
Family or friend of construction worker	47%	48%
Media and Telenovela use		
Watched <i>Pecados Ajenos</i> at least 3x per week	90%	93%
Everyday Viewer of Spanish Language TV	90%	93%

Research Question #1: Knowledge of Workplace Safety Outcomes

The first research question addressed whether the telenovela increased knowledge of the workplace safety messages that were embedded in the storyline. Table 3 shows the results of a chi-square analysis comparing differences between pre and post-test samples. Chi-square analysis revealed that post-test respondents were significantly more likely to know the three specific knowledge items that were explicitly stated in the telenovela storyline: (1) *Use the right ladder for the job* ($X^2=15.8, p<0.001$), (2) *Don't carry tools in your hands while climbing up a ladder* ($X^2= 19.1, p<0.001$), and (3) *Tie off the ladder at both ends* ($X^2=10.2, p<0.001$). From these data, the telenovela airing appeared to be associated with an increase of 10% of the sample for these knowledge items. For both the pre and post-test samples in this analysis, 90% of the participants reported watching the telenovela greater than 4x per week.

Table 3. Knowledge changes after telenovela workplace storyline airing.

Workplace Safety Knowledge Item	Pre-storyline airing (% yes)	Post-storyline airing (% yes)	X^2	<i>P</i>
<i>Use the right ladder for the job</i>	72%	84%	15.8	<0.001
<i>Don't carry tools in your hands while climbing up a ladder</i>	75%	87%	19.1	<0.001
<i>Tie off ladders at both ends</i>	79%	87%	10.2	<0.001

Storyline recognition and knowledge outcomes

In addition to analyses addressing Research Question 1, supplemental analyses examining the link between story recognition and knowledge outcomes were performed to explore if such recognition enhances outcomes. Apart from the telenovela's airing, survey data from the post-test asked about participants' recognition of the workplace safety storyline to test the actual effect of recalling the workplace storyline (appearing over a 2 week period-see methods) on these knowledge outcomes. Pearson chi-square analyses were used to check for any significant associations between a respondent recalling the storyline (recognition) and knowledge of the specific messages embedded in the storyline. Results (see Table 4) showed that the post-test sample was knowledgeable overall regardless of recognition of the storyline, however, recognition of the storyline was significantly associated with being able to recall the "*don't carry tools in hands while climbing up a ladder*" item ($X^2=3.83, p <0.01$), and marginally associated with the "*use the right ladder for the job*" item ($X^2=2.5, p<0.06$). "*Tie off ladders at both ends*" was not found to be significantly associated with either recognition or non-recognition of the storyline which likely. Combining the "*use the right ladder*" and "*don't carry tools in hands*" messages into an index score showed only a marginal association between respondents who recalled both messages and recognition of the storyline.

Table 4. Knowledge of workplace safety item and recognition of workplace storyline.

Knowledge item	% answering yes to Knowledge item based on recognition		Test Statistic	
	Non-recognition of storyline	Recognition of storyline	χ^2 (1, n=399)	P
<i>Use the right ladder for the job</i>	78%	85%	2.49	0.06
<i>Don't carry tools in your hands while climbing up a ladder</i>	80%	89%	3.83	0.05
<i>Tie off ladders at both ends</i>	90%	87%	0.53	n.s.
<i>Use the right ladder + Don't carry tools in hands</i>	72%	82%	4.0	0.07

These results spurred deeper analysis into whether there were any differences for the knowledge items “*use the right ladder*” and “*don't carry tools in hands*” among recognizers and non recognizers of the storyline controlling for a key demographic in this intervention; those who reported a relationship to construction work status and those who did not. Table 5 summarizes the association between the respondents’ reported relationship to a construction worker and recall of the specific embedded knowledge items. Interestingly and perhaps not surprisingly, results suggest that being a family or friend of a construction worker is marginally associated with positive recognition and recall of the knowledge item “*use the right ladder*”, and significantly associated with positive recognition and recall of the knowledge item “*don't carry tools.*”

Table 5. Knowledge of embedded message and recognition of storyline among those who are and are not family and friends of construction workers.

Knowledge of action that could prevent or reduce the risk of injury at a construction worksite	Relationship to Construction Work and Recognition of Workplace Storyline							
	Family member or friend of construction worker				No relationship to construction work			
	Non-recognition	Recognition	χ^2	p	Non-recognition	Recognition	χ^2	p
<i>Use the right ladder for the job</i>	74%	83%	0.5	0.06	79%	87%	0.7	n.s.
<i>Don't carry tools in your hands while climbing up a ladder</i>	70%	87%	0.9	0.05	90%	91%	0.05	n.s.

Predictor analysis

Supplemental regression analyses were conducted to examine several other predictors apart from recognition of the storyline to tease out the previously presented results for the knowledge item “*Don’t carry tools in your hands while climbing up a ladder*” This item was chosen apart from the other because it was the only knowledge outcome that remained statistically significant for the analyses described above. For this regression, a direct binary logistic regression (all variables entered at once) was used to examine predictors of the embedded message “*Don’t carry tools while climbing a ladder*” for family members and friends of construction workers. Logistic regression was used due to the binary nature of the outcome. Predictors were chosen based on the most plausible exposure possibilities to workplace safety messages (telenovela, newscast, PSA, website use, other individuals), relevant audience characteristics (trust in telenovelas for health information, frequency of viewing *Pecados Ajenos*, recognition of the storyline, and believability of the story). Table 6 presents this model with associated odds ratios, significance values, and 95% confidence intervals.

The variance explained by this model was moderate ($R^2 = .23$) and the log likelihood was 87.02. Both these values indicate that overall the model did not represent a significantly good fit. There were, however, three significant predictors that emerged from this model: recognition of the storyline, age and education level. The odds ratio for recognition can be interpreted within this model as follows: a person who recognized the storyline was nearly four times (3.84) as likely to recall the “*don’t carry tools while climbing a ladder*” than a person who did not recognize the storyline. The odds ratio for the age variable can be interpreted to mean that for every unit increase (one year) there was a 1.06 increase in the likelihood of recalling the message. For example, for every 10 years the odds of recognizing the workplace messages was 1.6 times that of someone ten years younger. Finally, the odds ratio for education level (.27) suggests that respondents who did not go to college were three times more likely to recall the “*don’t carry tools while climbing a ladder*” knowledge message compared to those who reported some college or more of formal education, controlling for the other variables in the model. The age and education results were surprising given that the variables associated with frequency of telenovela watching and exposure to workplace messages via the telenovela’s multi-media channels were not.

Table 6. Results of Logistic regression model prediction knowledge recall of the “Don’t carry tools while climbing a ladder” among Family and Friends of Construction Worker.

Variables	Odds Ratio (EXP (B))	P	95% C.I. for EXP(B)	
			Lower	Upper
Recognition	3.84	<i>0.01</i>	1.04	14.20
Age ¹	1.06	<i>0.05</i>	1.00	1.12
Education level ²	0.27	<i>0.03</i>	0.07	2.03
Income level ³	0.66	<i>n.s.</i>	0.07	1.53
Frequency of viewing Telemundo ⁴	0.22	<i>n.s.</i>	0.18	2.03
Frequency of viewing <i>Pecados Ajenos</i> per month ⁴	1.4	<i>n.s.</i>	0.16	11.20
Trust in telenovelas for health information	1.10	<i>n.s.</i>	0.62	1.74
Exposure of workplace from story on news	0.52	<i>n.s.</i>	0.14	2.76
Exposure from Public Service Announcement	1.30	<i>n.s.</i>	0.41	4.52
Exposure from telenovela seen on TV	2.30	<i>n.s.</i>	0.60	9.40
Exposure from <i>Pecados Ajenos</i> website	0.53	<i>n.s.</i>	0.14	2.00
Exposure via someone telling them about workplace messages seen on a telenovela	0.56	<i>n.s.</i>	0.16	1.65
Belief that <i>Pecados Ajenos</i> storyline could happen to them or someone else ⁵	0.80	<i>n.s.</i>	0.44	1.40

- 1- Continuous (odds ratio indicates each year increase),
- 2- Dichotomized (reference category is “high school or less”),
- 3- Dichotomized (reference category is “less than \$50,000/yr”),
- 4- Dichotomized (reference category is “three times a month or less”),
- 5- Dichotomized (reference category is “not likely at all”)

Research Question #2: Perceptions of Construction Workplace Safety Risks

The second research question addressed whether the telenovela produced changes in perceptions of workplace safety risks among family and friend of construction workers. Pre and post-test scores representing three theoretical constructs (perceived risks, perceived susceptibility, and perceived barriers to safety) were analyzed using a t-test of independent sample means. This analysis revealed no significant pre and post differences in perceptions of workplace safety risks among family and friends of construction workers.

Research Question #3: Behavioral Intentions

The third and final research question for the effectiveness study examined whether the telenovela airing was associated with changes in behavioral intentions to seek information and to engage in interpersonal communication about fall prevention among family and friends of construction workers. Similarly to the analysis of perceptions, a t-test of independent sample means of the indexed score revealed no significant pre and post differences between in behavioral intentions to seek information or communicate about fall prevention among family and friends of construction workers.

Explorative Qualitative Study

Research Question #4: Partnership influence on EE intervention process

The qualitative portion of this dissertation asked the following research question: How did the partnership between public health and Spanish language entertainment media influence the development, implementation, and evaluation of the workplace safety entertainment education intervention? Results from the interview analyses are presented and organized into four categories. First, the project partnership is contextualized by describing participants' roles within the project and any previous experiences working on Entertainment-Education (EE) projects. Second, the participants' views of the individual, interpersonal, and organizational characteristics of the partnership are described. Participants' descriptions of the stages of this project are presented last. Accompanying quotations are used to support the findings.

For the purposes of this dissertation, participants who worked at National Institute of Occupational Safety and Health (NIOSH) and Center for Construction Workers Safety (CPWR) were identified as public health professionals. The Telemundo interviewee representing the entertainment media perspective is referred to as the "entertainment media professional" Although the individuals from Hollywood Health and Society (HHS) had public health backgrounds, their extensive experience in EE projects gave them credibility at both the entertainment media and public health perspectives. They are referred to as the participants from the "liaison organization".

Project Roles and Previous EE Experience

Similarly to the quantitative demographic and media use information, several questions about participants' project role and whether they had worked on any previous EE projects provided contextual information for the results of the rest of this qualitative exploration. All participants interviewed reported working on the telenovela workplace safety project through its entirety or a large portion of the project with six of the eight reporting that they worked on the project from the very beginning stages. Three participants from three different organizations identified themselves as directors or associate directors for their respective organizations. The remaining five identified themselves in relation to this project with terms such as "*coordinator*", "*project manager*", "*communication specialist*", and "*project liaison*". One participant identified themselves as an "*evaluation analyst*". Six of the eight lived and worked on the east coast.

Given the role that HHS played in the intervention, it was not surprising that four of the eight participants (three of those four from HHS) reported having had prior experience with EE projects. Interestingly, there were no participants who reported working on any EE projects that involved workplace safety. Two public health participants did mention hearing that EE had been used in a workplace safety intervention at the international level and that knowing this helped them in their participation in this project.

Partnership characteristics

Part of the interview centered on how participants viewed the partnership and what characteristics at the individual, interpersonal, and organizational level were the most influential throughout the intervention.

Importance of having a "point person" with negotiation skills

Each organization had at least one person who acted like "a point person" and helped to provide an effective liaison between organizations. Participants described how essential this was for quick communication. This point person also needed to have excellent negotiation skills as the negotiation for message content was often delicate. Public health participants from CPWR and NIOSH described how important it was to have a "champion" working with them at Telemundo and that it really helped to make sure the project went forward. Likewise the entertainment media executive was pleased that the public health person that they worked with knew how "*Important it was that [public health people] don't talk too much in public health jargon*"

Organizational characteristics

Choosing the right network

“Telemundo was the network of choice because they cater to Spanish speakers in the US and not Spanish speakers abroad”. In addition this same interviewee outlined that Telemundo was a smaller network and that this created flexibility that was needed when doing an entertainment education project. Furthermore, a Telemundo employee expounded on the social mission of Telemundo, *“It is really important [at Telemundo] that we create telenovelas in the US, that they pertain to US Hispanics and relevant issues...Telemundo has always had a mission to inspire, inform, empower, and entertain US Hispanics.”* A public health employee validated this statement; *“They [Telemundo] did see this [construction work] as an issue in their community...they were very concerned in particular with the human rights aspect, a bit with workers rights.”*

Creative control is important in network television

One organizational characteristic particular to network television and especially Telemundo was their policy of guarding the writers from the public health officials. Liasion organization interviewees understood that that this policy was put in place to give the writer the creative control. The latter was corroborated by the Telemundo executive: *“The writer is very creative and I did it once and [found] the public health official doesn’t want to seem to negotiate a lot. However the writer takes offense to that if they feel their story is violated”*. More than two interviewees from one of the public health organizations agreed that creating storylines for the network was a wasted enterprise. One individual put it best: *“A lot of the work we did in retrospect was wasted. They (Telemundo) didn’t want storyline advice...they wanted ideas that were emotional that they could raise in the context of falls. They didn’t want two minute of dialogue. They saw that as their job. Public health officials felt they understood this and would have been grateful to have a chance to speak to the writer and have more contact with the producers as well. Still there was agreement from public health officials working on this project, that there is a tendency to want to as much information as possible into an intervention. “There were certain challenges because...[public health people] want things to be a 40 minute training in of itself”*.

Network organizations operate under different time pressures

One of the difficulties that public health officials had in understanding was the time pressures that are inherent in a network organization. Participants from the public health organizations were surprised at how fast things would need to change (*“I still cannot believe how fast they wanted things”*) and lamented that the *“entertainment media was not transparent process.”* Liasion officers tried to get public health officials to understand this and that it was important to prepare for *“everything to crystallize in five minutes”*, that it was important for public health people to understand the time crunch and the *“needs of the TV network..things happen very quickly at TV stations because there are so many people involved”*.

Government characteristics influence the partnership

Government project officials also discussed the importance of outside political pressures that they faced if the message was not controlled. For workplace safety, an erroneous health message would have ramifications in the support and collaboration that they could expect to receive from worker unions and others associated with construction work safety. According to public health officials, *“We are so tied to the politics and economies of the workplace that we couldn’t have any mistakes because it would reflect horribly on the agency. We would have real problem with our unions because they are supportive politically of NIOSH/CDC.”*

Project Stages

The original research question was loosely based on previous grounded theory work (Bouman, 2002) that explored EE partnerships and identified key stages that might be generalized to other EE collaborative projects. According to Bouman, a stages model of planning would give the diverse partner organizations involved in an EE project a shared frame of reference and help in completing the intervention. A key part of this research was trying to understand whether or not project leaders identified with a stages model and if they did, whether they incorporated it into the intervention. Key stages in this workplace safety project were thought to include: 1) development, in which the project begins to get off the ground and a partnership is formalized; 2) implementation, which involves production and broadcasting of the telenovela, and 3) evaluation, which consists of the summative research. Thus a central thrust of the research question was to understand whether participants felt that stages existed in this project and if they did, to better understand how each partner defined them.

Partners find that there is no clear definitions of stages

There was agreement among all participants that these stages did take place in this collaboration project, however, there was very little agreement on how to define the processes that went with each stage. For example, different words to identify these stages and the processes that went with them were used. Development was described as consisting of processes such as *“orientation”, “networking”, “implementation”, “negotiation”, “message and storyline development”* and *“crystallization”*. Implementation was thought of as, *“entering into discussions with the writer”* while others felt that it was also *“part of the development process”*. Others identified implementation as the production and broadcasting of the finished telenovela.. Participants universally agreed that evaluation involved the process of measuring the effects of the project on the audience as well as the development of the measurement tool.

“I’m not sure [about the stages] ...It’s hard. It was really slow. It wasn’t linear. Back and forth, didn’t go 1, 2 3, 4, 5. There was a lot of negotiation, a lot of push and pull”.

Several interviewees from the public health organizations and liaison organizations agreed with each other that the nature of the project made it impossible to properly divide and plan the project according to stages. Several pointed out that there were good intentions to plan according to stages. *“We had a timeline at the very beginning and each phase mapped out but then everything got messed up.”*

A general view was that the process was not linear and there was plenty of overlap between the so called stages. One public health professional put it this way, *“I’m not sure [about the stages]...It’s hard. It was really slow. It wasn’t linear. Back and forth, didn’t go 1, 2, 3, 4, 5. There was a lot of negotiation, a lot of push and pull”*.

Interestingly, public health professionals felt that the entire process was one “big development stage” until the very last moment. (*“Everything crystallizes in like five minutes”*) In contrast, the entertainment media representative seemed to take the lack of clear processes in stride as part of the television production landscape. This was in agreement with the sentiments of a participant from the liaison organization who expressed some bemusement at the idea of mentioning stages to an entertainment media person you were collaborating with. *“The only time that you really do that [mention stages] is when you’re talking to public health people..You’re really not going to tell them, ‘this is the stage we’re in’”*.

Development

Despite disagreement on what exactly constituted “development”, this term was used the most when talking to public health and liaison organization participants. It was widely agreed by all parties that a key part of developing a telenovela EE strategy is in networking and building personal relationships. Several interviewees listed informal meetings at conferences that eventually would lead to the beginnings of using EE as a workplace safety tool. Public health participants felt that it was important to use these networking opportunities to sharpen ideas and eventually present them to the entertainment media network. According to an interviewee from the liaison organization, an important aspect of developing an EE project is not only in, *“educating the public but also in the process educating the television network. They’re kind of our consumer. Everything needs to be polished and semi-finalized before they see it in order for them to be able to accept it.”*

A key aspect of development was the actual storyline development and decisions around what sort of messages would be inserted into the telenovela. For this project, participants who were involved from the beginning of this intervention described going through various storyline ideas and noting that a significant part of development was in being flexible to different ideas related to your health issue. For example, workplace safety professionals said that other workplace safety issues for Latinos were considered and that this was due to the specific telenovela that would be available for embedding safety messages.

“I think that there was a time when we wanted to focus on day laborers...it all depended on the telenovela itself that would work to integrate the storyline and the context of the telenovela....One of the telenovelas we came up in the beginning was from Mexico and [because] it was an outdoor scene we considered focusing on sun exposure, dehydration for trench workers”

Both public health and liaison officers agreed that an important lesson to take away from the development process was in knowing that only three succinct messages would be allowed in a storyline and that these need to be considered carefully because of the repercussions for the

effectiveness of the intervention and the ability to do a proper evaluation. One of the NIOSH officers put it best when describing the process of developing these messages.

“If you could only tell a worker three things what would you tell them? What are the three things that are going to make the biggest difference in safety for them? Trying to get things that are real and actionable....Was the “choose the right ladder for the job” the most actionable? It might not be because it’s not really in control of the worker”

Implementation

Implementation was (mostly) thought of as the production of the television program. For those in the public health organizations this implementation and production was a waiting game and felt more like it was part of the development phase. *“The mantra for this project was ‘hurry up and wait’ where there was at least 3-4 times where Telemundo called and said there was show, it’s going into production... We would be ready with surveys and information but at least twice we thought we were going but it didn’t happen”* A liaison organization interviewee agreed with this assessment but also cautioned that that this was the nature of the entertainment media business and that *“if the telenovela isn’t doing well then they are going to change it and add more drama and if your ideas don’t add more drama they are not going to take them into consideration”*.

Evaluation

Public health and the liaison organization interviewees agreed that evaluation planning needed to be concurrent with message development. *“The evaluation should affect all phases and it needs to because it needs to know why the key messages are there and the key messages should be based on research and what is shown and not shown”*. A participant who was heavily involved in the evaluation and had previous experience put it this way, *“I had lessons learned from [a prior project]...I wanted to be there for all the different steps so that I could evaluate properly”* Furthermore, this person also understood that the more complex the storyline, the more difficult it would be for the evaluation to be successful. Responding to the decision that the woman falling off the ladder would be pregnant for dramatic effect, *“On the writers side we saw how it would make it more dramatic, but for us it made the evaluation much more difficult. What kind of messages will people get out of us? Will people see this as workplace safety or that this is about unborn baby and pregnancy?”*

Public health officials described the frustration at not getting support that they felt they needed from Telemundo for the planning of the evaluation. This appears to be due to differing views on who should be responsible and what it meant as far as success of the project. The Telemundo entertainment person considered the public health partners “experts” and that they would do the best job in evaluation because they were “experts” *“We left that to the experts. They have done a good job such as at NIOSH and did a lot of analysis on the project so we left it to them”*

In summary, participants from public health viewed the concept of stages as important processes to understand because there were key elements to them but that using these stages to plan an intervention ultimately would prove useless due to the fast changing broadcast media world. Public health officials had a hard time getting used to the idea that planning was very challenging in the entertainment media world and agreed that it was a learning experience to see the unpredictability that dominated the network.

Discussion

The purpose of this study was to analyze the outcome data from a quasi experimental naturally occurring media intervention to contribute to the growing body of scientific knowledge about Entertainment-Education (EE) interventions. It also supports the Institute of Medicine's IOM recommendation for increased interventions and evaluations of culturally cognizant health communication (Smedley & Syme, 2000). A secondary goal of this dissertation study was to add depth to what is known about the actual practice of producing an EE intervention; specifically, how partners with diverse and sometimes competing agendas resolve differences to create an EE intervention such as the one in this study.

As stated in the review of the EE literature, over the last thirty years such programs have proven that they can be effective in influencing various health outcomes in diverse populations (Singhal et al., 2004). Moreover, findings in several recent studies show that an EE strategy may be useful when promoting health to Latino Spanish speakers (Crist, 2005; Lalonde et al., 1997; Wilkin et al., 2007). Several investigators have also found that exposure to a dramatic serial drama with embedded health messages is significantly likely to spur outside interpersonal communication with peers and family about included health information (Papa et al., 2000; Sood, 2002). Relative to other health promotion strategies, very little evaluation exists on EE programs in general and especially those that target U.S. Latino Spanish speaking populations (Murphy & Cody, 2003). Further research is needed, however, to understand the factors that determine how and why viewers communicate information within their social network and what this means for behavior changes at the population level (Murphy & Cody, 2003; Sood, 2002; Wilkin et al., 2007).

With some exceptions there is a dearth of peer reviewed publications about EE interventions that discuss the practical nature of the partnership process between a media and public organization (Bouman, 2004; Bouman et al., 1998). A stage model has been proposed to give a frame of reference for collaborating partners with different agendas (Bouman, 2004) but this model has not been explored to see whether other EE collaborations have applied these principles. Furthermore, no scholarly articles discuss collaboration that involve media organizations whose audience base is from a minority culture.

Results from the current study's effectiveness analysis showed that both the pre and post-test samples were comparable on key demographic and media use characteristics, and that the telenovela intervention increased audience knowledge on all three of the ladder fall prevention strategies embedded in the telenovelas. These three strategies were "*Don't carry tools in hands while climbing a ladder*", "*Use the right ladder for the job*", and "*Tie off ladders at both ends*".

Further analysis showed that participants with more story recognition had more knowledge of one of the three ladder fall prevention strategies "*Don't carry tools in hands while climbing a ladder*". The latter item was the only one of the three that was within the locus of control of the construction worker. This finding is also consistent with what interviewees said about the need to create health communication messages in workplace safety that are "actionable". The knowledge item "*Don't carry tools in hands while climbing a ladder*" may have resonated with audiences because of the relative ease of being able to do behavior associated with the message. In contrast, "*Use the right ladder for the job*" and "*Tie off ladders at both ends*" may have been more difficult to conceive of doing, or out of the worker's control.

Audiences unfamiliar with these concepts, even if half the sample indicated that they had some association with construction workers, may not have perceived this message as actionable.

The perception and behavioral intention outcomes seen in this intervention are not entirely inconsistent with what other EE interventions have produced. Indeed, translating knowledge changes to behavioral changes remains a significant challenge even with behavioral interventions that focus on behaviors that are more within the individual's control. In an EE telenovela broadcast on Telemundo that contained embedded messages about breast cancer, survey data revealed that knowledge and perceptions changes did not translate to increased behavioral intentions outcomes in women to get mammograms (Wilkin et al., 2007). While this intervention used more sophisticated ways of collecting data than the *Pecados Ajenos* intervention, including the use of focus groups and a pre and post-test panel design, researchers speculated that high scores along behavioral intentions in both pre and post samples contributed to the lack of change. In the *Pecados Ajenos* study, a similar "ceiling effect" phenomenon may have taken place with both pre and post samples scoring fairly high on these two outcomes.

Perceptions and behavioral intention outcomes in the *Pecados Ajenos* study may also have been due to not being able to collect qualitative data from the participants. For example, in conducting in-depth interviews with viewers of two telenovelas from Peru that had HIV/AIDS health messages, a researcher was able to find that these in-depth qualitative interviews were able to detect perception of risks and behavioral intention outcomes long after the airing of the telenovelas (Obregon, 1999). Because the *Pecados Ajenos* study methods were limited to the quantitative survey, perception and behavioral intention outcomes may not have been detected. In the future public health professionals working on an EE project should try to reach out to a smaller sample of on-line survey respondents and conduct more in-depth questioning. Interview data with key personnel corroborated this idea of expanding evaluation techniques to include individual interviews with post-test respondents. Interviewees also suggested recruiting participants well past the airing of the telenovela to see if the immediacy of the post-test may have masked future changes in participant perceptions of risk or behavioral intentions.

A significant finding that may speak to the ability to recruit survey participants for more longitudinal research was the excellent response rate of upwards of 70% achieved in both the pre and post-test sample recruitments. Several interviewees commented and speculated that people appear to be more willing to take a survey if the intervention is contained in a culturally appealing, interesting, and convenient vehicle, such as a popular telenovela.

Finally, although the overall process of collaborating and completing this entertainment-education project was conveyed as a positive experience by the individuals who worked on this project, the many challenges and frustrations voiced seemed to contradict this sentiment. For example collaborators expressed that challenges emerged from tensions between the entertainment and public health world to make something accurate and entertaining, the chaotic and unpredictable timetable of the entertainment broadcast media, and the difficulty in planning an evaluation within this unpredictable timetable. In talking to these interviewees it became clear that using the concepts of "stages" to have a shared frame of reference for all parties, while useful in theory, was not practical. The unpredictability of the network schedule made it difficult to plan in this linear way. This important finding does shed light on the actual practice of this kind of collaboration but does not mean that effective collaboration is impossible between public health and entertainment media. What these findings do suggest is that EE broadcasters need to be more transparent about outlining the mechanisms of work within a broadcast corporation.

Likewise, public health collaborators need to be open and flexible to the inherent and unpredictable currents that influence program development. Having initial conversations prior to the development of the project may help to provide a shared frame of reference as Bouman (2002) advocates.

Implications for Research and Practice

The findings of this dissertation study illustrate the value of using popular entertainment media to communicate health messages in a culturally relevant way. There are two fundamental issues that should be addressed when conducting research and practice on future entertainment education interventions and in particular those done via a broadcast TV network; 1) Creating more effective study designs and evaluation tools that capture a broader understanding of how the viewing population reacted to the intervention; and 2) Overcoming the dilemma between those working in entertainment media needing to add dramatic value and the need of public health officials to deliver actionable and accurate information.

Designing studies with useful evaluation methods is important for the continued validation of this work. This intervention was successful in creating a change in knowledge or initial “awareness” about the dangers of falls from ladders and generating awareness is generally considered an important stage in the continuum towards attitudinal and eventual behavior change. While it was recognized that this intervention was successful because it brought national awareness of worksite safety issues to the Latino/Hispanic community, it wasn’t clear why the perceptions (attitudinal) or behavioral intention outcomes did not change. Were they not realized because of the intervention design, the survey instrument, or the effectiveness of the messages within storyline? Future research should strive for alternative ways of capturing this important information including seeing if the effects of an entertainment education intervention remain over the longer term.

The second fundamental dilemma relates to the actual practice of working with television networks to deliver health messages. As the results of this study show, there was a creative tension that existed between entertainment media and public health professionals to deliver something accurate while preserving the integrity of the telenovela and making a storyline dramatically appealing. A suggestion for future practitioners looking to develop a television drama medium is to make sure to form a relationship with the writer of the series and attempt to negotiate an accurate message woven into a suitably entertaining storyline. Organizations should include personnel that understand the media world and have strong negotiation skills when working with broadcast medium.

Limitations

Several limitations should be taken into consideration when analyzing the main findings in this dissertation study. The intervention study procedures were cross sectional and thus subject to biases inherent in this study design (Shadish et al., 2002). Furthermore, the study design did not use a panel design so that the same viewers who took the pre-test survey could not be matched with the response on the post-test. The equivalence on key demographic and media use variables between the two samples may have overcome this limitation, however. Related to these

sampling issues, use of the internet to collect survey data through an on-line data source is subject to selection biases and it was not clear whether the typical Telemundo telenovela resembled the population that was recruited via this tool. Evidence exists that foreign born Latinos and native born Latinos have differences in frequency and access to the internet (Livingston, 2010). Unfortunately, audience information of a more general sample of telenovela/Telemundo viewers was not obtained so caution should be taken in interpreting the generalizability of these results.

Another limitation related to the evaluation is the limits that Likert scale measures have on capturing the feelings of audience members towards particular characters involved in the storyline. Previous EE studies have used a variety of methods to probe deeper into the audience perceptions of a telenovela storyline by conducting focus groups with viewers (Wilkin et al., 2007) or posting survey questions that are open ended (Sood, 2002).

Although every attempt was made to talk to several other people who worked on this intervention, the qualitative results could have been stronger if more individuals from Telemundo were available for interview. For example, many of the public health officials and the liaison organization interviewees spoke at length about how important it was to build a relationship with the writer of the storyline. Unfortunately, a conversation with the writer was not possible. Getting the perspective of this key person could have given insight into the process of message development, especially the decisions that were made to include three specific workplace safety messages within the storyline.

EE interventions have shown promise to effectively engage hard-to-reach populations about important health topics. However, research about the effectiveness of these interventions is still at an early stage. This study showed positive knowledge outcomes from the airing of a telenovela that contained embedded workplace messages. Additionally it highlights the power of using popular entertainment to engage viewers and persuade them to participate in a research study. Improved collaboration between entertainment media writers/producers and public health experts is needed to create interventions with the power to change viewers behaviors over time. In addition, more refined research methods are needed to examine EE intervention development and outcomes.

References

- American Society of Safety Engineers, & U.S. Occupational Safety and Health Administration. (2004). Hispanic Outreach. *Professional Safety*, 49(9), 1.
- Anashensel, C. (2002). *Theory Based Data Analysis for the Social Sciences*. Thousand Oaks: Pine Forge Press.
- Anderson, J. T. L., Hunting, K. L., & Welch, L. S. (2000). Injury and employment patterns among Hispanic construction workers. *Journal of Occupational and Environmental Medicine*, 42(2), 176-186.
- Bandura, A. (2004). Social Cognitive Theory for Personal and Social Change by Enabling Media. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 75-96). Mahwah: Lawrence Erlbaum Associates.
- Beck, V. (2004). Working With Daytime and Prime-Time Television Shows in the United States to Promote Health. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 207-224). Mahwah: Lawrence Erlbaum.
- Bobick, T. G. (2004). Falls through roof and floor openings and surfaces, including skylights: 1992-2000. *Journal of Construction Engineering and Management-Asce*, 130(6), 895-907.
- Bouman, M. (2002). Turtles and Peacocks: Collaboration in Entertainment & Education Television. *Communication Theory*, 12(2), 225-244.
- Bouman, M. (2004). Entertainment-Education Television Drama in the Netherlands. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 225-242). Mahwah: Lawrence Erlbaum.
- Bouman, M., Maas, L., & Kok, G. (1998). Health education in television entertainment--Medisch Centrum West: a Dutch drama serial. *Health Educ. Res.*, 13(4), 503-518.
- Brailsford, K., & Goodman, A. (2006). *Working with Hollywood to Deliver you Message to Millions*. Princeton: Robert Wood Johnson Foundation.
- Brunette, M. J. (2004). Construction safety research in the United States: targeting the Hispanic Workforce. *Injury Prevention*
- Brunette, M. J. (2005). Development of Educational and Training Materials on Safety and Health. *Family & Community Health*, 28(3), 253-266.
- Bureau of Labor Statistics. (2008a). *Employed persons by occupation, race, Hispanic or Latino ethnicity, and sex*. Washington D.C.: U.S. Department of Labor. Retrieved 11/10/08 from <http://www.bls.gov/iif/home.htm>.
- Bureau of Labor Statistics. (2008b). *National Census of Fatal Occupational Injuries In 2007*. Washington D.C.: U.S. Department of Labor. Retrieved 11/10/08 from <http://www.bls.gov/iif/home.htm>.
- Bureau of Labor Statistics. (2008c). *NonFatal Occupational Injuries and Illnesses Requiring Days Away From Work, 2007*. Washington D.C.: U.S. Department of Labor. Retrieved 11/10/08 from <http://www.bls.gov/iif/home.htm>.
- Crabtree, B. F., & Miller, W. L. (Eds.). (1999). *Doing Qualitative Research* (Second ed.). Thousand Oaks: Sage Publications.

- Crist, J. D. (2005). Cafecitos and Telenovelas: Culturally Competent Interventions to Facilitate Mexican American Families' Decisions to Use Home Care Services. *Geriatric Nursing*, 26(4), 229-232.
- de Castro, A. B., Fujishiro, K., Sweitzer, E., & Oliva, J. (2006). How immigrant workers experience Workplace problems: A qualitative study. *Archives of Environmental & Occupational Health*, 61(6), 249-258.
- de la Luz Casas Pérez, M. (2005). Cultural Identity: Between Reality and Fiction. *Television and New Media*, 6(4), 407-414.
- Derr, J., Forst, L., Chen, H. Y., & Conroy, L. (2001). Fatal falls in the US construction industry, 1990 to 1999. *Journal of Occupational and Environmental Medicine*, 43(10), 853-860.
- Dockterman, D. (2007). *Statistical Portrait of Hispanics in the United States, 2007*. Washington D.C.: Pew Hispanic Center-A Pew Research Center Project.
- Dong, X. W. (2005). Long workhours, work scheduling and work-related injuries among construction workers in the United States. *Scandinavian Journal of Work Environment & Health*, 31(5), 329-335.
- Dong, X. W., Entzel, P., Men, Y. R., Chowdhury, R., & Schneider, S. (2004). Effects of safety and health training on work-related injury among construction laborers. *Journal of Occupational and Environmental Medicine*, 46(12), 1222-1228.
- Dong, X. W., & Platner, J. W. (2004). Occupational fatalities of Hispanic construction workers from 1992 to 2000. *American Journal of Industrial Medicine*, 45(1), 45-54.
- Dong, X. W., Ringen, K., Men, Y. R., & Fujimoto, A. (2007). Medical costs and sources of payment for work-related injuries among Hispanic construction workers. *Journal of Occupational and Environmental Medicine*, 49(12), 1367-1375.
- Downey, K. (2006a). Nielsen Ratings Prove Telenovelas Can Deliver [Electronic Version]. *Broadcasting and Cable*. Retrieved 3/3/2009 from 95164-Nielsen_Ratings_Prove_Telenovelas_Can_Deliver.htm.
- Downey, K. (2006b). Nielsen Ratings Prove Telenovelas Can Deliver [Electronic Version]. *Broadcasting & Cable*. Retrieved 3/03/09 from www.broadcastingcable.com/article/95164-Nielsen_Ratings_Prove_Telenovelas_Can_Deliver.htm.
- Dutta, M. J., & Basnyat, I. (2008). The Radio Communication Project in Nepal: A Culture-Centered Approach to Participation. *Health Educ Behav*, 35(4), 442-454.
- Emmons, K. M. (2000). Paper Contribution F: Behavioral and Social Science Contributions to the Health of the Adults in the United States. In B. D. Smedley & S. L. Syme (Eds.), *Promoting Health: Interventions Strategies from Social and Behavioral Research* (pp. 254-321). Washington D.C.: National Academy Press.
- Encuesta, Inc. (2006). *New Americanos Poll Study Captures Hispanic Television Habits and Opinions*. Miami.
- Encuesta Americanos Poll. (2006). New Americanos Poll Study Captures Hispanic Television Habits and Opinions. Retrieved 3/03, 2009, from www.encuesta.com
- Finnegan Jr., J. R., & Visawanth, K. (1997). Communication Theory and Health Behavior Change. In K. Glanz, F. Marcus Lewis & B. Rimer (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice*. San Francisco: Jossey-Bass.

- Franklin, S. (2008, 3/02). Construction job fatality rates exceed those of other group, and many are reluctant to complain. *Chicago Tribune*.
- Freimuth, V., & Quinn, S. (2004). The Contributions of Health Communication to Eliminating Health Disparities. *American Journal of Public Health, 24*(12), 3.
- Gillen, M., Faucett, J. A., Beaumont, J. J., & McLoughlin, E. (1997). Injury severity associated with nonfatal construction falls. *American Journal of Industrial Medicine, 32*(6), 647-655.
- Glanz, K., Lewis, F., & Rimer, B. (Eds.). (1997). *Health Behavior and Health Education 2nd Edition*. San Francisco: Jossey-Bass.
- Goodrum, P. M., & Jiukun, D. (2005). Differences in Occupational Injuries, Illnesses, and Fatalities among Hispanic and Non-Hispanic Construction Workers. *Journal of Construction Engineering & Management, 131*(9), 1021-1028.
- HealthyPeople2010. (2000). *Health Communication*. H. a. H. Services. Retrieved from <http://www.healthypeople.gov/document/HTML/Volume1/11HealthCom.htm>.
- Henry J. Kaiser Foundation. (1994). *The Use of Mainstream Media to Encourage Social Responsibility: The International Experience* Menlo Park.
- Hornik, R. C. (Ed.). (2002). *Public Health Communication: Evidence for Behavior Change*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Hsiao, H., & Simeonov, P. (2001). Preventing falls from roofs: a critical review. *Ergonomics, 44*(5), 537-561.
- Institute of Medicine (Ed.). (2002). *Speaking of Health*. Washington D.C.: The National Academies Press.
- Jacobsen, T. L., & Storey, J. D. (2004). Development Communication and Participation: Applying Habermas to a Case Study of Population Programs in Nepal. *Communication Theory, 14*(2), 99-121.
- Kennedy, M. G., O'Leary, A., Beck, V., Pollard, K., & Simpson, P. (2002). Increases in calls to Centers for Disease Control National STD and AIDS hotline following AIDS-related episodes in a soap opera. *Journal of Communication, 54*(2), 287-301.
- Koschhar, R. (2008). *Latino Labor Report, 2008: Construction Reverses Growth for Latinos*. Washington D.C.: Pew Hispanic Center
- Kreuter, M. W., & McClure, S. M. (2004). The Role of Culture in Health Communication *Annual Review of Public Health, 25*.
- Labor Occupational Health Program. (2007). *Immigrant Workers in U.S. Construction-Sharing Lessons Learned in Our Unions*. Berkeley: UC Berkeley.
- Lalonde, B., Rabinowitz, P., Shefsky, M. L., & Washienko, K. (1997). La Esperanza del Valle: Alcohol Prevention Novelas for Hispanic Youth and their Families. *Health Education and Behavior, 24*(5), 587-602.
- Lipscomb, H. J., Dale, A. M., Kaskutas, V., Sherman-Voellinger, R., & Evanoff, B. (2008). Challenges in residential fall prevention: Insight from apprentice carpenters. *American Journal of Industrial Medicine, 51*(1), 60-68.
- Lipscomb, H. J., Li, L. M., & Dement, J. (2003). Work-related falls among union carpenters in Washington State before and after the vertical fall arrest standard. *American Journal of Industrial Medicine, 44*(2), 157-165.

- Livingston, G. (2010). *The Latino Digital Divide: The Native Born versus The Foreign Born*. Washington, D.C.: Pew Research Center.
- Murphy, S., & Cody, M. (2003). *Summary Report*. Paper presented at the Developing a Research Agenda for Entertainment-Education and Multicultural Audiences Conference, Santa Monica, CA.
- National Center for Construction Education and Research. (2007). Statistics from the U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, and Career Guide to Industries. Retrieved 12/9, 2008
- Neuhauser, L., Richardson, D., Mackenzie, S., & Minkler, M. (2007). Advancing Transdisciplinary and Translational Research Practice: Issues and Models of Doctoral Education in Public Health. *Journal of Research Practice*, 3(2), 24.
- Nielsen Company. (2008). *Nielsen Reports Growth of 4.4% in Asian and 4.3% in Hispanic U.S. Households for 2008-2009 Television Season-No Changes in Top 20 Local Market Ranks*. New York.
- O'Connor, T. (2003). Reaching Spanish Speaking Workers and Employers with Occupational Safety and Health Information, *Safety Is Seguridad-Appendix F*. Washington, DC: The National Academy of Sciences.
- Obregon, R. A. (1999). *Colombian telenovelas and public health messages: A focus on HIV/AIDS and sexuality issues*. Unpublished Ph.D., The Pennsylvania State University, United States -- Pennsylvania.
- Papa, M. J., Singhal, A., Law, S., Pant, S., Sood, S., Rogers, E. M., et al. (2000). Entertainment-education and social change: an analysis of parasocial interaction, social learning, collective efficacy, and paradoxical communication. *The Journal of Communication*, 50(4), 31-55.
- Parrot, R. (2004). Emphasizing "Communications" in Health Communication. *Journal of Communication*, 54(4).
- Passel, J. S., & Cohn, D. V. (2008). *A Portrait of Unauthorized Immigrants in the United States*. Washington D.C.: Pew Hispanic Center.
- Pellow, D. N., & Sun-Hee Park, L. (2003). *The Silicon Valley of Dreams*. Retrieved 4/21/09, from <http://books.google.com/books?id=Z4TI-niBdGkC>.
- Pierson, R. M. (1996). *The benefits of culturally embedded health messages: Targeting African-American women*. Unpublished Ph.D., Stanford University, United States -- California.
- Pointdexter, D. (2004). A History of Entertainment-Education 1958-2000. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 21-36). Mahwah: Lawrence Erlbaum Associates.
- Pollard, W. E., & Beck, V. (2000). *Audience analysis research for developing entertainment-education outreach: daytime dramas audiences and health information*. Paper presented at the American Public Health Association 128th Annual Meeting and Exposition, Boston.
- Richardson, D. B., Loomis, D., Bena, J., & Bailer, A. J. (2004). Fatal occupational injury rates in southern and non-southern states, by race and hispanic ethnicity. *American Journal of Public Health*, 94(10), 1756-1761.
- Rivara, F. P., & Thompson, D. C. (2000). Prevention of falls in the construction industry - Evidence for program effectiveness. *American Journal of Preventive Medicine*, 18(4), 23-26.

- Sabido, M. (2004). The Origins of Entertainment Education. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 61-74). Mahwah: Lawrence Erlbaum Associates.
- Schatzman, L., & Strauss, A. L. (1973). *Field Research: Strategies for a Natural Sociology*. Englewood Cliffs: Prentice-Hall.
- Schneider, S. (2006). The Economics of Health and Safety in Construction.
- Schulte, P. A. (2006). *Emerging issues in occupational safety and health*.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental for Generalized Causal Inference* (1st ed.). Boston: Houghton Mifflin.
- Sherry, J. L. (2002). Media Saturation and Entertainment—Education. *Communication Theory*, 12(2), 206-224.
- Singhal, A., Cody, M., Rogers, E., & Sabido, M. (Eds.). (2004). *Entertainment-Education and Social Change: History, Research and Practice*. London: Lawrence Erlbaum and Associates.
- Singhal, A., & Rogers, E. (2004). The Status of Entertainment-Education Worldwide. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 3-20). Mahwah: Lawrence Erlbaum Associates.
- Skaff, M. M., Chesla, C. A., de los Santos, V., & Lawrence Fisher, M. (2002). Lessons in cultural competence: Adapting research methodology for Latino participants. *Journal of Community Psychology*, 30(3), 305-323.
- Smedley, B. D., & Syme, S. L. (Eds.). (2000). *Promoting Health: Interventions Strategies from Social and Behavioral Research*. Washington D.C.: National Academy Press.
- Sokas, R. K., Nickels, L., Rankin, K., Gittleman, J. L., & Trahan, C. (2007). Trainer evaluation of a union-based ten-hour safety and health hazard-awareness program for US construction workers. *International Journal of Occupational and Environmental Health*, 13(1), 56-63.
- Sood, S. (2002). Audience Involvement and Entertainment-Education. *Communication Theory*, 12(2), 18.
- Sood, S., Menard, T., & Witte, K. (2004). The Theory Behind Entertainment-Education. In A. Singhal, M. Cody, E. Rogers & M. Sabido (Eds.), *Entertainment-Education and Social Change: History, Research, and Practice* (pp. 117-149). Mahwah: Lawrence Erlbaum.
- State Building and Construction Trades Council. (2008). Focus on Prevention: The Top Four Construction Hazards. Unpublished Power Point Presentatoin. Occupational Safety and Health Administratino.
- Storey, J. D., Boulay, M., Karchi, Y., & Heckert, K. (1999). Impact of the integrated radio communication project in Nepal, 1994-1997. *Journal of Health Communicaiton*, 4(4), 271-294.
- Strecher, V. J., & Rosenstock, I. M. (1997). The Health Belief Model. In K. Glanz, F. Lewis & B. Rimer (Eds.), *Health Behavior and Health Education 2nd Edition* (pp. 41-59). San Francisco: Jossey-Bass.
- The Center for Construction Research and Training. (2007). The Construction Chart Book-Section 15. Fourth. Retrieved 12/09, 2008, from <http://www.cdc.gov/eLCOSH/docs/d0100/d000038/sect15.html>

- U.S. Census Bureau News. (2008). *U.S. Hispanic Population Surpasses 45 Million-Now 15 Percent of Total*. Washington D.C.: U.S. Department of Commerce. Retrieved 12/09/08 from <http://www.census.gov/Press-Release/www/releases/archives/population/011910.html>.
- Valenzuela, A., Theodore, N., Meléndez, E., & Gonzalez, A. L. (2006). *On The Corner: Day Labor in the United States*. Los Angeles: Center for the Study of Urban Poverty,.
- Wilkin, H., Valente, T., Murphy, S., Cody, M., Huang, G., & Beck, V. (2007). Does Entertainment-Education Work with Latinos in the United States? Identification and the effects of a Telenovela Breast Cancer Storyline? *Journal of Health Communication*, 12(5), 6.

Appendix

A. Survey items measuring primary independent and dependent variables

Primary Independent Variable (Predictor)	<i>Items and Response choices</i>	<i>Value Labels</i>
RECOGNITION OF STORYLINE	Which of following storyline's do you recognize as being part of the <i>Pecados Ajenos</i> telenovela?	
	a) Natalia's sister dies*	No
	b) Rogelio's father returns	Yes
	c) Lola and Monica convince Natalia that she should live with Luis	*Fake Story
	d) Tere falls from a ladder	
e) A car hits Freddy		
Primary Dependent Variables (Outcomes)	<i>Question and Items choices</i>	<i>Value Labels</i>
KNOWLEDGE OF SPECIFIC WORKPLACE SAFETY MESSAGES	Which of following can you do to reduce the risk of falling in a construction work site?	
	a) Use the right ladder for the job*	No
	b) Tie off ladders*	Yes
	c) Do not carry tools or materials in your hands when climbing a ladder*	*Specific messages mentioned in main event of storyline
	d) Use personal protective equipment	
	e) Attend a training about workplace safety	
	f) Report unsafe working conditions	
PERCEPTIONS TOWARDS WORKPLACE SAFETY RISKS AMONG FAMILY AND FRIENDS OF CONSTRUCTION WORKERS	Please indicate whether you agree or disagree with the following statements. *	
	a) An accident will not happen to me friend/family member on the job	Strongly disagree
	b) At my friend/family member's job site, they follow safety precautions	Disagree
	c) My friend/family member's boss would not put them in danger at work	Not sure
	d) Taking safety precautions would make my friend/family member's job take longer	Agree
	e) My friend/family member could get hurt at their site	Strongly agree
	f) My friend/family member can protect themselves from injury at their work site	Strongly disagree
	g) Using protective equipment could save my friend/family member's life at their work site	*Respondents who were either past or present construction workers were asked similar questions rephrased to take into account their own perspective.
	h) My friend/family member does not need to use protective equipment at work	
	i) Construction is one of the most dangerous industries to work in	
	j) Deaths and injuries on construction sites can be prevented.	
	k) If my friend/family member reported unsafe work conditions, they could lose their job.	

BEHAVIORAL INTENTIONS TO SEEK AND COMMUNICATE INFORMATION ABOUT WORKPLACE SAFETY	How probable are you to do the following or suggest to your friend or family member to do the following in the next six months?	
	a) Report an unsafe construction practice	Very unlikely
	b) Talk to someone I know about construction workplace safety	Not likely
	c) Make changes at a workplace to make it safer	Not sure
	d) Use personal protective equipment	Likely
	e) Attend training about construction safety	Very likely
	f) Seek community resources for construction safety information.	
g) Seek government sources for construction safety information		

B. Interview guide used in qualitative interviews

Role/work duties during your time working on the workplace safety project	
<p>1. With whom or what organization were you were working for on the telenovela project?</p> <p>2. How did you get involved in the workplace safety telenovela project ?</p> <p>3. Prior to your work on this project, what did you know about the use of entertainment education to convey public health messages?</p>	<p>a. <i>When did you first start working on this project? When did you end working on it? Did you work on it part time or in a full time capacity?</i></p> <p>b. <i>Was there a title in your role/position?</i></p> <p>c. <i>What did you know about the project prior to starting to work on it?</i></p> <p>d. <i>How would you describe your day to day (week to week?) duties on the project?</i></p> <p>e. <i>When you first started, what did you find most intriguing/interesting about working on the workplace safety project?</i></p> <p>f. <i>Previous experiences?</i></p> <p>g. <i>Thoughts and opinions about EE for public health messaging.</i></p> <p>h. <i>What was your first thought when you understood that this EE program would be about workplace safety messages?</i></p>
Collaborating with other organizations on this project	
<p>1. What organization (if any) were you working for on this project?</p> <p>2. What did you know about the other organization's that were involved on this project prior to your involvement? (CPWR, NIOSH, HHS, Telemundo)</p>	<p>a. <i>What they did?</i></p> <p>b. <i>Purpose?</i></p> <p>c. <i>Overall mission?</i></p>
<p>3. How often did meetings between the different collaborators on this project take place?</p>	<p>a. <i>Was there one organization that was "central" to communicating to the other organizations?</i></p> <p>b. <i>Was there ever a protocol or specific plan of how communication was going to happen between organizations?</i></p>

	<p>c. <i>Was there one organization that you were specifically involved with?</i></p> <p>a. <i>If yes, can you talk about how this happened and (or) why?</i></p>
4. If you needed to get in touch with someone at another organization, how did you go about doing that?	<p>a. <i>Was there someone who you always were in touch with at that other organization? Was this communication scheduled?</i></p> <p>b. <i>Was there a preferred method of communication?</i></p>
5. How involved were you in the development of the messages that were used in the storyline?	<p>a. <i>If you were involved, do you know how or why the messages were chosen?</i></p> <p>b. <i>What did this look like?</i></p> <p>c. <i>Was there a lot of negotiation to establish what messages would get used?</i></p> <p>d. <i>How long did it take to get the messages figured out?</i></p>
Organizational Structure/Process	
6. Did it feel that there were distinct stages in the project when you were working there and if so how would you classify them?	<p>a. <i>How did you see your work duties and responsibilities fitting into each of these stages?</i></p>
7. Were there any times (during your work on the <i>Pecados Ajenos</i> project) that you felt that there the different mission's of each organization created a barrier to collaboration?	<p>a. <i>Can you give any examples when this happened?</i></p> <p>b. <i>Maybe relating it to the stages that we just discussed.</i></p>
8. In your opinion, how well do you think the organizations were able to communicate their needs to each other?	<p>a. <i>What facilitated this?</i></p> <p>b. <i>What challenged this process?</i></p>
9. Given the opportunity what would you change to improve future EE collaborations?	<p>c. <i>Would you work on a future EE collaboration?</i></p>