

2018-01-01

Development And Testing Of A Culturally Tailored Intervention To Promote HPV Vaccination Intentions In Latina Young Adults

Erica Landrau

University of Texas at El Paso, eldrau@gmail.com

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DEVELOPMENT AND TESTING OF A CULTURALLY TAILORED
INTERVENTION TO PROMOTE HPV VACCINATION
INTENTIONS IN LATINA YOUNG ADULTS

ERICA LANDRAU-CRIBBS

Master's Program in Clinical Psychology

APPROVED:

Lawrence D. Cohn, Ph.D., Chair

Julia Lechuga, Ph.D.

John Wiebe, Ph.D.

Ophra Leyser-Whalen, Ph.D.

Charles Ambler, Ph.D.
Dean of the Graduate School

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DEVELOPMENT AND TESTING OF A CULTURALLY TAILORED
INTERVENTION TO PROMOTE HPV VACCINATION
INTENTIONS IN LATINA YOUNG ADULTS

by

ERICA LANDRAU-CRIBBS, B.A.

THESIS

Presented to the Faculty of the Graduate School of
The University of Texas at El Paso
in Partial Fulfillment
of the Requirements
for the Degree of

MASTER OF ARTS

Department of Psychology
THE UNIVERSITY OF TEXAS AT EL PASO

May 2018

Abstract

The human papillomavirus (HPV) is the most common sexually transmitted infection in the United States and a known risk factor for cervical cancer. Several HPV vaccines have been approved as a primary prevention option. Vaccine administration is recommended for individuals between the ages of 9 and 26. Despite recommendations to vaccinate and a disproportionately high rate of cervical cancer among Latinas, rates of vaccination remain low among this population. The HPV vaccine consists of three doses applied six months apart. Vaccination initiation and completion rates are particularly low among Latina young adults (18-26 years of age) and adolescents (13-17 years of age), respectively. Presently, few culturally tailored interventions to promote HPV vaccination have been developed for Latina young adults. The first objective of the present study was to develop a culturally tailored health intervention to promote HPV vaccination intentions among Latina young adults. An experimental design was conducted to test the impact of a culturally-tailored fotonovela on HPV knowledge, vaccine attitudes, and intentions to obtain the vaccine compared to a CDC informational sheet that was not culturally tailored. The second objective of this study was to test the effect of HPV knowledge and constructs of the Health Belief Model (perceived severity of contracting HPV, barriers to vaccination and self-efficacy), and the influence of culture normative contextual influences such as engagement in sexuality-related discussions with mother, perceived parental objection to getting vaccinated, and preference for Spanish) on HPV vaccination intention using structural equation modeling (SEM). Results revealed that intentions to get vaccinated and perceived severity of HPV were significantly higher among participants randomly assigned to receive information through the culturally tailored intervention compared to participants assigned to receive information via the CDC informational sheet. Additionally, results from the SEM emphasize the role of the family and culture in the decision to vaccinate. Findings could inform

patient-provider communication regarding HPV vaccination and help to identify potential points of intervention for this at-risk group.

Keywords: HPV, vaccination intent, fotonovela, Latinas, sexuality

Table of Contents

Abstract	iv
Table of Contents	vi
List of Table	vii
List of Figures	viii
Introduction	1
Method: Study 1	22
Results: Study 1	31
Method: Study 2	38
Results: Study 2	48
Discussion	60
List of References	73
Appendices	86
Vita	140

List of Tables

Table 1: Demographics of the First Round of Interviews	125
Table 2: Major Findings Related to HBM and PEN-3 Factors that Influence Latina Young Adults' HPV Vaccine Acceptance	126
Table 3: Perceptions that Influence Latina Young Adults' HPV Vaccine Acceptance.....	127
Table 4: Enablers (or Cultural Factors) Factors that Influence Latina Young Adults' HPV Vaccine Acceptance.....	128
Table 5: Nurturers (or Important Others) that Influence Latina Young Adults' HPV Vaccine Acceptance.....	129
Table 6: Feedback on the Fotonovela in the Second Round of Interviews	130
Table 7: Demographics of the Randomized Control Trial Sample.....	131
Table 8: Demographics of the Randomized Control Trial by Group.	132
Table 9: Suggestions for the Culturally-Tailored Fotonovela and CDC fact sheet.	133
Table 10: Means and Standard Deviations for HPV-related Behavioral Intentions.....	134
Table 11: Correlation Matrix for HPV Behavioral Intention items.....	135
Table 12: Reliability Estimates of Measures.	136

List of Figures

Figure 1. The PEN-3 (Airhihenbuwa, 1992) and HBM (Rosenstock, 1990).	137
Figure 2. Diagram of Excluded Participants.....	138
Figure 3. Diagram of Structural Equation Model	139

Introduction

The human papillomavirus (HPV) is the most common sexually transmitted infection in the United States. Estimates of prevalence indicate that approximately 79 million individuals are infected with HPV and nearly 14 million people become infected each year (Centers for Disease Control and Prevention [CDC], 2014). Although more than 100 strains of HPV have been identified, certain strains have been classified as high or low-risk of causing reproductive cancers. Those belonging to the low-risk category are types 6 and 11 and have been associated with the incidence of genital warts and recurrent respiratory papillomatosis. High-risk strains are types 16 and 18 and are the primary cause of cervical, vulvar, and penile cancers (CDC, 2012).

In the US, Latina women are diagnosed with cervical cancer at higher rates than non-Latina whites (Hernandez et al., 2008; Howlander et al., 2014). Latina women have a cervical cancer rate of 11.3/100,000 compared to the incidence rate of non-Latina white women estimated at 7.4/100,000 (CDC, 2012). However, HPV-related vulvar cancer rates for Latinas (1.2/100,000) and whites (1.9/100,000), and HPV-related vaginal cancer rates for Latinas (0.4/100,000) and whites (0.4/100,000) remain similar. The Food and Drug Administration has approved three vaccines that protect against HPV: Gardasil®, Gardasil® 9, and Cervarix®.

Clinical trials have shown that Gardasil® and Cervarix® provide almost 100% protection against HPV infection for up to 8-9 years. Gardasil 9® has been found to be 97% effective in preventing cervical and vulvar cancers (National Cancer Institute [NCI], 2015). The HPV vaccines consist of a three-dose series administered in a six-month period. In order to prevent HPV-related infection, vaccination has been identified as a primary option for prevention (CDC, 2007) with screening and treatment as secondary prevention options (Sherris et al., 2006).

The HPV vaccine is recommended for individuals 11 to 12-years-old, and vaccination can be administered to children as young as 9-years-old. Catch-up vaccination is also recommended for males and females between the ages of 18 to 26 who have not been vaccinated previously or who have not completed the three-dose series (National Cancer Institute [NCI], 2015). Although vaccination is recommended before an individual is sexually active to maximize immunological protection, initiation of the vaccination series is still recommended if an individual is currently sexually active, has been or is currently infected with HPV, or has an abnormal Pap Smear test (Jones & Cook, 2008).

Vaccination initiation and completion rates are low among young adults between the ages of 18 to 26 regardless of ethnicity. Despite vaccination recommendations, only 21% of individuals between the ages of 18 to 26 have been vaccinated (Vanderpool et al., 2013), which is worrisome since the highest HPV prevalence rates occur in sexually active individuals between the ages of 20 to 25 years (Schiffman & Kjaer, 2003). Among adolescent females, ages 13 to 17 years, 62.9% of Latinas and 51.1% of non-Latina whites have received 1 or more doses of the HPV vaccine but only 35.5% of Latinas and 33.7% of non-Latina whites have completed vaccination (CDC, 2012a).

Vaccination initiation rate disparities exist when comparing Latinas and non-Latina whites who are between the ages of 18 and 26. Among Latinas between the ages of 18 to 26, 30.3% of Latinas have initiated vaccination compared to 41.7% of non-Latina whites (CDC, 2015a). Although a small portion of young adult Latinas have initiated or completed the HPV vaccination series, few health education interventions and communications have been developed to target this at-risk population (Chan, Brown, Sepulveda, & Teran-Clayton, 2015). Much

research, however, has been conducted to understand factors associated with acceptance of the HPV vaccine using well-known health behavior change models.

Prominent Health Behavior Change Theoretical Models

The Health Belief Model (HBM) and the Theory of Planned Behavior (TPB) are two of the most widely used health behavior change theories in the field of health promotion (Glanz & Bishop, 2010). The HBM was developed in the 1950s in order to understand individuals' failure to take part in screening and preventative health services (e.g., tuberculosis screening) at the asymptomatic stage (Kassl & Cobb, 1966). The HBM later expanded in order to explain individuals' response to symptoms of illness (Kirscht, 1974) and then adherence to prescribed medical regimens (Becker, 1974; Becker, Drachman, & Kirscht, 1974). The HBM has since been used to explain and predict the adoption of preventative health behaviors (Rosenstock, 1966), including condom use (Mahoney, Thombs, & Ford, 1995), breast self-examination (Lee Champion, 1985), STI and HIV testing (Zak-Place & Stern, 2004), cervical cancer screening (Burak & Meyer, 1997) and HPV vaccination (Donadiki et al., 2014).

The HBM suggests that an individual will take health-related action if: 1) he or she feels at risk for a particular disease that has severe negative consequences (Fishbein & Guinan, 1996; Rosentock, 1966); 2) believes that he or she can successfully perform the recommended health behavior to prevent the disease; 3) he or she perceives that there are more benefits than barriers to performing the recommended health behavior (Carpenter, 2010; Fishbein & Guinan, 1996); and 4) the individual encounters cues to action in the environment, such as recommendation by a health care provider, that alerts him/her about available courses of action. For example, if an individual feels susceptible to a particular health disease, believes that severe consequences may result if one is diagnosed with the illness, believes there is a course of action available to reduce

the susceptibility and severity, that the perceived benefits of enacting the course of action are greater than the barriers, and is reminded by cues in the environment of the advisable course of action, then the individual is likely to make a decision to perform the recommended action (Glanz, Rimer, & Viswanath, 2008).

According to the TPB, behavior such as HPV vaccination is guided by behavioral intentions. Behavioral intentions are a combination of the individual's attitude toward the behavior, subjective norms regarding the behavior, and the individual's perceived behavioral control. The evaluation of the behavior as either positive or negative refers to the individual's attitude toward the behavior. Subjective norms refer to the individual's perception of the extent to which a social expectation to perform the behavior exists (Ajzen, 1991). Perceived behavioral control refers to the degree of control that the individual perceives himself or herself as having when performing the behavior. The individual's perceived degree of control can be dependent on the resources or skills necessary to perform the behavior (i.e., time, health insurance, money, parental approval; Godin & Kok, 1996).

The HBM and the TPB have featured prominently in research on HPV vaccine acceptance among college age individuals. In a recent review, Ferrer, Audrey, Trotter & Hickman (2015) found that 80% of research studies conducted to understand HPV vaccination decisions among college age individuals were informed by the HBM and the TPB. Factors shown to significantly explain intention to vaccinate include: perceived severity of HPV, perceived likelihood of being diagnosed with HPV and cervical cancer, perceived benefits and barriers of vaccination, cues to action in the form of a provider recommendation, and self-efficacy (Bennett, Buchanan, & Adams, 2012; Gerend & Shepherd, 2012; Guvenc, Seven, Akyuz, 2015; Krawczyk et al., 2012). Additionally, positive attitudes toward HPV and

subjective norms (or the opinion of “important others”) have been shown to be associated with the intention to obtain the vaccine (Bennett, Buchanan, & Adams, 2012; Gerend & Shepherd, 2012; Krawczyk et al., 2012). Studies have also looked at HPV knowledge as a predictor of HPV vaccination intentions and results indicate that greater HPV knowledge is associated with a greater likelihood of HPV vaccination (Guvenc, Seven, & Akyuz, 2015).

Two limitations are noted in past research on HPV vaccination acceptance. First, past research has been primarily informed by theories such as the HBM and the TPB which were developed and tested in non-minority affluent populations and hence, may have limited applicability in explaining health behaviors in diverse ethnic populations. Second, Latina college age individuals have not featured prominently in HPV vaccination acceptance research compared to non-Latina whites. It is important to study populations that are disproportionately affected by a particular illness to elucidate how factors that differentiate the minority from the majority European American population are influencing decision-making such as culture, attitudes, and resources. The scant research that has been conducted with Latinas indicate that Latina women prefer to receive information about the HPV vaccine from certain sources such as close family members and health care providers, and this is influenced in turn by the perceived accessibility and level of comfort with the source (Stephens & Thomas, 2014). In addition, research suggests that hypothetical acceptability of the vaccine is high among Latinas and that cervical cancer prevention is among the most important motivations for vaccination among this population (Watts et al., 2009). An important gap in this research is the dearth of theories that go beyond personally-derived attitudes and include contextual aspects such as the potential influence of culture. Sociocultural normative beliefs and expectations may exert an important influence on health behaviors such as vaccination against a sexually-transmitted infection. For example, a

recent meta-analysis indicated that HPV vaccination decisions among Latino parents are influenced by the belief that by vaccinating their female children, they may be condoning initiation of sexual activity (Galbraith et al., 2015).

As mentioned above, prominent health behavior change theories were developed with non-Hispanic white, middle-class samples in the United States (Ajzen, 1991). A closer look at the HBM components indicates that individuals decide to enact a health preventative behavior by weighing the benefits and drawbacks. In addition, health behavior is predicted by variables such as self-efficacy, perceived susceptibility, and benefits. This is a limitation as the meaning of self-efficacy may differ depending on the social context or culture of the individual (Pasick & Burke, 2008). For example, Burke et al. (2009) found that Latinas and Filipinas viewed self-efficacy as a product of their connections with others. In other words, an individual is able to feel confident in performing a behavior because of his or her supportive relationships with others. Although individual cognition matters, the individual's social and cultural context may also play an important role in understanding the health behavior of ethnic minorities (Pasick & Burke, 2008).

Reviewing the health promotion field, one immediately notices the dearth of theories that take into account the role of culture and cultural context in behavior change. This state is problematic because cultural beliefs may influence the effectiveness of educational interventions. For example, Latinos report more fatalistic beliefs about cancer (Abraido-Lanza et al., 2007, Dettenborn, DuHamel, Butts, Thompson, & Jandorf, 2005, Perez-Stable, 1992) compared to non-Hispanic whites. The fatalistic belief that death from cancer is unpreventable has also been shown to influence Hispanics' intent to engage in cancer screening and treatment. For example, when Hispanic adult women, living on the Texas-Mexico border, were educated on HPV and informed that HPV caused the majority of cervical cancers, their cultural beliefs framed how

HPV was understood and managed. Participants reported cervical cancer as unavoidable once diagnosed with HPV and treatment as unnecessary as they were already going to die from cancer (Fernandez et al., 2009).

Additionally, level of acculturation has been associated with fatalistic beliefs and, as a result, engagement in cancer screening and treatment. Harmon, Castro & Coe (1997) found that low acculturated women endorsed greater cancer fatalistic beliefs in comparison to high acculturated and bicultural women, while controlling for education and insurance status. Low acculturated women were also less likely to know the definition of a pap smear test (Harmon et al., 1997), report greater fear of cancer (Balcazar, Castro, & Krull, 1995), and were less likely to have received a pap smear test (Byrd, Peterson, Chavez, & Heckert, 2004; Shah, Zhu, Wu, & Potter, 2006). Not only can cancer fatalism serve as a barrier to cancer screening (Espinosa & Gallo, 2011) and treatment (Fernandez et al., 2009), educational interventions may be less effective due to the fatalistic beliefs Latinos may hold about cancer.

While health education interventions informed by the HBM have increased awareness of HPV and the benefits of vaccination, the efficacy of these interventions may increase when health beliefs shaped by culture are also taken into account. In addition, the HBM is based on a model of attitudes which has been recently criticized for not adequately capturing the role and function of attitudes among individuals socialized in cultures that emphasize interdependence (Riemer, Shavitt, Minkyung Koo & Markus, 2014). In the following paragraphs, I first present the position of the National Institutes of Health (NIH) regarding the need to study culture and account for it in health intervention development and the need to move beyond simplistic theories of culture. I then delineate alternate theories that highlight the importance of culture when developing interventions to promote adoption of health protective behaviors. Such theories

provide guidance to researchers on how to follow the NIH recommendations for conducting culturally-informed research.

The NIH's Perspective: A Need to Ground Interventions in Culture

A primary critique of past research investigating the influence of culture on health behavior is the operationalization of culture. Past research has operationalized culture using one-dimensional variables such as ethnicity or a singular belief. For example, beliefs such as familism have been used in past research to explain the health behavior of U.S. Latinos. Although research shows that familism is an important belief in Latino culture, a singular belief may not explain the complex influence of culture in an individuals' health-related decisions (Kagawa-Singer, Dressler, George, & Elwood, 2014). Measuring culture using one-dimensional, binary variables or singular beliefs impedes identification of the true contribution of culture in influencing health behavior.

In order to improve the practices of health research, the NIH suggests that researchers make efforts to understand the role of culture in health. This requires researchers to identify the manner in which culture influences health beyond beliefs; to acknowledge the target group's culture when developing the research design, methodology and research question; and to remain conscious of their own worldviews. Additionally, the NIH addresses current limitations regarding the integration of culture in health research by providing recommendations for future research. In order to account for the diversity within cultural groups, the NIH recommends that researchers should: (1) recognize culture as heterogeneous and integrate culture into all study design steps; (2) use mixed methods in order to ensure cultural processes not easily elicited using one single approach (i.e., quantitative methods) are identified; (3) base research questions and hypotheses on the cultural realities of the target group; (4) collaborate with members of the target

group throughout the research process (i.e., conduct community-based participatory research); and (5) use culturally competent practices in order to ensure cultural relevance and acceptability (Kagawa-Singer et al., 2014). Attending to these recommendations will allow researchers to identify salient issues and cultural processes not easily identified using previous approaches to cross-cultural health research.

Collectivism and Interdependence in Latino Culture

One theory positing the manner in which culture influences psychological processes is the individualism-collectivism theory (Hui & Triandis, 1986; Triandis, 1989). The theory of individualism-collectivism was developed to account for the systematic differences that researchers observed regarding the manner in which members from different cultures conceptualize the self. Individuals who are socialized in cultures that emphasize collectivism perceive the self as an extension of the in-group, whereas individuals who are socialized in individualist cultures perceive the self as being unique and separate from others. Hence, societies that emphasize collectivism engender an interdependent view of the self while individualist societies engender an independent view of the self (Markus & Kitayama, 1991). In short, the cognition and motivation of individuals who emphasize interdependence will be focused around important others in their collective, while the cognition and motivation of the individual who emphasizes independence will be focused around the individualized self and in reference to traits and attitudes pertinent to it (Oyserman, Coon, & Kemmelmeier, 2002).

The tenets of the individualism-collectivism theory of cultural influence have received empirical validation from cross-cultural studies comparing samples of individuals socialized in Eastern cultures (e.g., China, Japan) and Western cultures, primarily the United States. Although research is continuing to uncover where the entire South American continent and Mexico is

positioned in relation to the East-West cultural differences continuum, to date research suggests that Mexican participants exhibit higher collectivism scores than do North American participants (Hofstede, 1980), Mexican American young adults endorse more collectivist attitudes than Anglo American young adults (Freeberg & Stein, 1996); in addition, Mexican American young adults feel more obligated to avoid conflict within their family and report greater pride from their family membership than Anglo-American young adults (Freeberg & Stein, 1996) and Mexicans engender an interdependent view of the self (Diaz-Guerrero, 1994; Ybarra & Trafimow, 1998; Lechuga & Wiebe, 2009; Ramirez-Esparza, 2008. Importantly, the individualism- collectivism theory has allowed researchers to investigate the influence of culture on basic psychological processes beyond beliefs such as attitudes.

Beyond Beliefs: The Normative Contextual Theory of Attitudes

Attitudes are a central construct in health psychology. Prominent theories of behavior change emphasize the roles of attitudes towards a disease and its consequences. However, the traditional model of attitudes may only apply to individuals socialized primarily within a western, affluent cultural context (e.g., the United States). For example, the traditional model of attitudes proposes that attitudes are informed primarily by personal preferences. The main function of attitudes, in this context, is to assert the individual's uniqueness and hence, independence from others. In addition, attitudes are assumed to be stable and internally consistent.

Recently, the universality of the formation and function of attitudes as conceptualized in mainstream social psychology has been called into question. According to Reimer and colleagues (2014), psychology's model of attitude formation and function was derived from the accumulation of social psychological research conducted primarily with samples of Caucasian

participants living in the United States, a culture that is the epitome of socialization practices which instill individualism, and as such, the model reflects a person-centric model of attitudes.

Riemer et al. (2014), informed by at least two decades of cross-cultural research, expanded upon the person-centric model of attitudes in order to address findings from non-western cultural contexts.

The normative- contextual model of attitudes states that the attitudes of individuals socialized in a non-western cultural context (e.g., cultures that socialize individuals to emphasize interdependence with in- group members) will be informed by personal preferences but also by normative preferences (preferences of important others) to an equal or greater degree. The function of attitudes, in this case will be to enhance social approval, interdependence and harmony with important others (Riemer et al., 2014). In this case, attitudes will include the views of important others, and will depend on the context and norms of the situation.

Similarly, cultural differences in how individuals understand health and their health-related decisions may exist. Within western cultural contexts, health may be perceived as an individual's responsibility and decisions to maintain their health are motivated by their desire to achieve independence and self-fulfillment. However, for individuals socialized in non-western cultural contexts, there is a greater emphasis on the collective in understanding health and in making health-related decisions. Health allows individuals within collectivists cultures to fulfill the social obligations of important others within their collective. Therefore, the social consequences of adopting a health-related behavior for individuals socialized within non-western cultural contexts may be a motivational force when making health-related decisions. In the next section, I describe another theory developed in the field of health promotion to account for the complex influence of culture on health behavior.

The PEN-3 Model of Cultural Influence

An important model, which is grounded in cultural analysis, and attracting increasing attention, is the PEN-3 model of health behavior (Airhihenbuwa, 1989; 1990; 1995). Figure 1 presents a graphic representation of the model. The PEN-3 model extends prior health behavior change theories that influence health behavior at the individual level by incorporating the role of the sociocultural context (Airhihenbuwa, 1995; Airhihenbuwa & Iwelunmor, 2012). The PEN-3 model includes three domains: 1) health education, 2) educational diagnosis of health behavior, and 3) cultural appropriateness of health behavior. The first domain, health education, refers to three potential targets of intervention (Person, Extended family, and Neighborhood level). This domain helps to identify the targeted person(s) of the behavior change intervention, the extended family that may influence the potential behavior change, or neighborhoods in which the intervention is necessary. The second domain, educational diagnosis of health behavior, refers to the factors that facilitate or inhibit enactment of a health behavior (Perception, Enablers, and Nurturers). Perceptions of the health behavior include personal knowledge, attitudes or beliefs that facilitate or inhibit enactment of a health behavior; Enablers refer to the cultural and structural factors that influence engagement in the health behavior; and Nurturers refer to the influence of members of the individual's social network in making a health-related change. Lastly, the category cultural appropriateness of health behavior refers to the specific type of influence that Perception, Enablers, and Nurturers may have on an individual's beliefs and practices and this influence may be positive (encouraging HPV vaccination), exotic (neither positively nor negatively influences HPV vaccination), and/or negative (discouraging HPV vaccination).

For example, studies in the domain of cervical cancer prevention informed by the PEN-3 (Boyte et al., 2014; Garbanti et al., 2013) indicate that parents who associate pap tests with sexual promiscuity were less likely to accept pap testing for their non-sexually active adolescent daughters. According to the PEN-3 model, parents exert an influence as nurturers (within the education diagnosis of behavior domain) who serve as a negative influence (within the cultural appropriateness of behavior domain) on their adolescent daughters' opportunity to be screened for cervical cancer. In a separate study, the distrust of health care providers reduced participants' willingness to get screened and vaccinated (Martinez & Carter-Pokras, 2006). In reference to the PEN-3 model, the distrust of healthcare providers are enablers that would negatively influence the participants' willingness to be screened or vaccinated against a sexually transmitted infection.

Interventions to Promote HPV Vaccination among College Aged Individuals

As described above, research investigated the factors that influence decisions to obtain the HPV vaccine among college aged individuals. Such research is important to inform the development of interventions. Unfortunately, very few interventions have been developed and tested to promote vaccination among young adults (Gerend & Shepherd, 2012; Mehta, Sharma, & Lee, 2014). In one study, Gerend & Shepherd (2012) assessed the effect of message framing on HPV vaccination uptake. Female college students were randomly assigned to the gain-framed (focus on the benefits of the HPV vaccine), loss-framed (focused on the costs of not getting the HPV vaccine) or control/no frame condition. After receiving tailored information, participants in the loss-framed condition reported greater perceived susceptibility of acquiring HPV, greater perceived benefits and attitudes of vaccination than the control condition. In addition, intention to vaccinate was positively associated with vaccine uptake (Gerend & Shepherd, 2012). Students

in the gain-framed group reported greater perceived benefits and more positive attitudes than the control group. In another educational intervention, participants were randomly assigned to either a traditional knowledge- based intervention or a HBM-based intervention (Mehta, Sharma, & Lee, 2014). Participants in the control condition only received neutral information explaining sexually transmitted diseases whereas participants in the experimental condition received information based on the HBM model and received a detailed plan explaining how to get vaccinated. After the intervention, participants in the HBM-based intervention reported greater perceived severity, benefits, self-efficacy, cues to action and intention to obtain the vaccine than the control condition.

A few gaps in intervention development and testing remain. Specifically, there are few health interventions aimed at college age Latinos. Stock, Peterson, Houlihan, & Walsh (2013) randomized participants (77% White) to receive either a brief information intervention or to the control group. The control group received no information while the brief information intervention group received an article adapted from the CDC fact sheet. The article addressed prevalence of HPV, oral transmission of HPV, HPV-related oral cancer and genital warts, and prevention of HPV. Results indicated that participants who received the brief information intervention group reported greater HPV-related knowledge, greater perceived risk of contracting a STI from unprotected oral sex, greater concern for the possibility of getting HPV from oral sex, and likelihood of vaccinating against HPV than participants in the control condition.

In a separate study, Patel and colleagues (2012) randomized 256 female undergraduates (67.2% white, 73.6% currently sexually active) to receive either a HPV-specific education intervention or standard care. Participants in the HPV-specific education intervention discussed the “HPV and Vaccination” factsheet which was adapted from the CDC fact sheet with the study

coordinator at baseline. Two weeks after baseline, the intervention group participants were reminded via mail of how to receive the HPV vaccine at the university clinic, received an additional “HPV and Vaccination” fact sheet, and were sent a brief explanation of the HPV vaccine. Participants in the control condition received a similar fact sheet addressing HPV and how to get the HPV vaccine at the university clinic. Control participants did not receive the “HPV and Vaccination” fact sheet, did not discuss the fact sheet with the study coordinator and did not receive the reminder to vaccinate or fact sheet two weeks later. The HPV-specific education intervention participants were not more likely to get vaccinated. However, participants were more likely to intend to get vaccinated against HPV if they perceived parental approval to get vaccinated, susceptibility of getting a genital HPV infection within their lifetime, and that the HPV vaccine would promote their health.

Health Communication Interventions: Culture Matters

In the domain of health communications research, empirical evidence indicates that culture moderates the way individuals react to health communications (Kreuter & McClure, 2004) and hence, interventions are maximally effective when they are culturally tailored by appealing to the target recipients’ attitudes, values, and beliefs (Darbes, Crepaz, Lyles, Kennedy, & Rutherford, 2013; Eyles & Mhurchu, 2009; Glanz, Rimer, & Viswanath, 2008; Nam, Janson, Stotts, Chesla, & Kroon, 2012; Vincent, McEwenn, Hepworth, & Stump, 2014). For example, a qualitative study investigating the role of ethnic identity on attitudes toward a HPV vaccination message in a sample of Puerto Ricans indicated that perceived physical facial characteristics between the participant and the actors in the advertisement and other socio-cultural characteristics were taken into account by participants when processing the message (Calo, Fernandez, Fernandez-Espada, & Colon-Lopez, 2013). Specifically, participants’ perceived lack

of identification with the accent of the actors and facial characteristics of actors delivering the message led to participants not identifying with the message and consequently not feeling at risk of contracting HPV (Calo et al., 2013). In fact, the message was seen as only relevant for Latinos in the United States or for Puerto Ricans in New York or Florida (Calo et al., 2013). In contrast, in another study, when participants felt that the narrative of the health message and characteristics of individuals delivering the message were relevant to them, they were more likely to view the HPV vaccine as an effective tool to prevent cervical cancer (Frank, Murphy, Chatterjee, Moran & Baezconde- Garbanati, 2015). In the Frank et al. (2015) study, participants were asked to watch a film showing a Mexican American female (Lupita) teach her sister (Connie), friend (Petra), and mother (Blanca) about HPV and its prevention (HPV vaccine) and screening (Pap test) options. Identification with the main character of the narrative (Lupita), who was diagnosed with HPV, was positively associated with perceived susceptibility of contracting HPV. In addition, Mexican American participants' perceived severity (i.e., perceived degree of negative impact of contracting HPV) continued after 6 months of viewing the film. Furthermore, other studies showed that Mexican American women watched the film more times, and were more likely to share the gist of the film with significant others in their social network compared to non-Latina white women (Baezconde-Garbanati et al., 2014). Researchers concluded that identifying with the narrative prompts message receivers to be transported into the narrative, take on the character's perspective, and endorse attitudes and behaviors recommended in the health message (Bandura, 2004, Moyer-Gusé & Nabi, 2010; Slater & Rouner, 2002;). Hence, greater cultural fit may help enhance positive attitudes toward a recommended health preventative behavior.

As previously discussed, tailoring refers to the creation of health communication messages in which the content, context, and method of delivery is tailored to meet the preferences of message recipients (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008; Kreuter, Stretcher, & Glassman, 1999; Kreuter & Wray, 2003). According to Hawkins et al. (2008), three types of health communication messages exist: mass communication, targeted communication, and tailored communication. These categorizations reflect the progressive degree of customization of messages. Specifically, the extent to which content, graphics, and delivery reflects the characteristics and preferences of the audience (e.g., graphics including individuals of various ethnic groups versus only Mexican Americans) and segmentation which refers to dividing a population into smaller, more homogenous groups (e.g., general population versus 18-26 year old Mexican Americans; Slater, 1996). For example, CDC fact sheets containing HPV- related information are considered a form of mass communication because they address the general population of Americans with identical message content and images.

Unlike a mass communication message, a targeted communication message targets a subgroup of the population such as Mexican Americans with unique message content based on shared characteristics of the group such as cultural values of collectivism, religiosity, or preferred language. Finally, a tailored communication is a message informed by the assessed characteristics and needs that are relevant to a specific individual (Hawkins et al., 2008; Kreuter & Wray, 2003). For example, message content may be based on the individual's readiness to change, or the individual's knowledge of HPV and the vaccine. In sum, tailored messages have been shown to be effective in promoting health behavior change and more effective than generic messaging due to the increased chance that the message will be viewed as relevant to the individual (Noar, Benac, & Harris, 2007; Petty & Cacioppo, 1984). Tailoring health information

allows only the factors personally relevant to the receiver to be presented. Because of this, message recipients are more likely to attend to the information (Kreuter, Stretcher, & Glassman, 1999). Not only has evidence shown that tailoring is effective (Noar, Benac, & Harris, 2007; Skinner, Campbell, Reimer, Curry, & Prochaska, 1999), but the inclusion of theory has been shown to increase the efficacy of interventions as well (Glanz & Bishop, 2010).

Fotonovelas

Fotonovelas have been traditionally used in Latino culture as a medium for communication and entertainment (Flora, 1981). A fotonovela is composed of still photographs with word bubbles, similar to a comic book, and a dramatic or soap opera-like narrative. The narrative typically includes a main character performing a recommended health behavior such as completing the HPV vaccine series who informs supporting characters such as her peers or family of what she has learned in order to promote initiation of the recommended health behavior, increase self-efficacy, challenge social norms that may prevent behavior enactment (Cabassa, Molina, & Brown, 2012), and provide skills to reduce barriers (Unger, Cabassa, Molina, Contreras, & Baron, 2013). The storyline is typically informed by focus groups and evaluated by a sample of the targeted group in order to ensure the cultural relevance and identification with the intended audience. Once tested, a fotonovela can be disseminated via television, radio, internet (videos or photos), or print (Unger et al., 2013).

Traditionally, health-related fotonovelas have been used to address culturally diverse populations and populations who may have a low-literacy level (Valle, Yamada, & Matiella, 2006). Fotonovelas have been developed to address health issues such as diabetes (Unger, Molina, & Baron, 2009), depression (Cabassa et al., 2012; Hernandez & Organista, 2013; Unger et al., 2013), dementia (Valle et al., 2006), unhealthy eating (Hinojosa et al., 2010), and HPV

(Chan et al., 2015). Fotonovelas have been shown to be effective in increasing knowledge, intentions, and self-efficacy (Chan et al., 2015; Hernandez & Organista, 2013). In a previous study, results revealed that participants who read a culturally-tailored fotonovela had greater gains in depression-related knowledge ($d = 1.19$), intention to seek treatment for depression ($d = .47$), and self-efficacy to identify treatment as necessary in comparison to participants who took part in a group discussion ($d = 1.20$). Additionally, in one study participants were more likely to give the fotonovela to individuals in their social network in comparison to a traditional information pamphlet (Unger et al., 2013).

The effectiveness of the fotonovela may be explained by the inclusion of relevant ethnic identities and culturally congruent arguments. Previous research has shown a preference for health information with relevant ethnic cues and identities presented among ethnic minorities (Appiah, 2004). Additionally, pictures reflecting cultural values and norms of the target audience have been shown to increase the effectiveness of persuasive communications (Mitchell, 1986). It has been suggested that if the receiver is able to assume the identity or relate to the perspective of the main character or the health message, deeper processing and behavior change are possible.

A study was conducted to develop and test a fotonovela to increase HPV vaccination intentions among Latina college-aged women (Chan, 2015). The Chan et al. (2015) fotonovela entitled “What You Don’t Know” was tested with young Latino adults (18-26 years old) attending a low-income community clinic. The fotonovela narrative explained the importance of HPV vaccination for individuals in a committed relationship. The storyline was informed by the HBM model. Furthermore, before testing the authors ensured the cultural and linguistic appropriateness by seeking the input of community members. Using a single group pre and post-test design to test the effect of the fotonovela on change in HBM constructs, results indicated that

Latino young adults' knowledge, attitudes and intentions to receive the vaccine increased at post-test.

The purpose of the present study was to develop a fotonovela targeting HBM constructs while also using the PEN 3-model of cultural influence on health behaviors to inform the fotonovela narrative and hence, increase the cultural-relevance of the fotonovela for Mexican-American female, young adults. Specifically, formative research was conducted following the theoretical tenets of the PEN-3 model to ensure that the cultural factors affecting HPV vaccination decisions were targeted. Furthermore, the cultural and linguistic relevance of the fotonovela was tested by asking the target population to provide feedback on the narrative and photographs in order to assess acceptability and feasibility. The target population was asked to provide feedback to refine the storyline, dialogue, and characters included in the fotonovela.

Study Overview, Aims and Hypotheses

The aims of the proposed study was to develop a culturally-tailored intervention aimed at promoting vaccination against the Human Papillomavirus (HPV) in Latina college age adults. The current study consisted of two phases: 1) conduct formative research to develop the intervention and refine it (formative phase) and 2) pilot test the efficacy of the intervention (pilot testing phase). Our formative phase was informed by the PEN-3 model. Specifically, during our formative phase, we conducted interviews to answer the following research question. What are the PEN-3 factors that influence Latina college age individuals' HPV vaccine acceptance? Answers to this question permitted the adaptation of the intervention to deliver the intervention at the individual level and reinforce the positive and attempt to reduce the negative influence of perceptions, enablers and nurturers. In the present study, a health promotion message with a

greater degree of segmentation and customization for Latinas living in the U.S.-Mexico border was created.

During phase 2, we tested the efficacy of the culturally-tailored fotonovela in a two-arm randomized controlled trial with 2 repeated outcome assessment points (pre and post-test). Participants were randomly assigned to receive the culturally-tailored fotonovela (intervention) or to a condition where they were asked to read a CDC fact sheet providing information about HPV and the vaccine (control condition). During phase 2, the following hypotheses were tested: Participants assigned to the fotonovela condition will score higher on (a) vaccination intentions, (b) HPV and HPV vaccine-related knowledge, (c) attitudes toward the HPV vaccine, (d) perceived susceptibility, perceived severity, perceived benefits, perceived self-efficacy to get the vaccine and fewer barriers compared to participants assigned to the CDC fact sheet condition.

Method: Study 1

Participants

Two sets of participants were recruited. The first set of participants was comprised of 20 participants ($M_{age} = 21.73$; $SD = 2.55$; range = 19-26 years old) for the initial round of interviews. Ten participants had received the HPV, nine had not received the HPV vaccine and one survey was lost. Of the ten participants who received the HPV vaccine, five participants received one HPV vaccine shot, four received two shots and one participant was unsure.

Participants were recruited from the University of Texas at El Paso Introduction to Psychology research pool (See Appendix A for SONA-Systems posting). Recruitment was also conducted by posting fliers around campus requesting participation in the study. Eligibility criteria required participants to be between 18 to 26 years of age, to self-identify as Mexican American, and to not have completed the three-dose HPV series (See Appendix B for Screening Questions).

Participants were compensated by receiving two hours of research course credit or fifteen dollars for their participation. If ineligible, the interviewer informed the participant that he or she is unable to participate but will be granted half a credit on SONA-Systems. See Table 1 for additional demographics.

The second set of participants were an additional ten participants recruited to evaluate the developed fotonovela “How did this even happen?” in interviews. Participants were recruited from the University of Texas at El Paso Introduction to Psychology research pool. Eligibility criteria required participants to be between 18 to 26 years of age, to self-identify as Mexican American, to have not participated in the initial round of interviews, and to not have completed the three-dose HPV series (See Appendix D for Screening Questions). Participants were also asked if they have ever been to the UTEP health center to get services and their student

classification. Responses to the latter two questions did not affect eligibility for the interview. Participants were compensated by receiving two hours of research course credit for their participation. If ineligible, the interviewer informed the participant that he or she is unable to participate but will be granted half a credit on SONA-Systems.

Measures

Sociodemographic questionnaire (Appendix L). A 13-item sociodemographic questionnaire assessed participant demographic information such as age, gender, marital status, current relationship status, current student classification, ethnicity, sexual orientation, and current city. In order to assess use and access to health services, participants self-reported whether or not they had a primary healthcare provider, their last regular check-up, location where they typically sought healthcare, status and type of health insurance. Some questions were taken from a previous sociodemographic questionnaire (Lechuga, Swain, & Weinhardt, 2011).

Abbreviated Multidimensional Acculturation Scale (Appendix E). A 23-item questionnaire adapted from the original 42 item questionnaire developed by Zea, Asner-Self, Birman & Buki (2003). The questionnaire assessed U.S. acculturation and Latina acculturation. The adapted questionnaire includes the following subscales for U.S. and Latina acculturation: U.S. identity (6 questions, questions 1-6), English language competence (9 questions, questions 7-15), Spanish language competence (8 questions, questions 16-23). A sample item for U.S. identity: “I think of myself as being U.S. American.” A sample item for English language competence: “How well do you speak English in general?” A sample item for Spanish language competence: “How well do you speak your native language with family?” Response options for all questions ranged from 1 (Not at All) to 7 (Very much). Scores for each subscale was averaged, with higher scores indicating greater US identity, Spanish and English language

competence. The US cultural identity subscale has high internal consistency ($\alpha = .96$), as does its two subscales: English language competence subscale ($\alpha = .96$), and Spanish language competence subscale ($\alpha = .97$) (Zea et al., 2003).

Communication with Parents (Appendix L). A 9-item questionnaire was developed to assess the participants' comfort having conversations with their parent(s) about sexuality. The questions assessed the parent or the person with whom the participants felt most comfortable having sexuality-related questions. The following questions assessed the frequency of conversation, the topics discussed and the parent or other person's sexual beliefs. A sample item for identifying the person whom the participant felt comfortable having sexuality-related discussions with: "Please select a person with whom you felt most comfortable having conversations related to sexuality." Responses for the person with whom you felt most comfortable having conversations related to sexuality were: mother, father or other (please specify). A sample item for frequency of conversations: "How often do you have conversations about sexuality with your _____?" Response options included "once every day", "once every week", "once every month", and "once every year". A sample item for the parent or other persons' beliefs: "My _____ thinks I should wait to have sex until I get married." Responses for parents or the other persons' beliefs range from 1(Completely Disagree) to 5(Completely Agree). The psychometric properties of the subscales have not been reported.

Sexual Health History questionnaire (Appendix M). A 10-item questionnaire was adapted from a previous study (Lechuga, Swain, & Weinhardt, 2011). The questions assessed the participants' HPV vaccine status, HPV vaccine history, HPV vaccine intentions, HPV vaccine attitudes and barriers to receiving the HPV vaccine. A sample open-ended item for HPV vaccine status: "How many doses of the vaccine have you gotten?" A sample item for history of the HPV

vaccine: “Has a healthcare provider recommended the HPV vaccine to you?” Response options included “yes” and “no”. A sample item for HPV vaccine intention: “If you have not been vaccinated against HPV, do you intend to get it?” Response options included “yes”, “no” and “undecided”. A sample item for HPV vaccine attitudes: “How do you evaluate the HPV vaccine?” Response ranged from 1(“Very Positively”) to 7(“Very Negatively”). A sample item for barriers to receiving the HPV vaccine: “What are your reasons for not getting the HPV vaccine/finishing the series (check all that apply)?” Response options included: “the vaccine costs too much”, “I need more information on the vaccine”, “I am embarrassed to request the vaccine”, “my doctor had not recommended I get the vaccine”, “the vaccine needs three shots”, “I need more information on HPV”, “I am not at risk for HPV”, “my parents do not want me to get the vaccine”, “the vaccine is unsafe”, “I am afraid of needles”, “I am too old to get the vaccine” and “my spouse/partner does not want me to get the vaccine”.

In-depth Interview guide (See Appendix B for the first interview guide and See Appendix D for the second interview guide). In the initial set of interviews, participants were briefly introduced to the interview topic (adopting health behaviors that prevent STIs) and then asked 17 interview questions. Following each interview question, the interviewer asked a follow-up probe or prompt in order to address additional aspects of the question not answered by the participant and/or to elicit more detailed information. For example, participants were asked to report their trusted sources for health information. In order to elicit more detailed information, the interview would probe with various sources of health information such as paper brochures or online videos. In case participants did not report trusted sources of information for the HPV vaccine, the interviewer prompted them to report from whom they would feel most comfortable receiving information about HPV and HPV vaccination.

Interview questions assessed access to health services on campus (e.g., “Have you ever been to the UTEP health clinic?”). Additional questions were asked to identify the perceptions (e.g., HPV knowledge), enablers (e.g., social and cultural factors) and nurturers (e.g., family and friends) that may positively or negatively influence the participants’ decision to vaccinate against HPV. Questions addressed perceptions of vaccinations in general (e.g., “What comes to your mind when you think about vaccinations?”) and perceptions of HPV and the HPV vaccine (e.g., “What have you heard or know about the human papillomavirus (HPV) and the HPV vaccine?”). Questions identifying enablers (e.g., “Are there any stories or cultural beliefs passed down from within your family that would make you mistrust the medical community or vaccinations?”) and nurturers (e.g., “When it’s time to make decisions about your health, who do you talk to?”) were included that could either positively or negatively influence the decision to vaccinate against HPV.

Then, the interviewer read the fotonovela entitled “What you don’t know...” (Chan et al., 2015) aloud while pointing out pictures and introducing the characters. After reading the fotonovela, participants were asked how likely they were to read a fotonovela in the future and what changes they would make to the fotonovela read to them. Additionally, participants were asked to share one piece of information about HPV or the HPV vaccine that they felt was most important for UTEP students to know.

During the second set of interviews, the interviewer briefly introduced the interview topic (identifying the best way to present health information to young adults attending college) and then asked 27 interview questions with a combination of 1 to 5 prompts or probing questions. Participants were asked to report their attitudes toward vaccinations in general (e.g., “Could you tell me if you are for or against vaccinations?”), knowledge of HPV and the HPV vaccine (e.g.,

“What have you heard or know about the human papillomavirus or the HPV vaccine?”) and their HPV vaccine history (e.g., “Did a health care provider speak to you about the vaccine?”). The interviewer read the initial draft of the fotonovela entitled “How did that even happen?” aloud and asked participants to provide feedback on the fotonovela storyline (e.g., “Which parts could be left out?”), characters (e.g., “What do you think about the conversation between Sofia, Carla, and Taylor?”) and effectiveness (e.g., “How helpful do you consider the information provided in helping you reach a decision on whether to get vaccinated/finish the doses?”).

Procedure

The initial interview sessions typically took 30 to 45 minutes to complete. Participants were first asked questions assessing their eligibility for the interviews. After eligibility criteria was verified, the participant was instructed to read and sign the informed consent form. At the beginning of the interview session, the participant was briefly introduced to the topic of the interview (“Today, we will be talking about adopting health behaviors that prevent one from acquiring a STI such as HPV.”) and told the interview would be audio-recorded. Each interview session followed the interview guide (See appendix B). After the initial questions were asked about perceptions, enablers and nurturers that could influence the participants’ decision to vaccinate against HPV, the participant was introduced to the “What you don’t know...” fotonovela (Chan et al., 2015). Participants were told they would read a fotonovela developed in California promoting the HPV vaccine to young adults. The interviewer briefly explained the fotonovela narrative and introduced the characters in the fotonovela while scrolling through the photos within the fotonovela. Questions were asked about the potential effectiveness of the fotonovela with young adults and the changes they would make to the storyline. After the interview, participants completed the survey packet. Once participants completed the

questionnaires, they were debriefed and received a copy of the CDC fact sheet on genital HPV.

Interviews were transcribed by a graduate research assistant. Transcripts were uploaded to MaxQDA. The MaxQDA software was used to identify emergent themes in the data (Corbin & Strauss, 1990; Strauss & Corbin, 1994). Preliminary coding categories were developed by the two raters and informed by the PEN-3 model and HBM used to develop the interview guide. Preliminary coding categories included Perceptions, Enablers and Nurturers. A pair of coders discussed the first two transcripts in order to identify relevant statements within each transcript (text) that should be assigned to one of the major coding categories (Perceptions, Enablers, and Nurturers). After assigning a statement to one of the three major categories, the pair of coders then identified and discussed the sub-category to which the statement belonged (e.g., assigning a specific statement to the “perceived severity” sub-category within the main “Perceptions” category.) Statements were assigned to the major category “Perceptions” if they referred to constructs of the HBM (e.g., perceived severity, self-efficacy or benefits), knowledge, attitudes or beliefs about HPV or the HPV vaccine. Statements were assigned to the major category “Enablers” if they referred to structural level factors outside of the individual’s control, such as the influence of sociocultural normative expectations, familial characteristics such as communication about sexual health, the media, and access to a healthcare provider’s recommendation or access to healthcare. Statements were assigned to the major category “Nurturers” if they referred to the direct influence of members of the participant’s social network in the decision to receive the HPV vaccine; statements were also assigned to the category “Nurturers” when they referred trusted sources of information about HPV and the vaccine. Sub-codes were developed when participants referenced a specific type of ‘Perception’ (e.g., positive attitudes toward vaccines), ‘Enabler’ (e.g., open communication with family about sexuality) or

‘Nurturer’ (e.g., positive influence of mother). All sub-codes were then recoded as either positive (encouraging vaccination) or negative (discouraging vaccination). After coding the first two interviews, the remaining interviews were coded separately by both coders, who subsequently resolved coding disagreements through discussion. Thematic categories were subsequently refined, merged or subdivided based on discussion among the two coders.

The initial draft of the “How Did This Even Happen?” fotonovela was developed using the themes identified in the first round of interview sessions. Themes that encouraged HPV vaccination (e.g., vaccine effectiveness) were emphasized in the fotonovela; themes that discouraged HPV vaccination were *reframed* in the fotonovela to highlight the benefits of HPV vaccination (e.g., preventing cancer rather than condoning early sexual activity).

During the second round of interviews, participants were instructed to read and sign the consent form. At the beginning of the interview session, the participant was briefly introduced to the topic of the interview (“During today’s session, I will ask you your opinions about an educational intervention to promote vaccination against the Human Papillomavirus or HPV in young women attending college.”) and told the interview would be audio-recorded. Each interview session followed the interview guide (See appendix D). After the initial questions were asked about their perceptions of vaccinations, HPV and HPV vaccinations, participants were told they would be shown the initial draft of the “How did this even happen?” fotonovela developed in El Paso promoting the HPV vaccine to Latina young adults. The interviewer explained the fotonovela narrative and introduced the characters in the fotonovela while scrolling through the photos within the fotonovela. Participants were asked to provide feedback on the specific message content, communication styles, readability, and graphics of the initial draft of the fotonovela. After the interview, participants were debriefed and provided the CDC fact sheet on

genital HPV. Interviews were transcribed and the recordings were replayed in order to ensure accuracy.

Results: Study 1

Demographics

Participants in the initial set of interviews were 20 Mexican-American female young adults ages 19-26 ($M_{age} = 21.73$, $SD = 2.55$) and were recruited using fliers or from the University of Texas at El Paso Introduction to Psychology research pool. One survey was misplaced and thus was not included. Sixteen participants reported to be living in El Paso, two participants reported to be living in Juarez, and one participant reported to be living in another location. Participants rated themselves highly competent in English ($M = 6.63$, $SD = .51$, range = 5.38-7.00; scale ranges from 1-7) and Spanish ($M = 6.10$, $SD = 1.21$, range = 2.63-7.00; scale ranges from 1-7). Participants also identified moderately strongly with U.S. culture ($M = 5.87$, $SD = .97$, range 3.83-7.00; scale ranges from 1-7). Thirteen participants self-identified as heterosexual, 3 as lesbian/gay and 3 as bisexual. Ten participants reported to be sexually active. Eleven participants indicated that they had received a healthcare provider's recommendation to get vaccinated against HPV.

Themes from the initial set of interviews

Fourteen themes were identified and categorized as perceptions (e.g., positive attitudes toward vaccines), enablers (e.g., open communication with family about sexuality) or nurturers (e.g., positive influence of mother) under the Educational Diagnosis of Health Behavior domain within the PEN-3 model. After identifying whether the theme was a perception, enabler or nurturer, the themes were then categorized as either a positive (themes that encourage vaccination, e.g., vaccines as prevention) or negative (themes that discourage vaccination, e.g., vaccination as condoning sex) influence to HPV vaccination under the Cultural Appropriateness of Health Behavior domain within the PEN-3 model.

An example of a perception of vaccines as prevention is exemplified in this quote from one participant:

“I mean there seems to be a lot of benefits because of it. If it helps you fight a lot of serious diseases that could be potentially fatal that seems to be a really great upside.”

Emphasis on this perception was included in the fotonovela narrative by having characters discuss the importance of prevention of HPV before it is too late.

An example of the influence of an enabler of vaccination is exemplified in the next quote. In this quote, the participant refers to how a sociocultural normative expectation regarding sexuality prevents her from getting vaccinated.

Well, I’m Hispanic and although I’m not catholic a lot of my family is. And normally, when Hispanics are Catholics they look down on sex. HPV wouldn’t even be an option. They’d be like well you’re not even going to have sex so I don’t see what the issue is so it’s kind of like one of those things.”

The potential negative influence of this cultural enabler was countered in the fotonovela by including a model of an interaction between a mother and daughter about the decision to obtain the vaccine in light of fears that vaccination may condone sexual activity.

Finally, an example of the effect of a nurturer was mentioned by participants. The following quote illustrates the positive effect of certain trusted sources of information:

“I would probably go to a doctor, then my mom and then my friends and then my partner.”

The fotonovela narrative modeled the adoption of a sexual health preventative behavior during interactions between the main character and her mother, friends and a health care provider.

Table 2 presents the main and sub-thematic categories derived from the initial set of interviews. Tables 3-5 present the main and sub-thematic categories, a representative quote for each theme, and implications for the development of the fotonovela script. As shown in Table 2, emergent themes indicative of participants' perceptions suggested factors that may have a positive or negative influence on HPV vaccination. Factors that encouraged vaccination were classified as positive whereas factors that discouraged vaccination were classified as negative. Seventeen participants were in favor of vaccines as they prevent disease and are a preventative measure to procure good health. Three participants were skeptical of vaccines and their skepticism was influenced by their mistrust of the medical profession and the health care industry. However, one participant mentioned that exposure to scientific evidence about vaccinations would influence her decision to get vaccinated. The perceived severity of being diagnosed with HPV was classified as a positive influence on the decision to obtain the HPV vaccine. Seventeen participants indicated that they perceived being diagnosed with HPV as serious and conducive to other illnesses such as cervical cancer. Two participants indicated that they were at low risk for contracting HPV because they had never engaged in sexuality activity. Other factors that emerged as potential negative influences on vaccination decisions were lack of information about HPV and the vaccine, fear of pain at the injection site and unknown long-term side-effects.

The PEN-3 model of health behavior posits that factors that are beyond the control of the individual such as cultural norms, health care access, and availability of information from trusted sources about the preventative behavior in question influence the adoption of health preventative behaviors. The purpose of the present study was to uncover factors at the cultural level, such as norms, that may influence vaccination. In the PEN-3 category of enablers, a factor that was

found to have a positive effect on vaccination was open communication with family about sexuality. One participant reported that having an open communication with her mother about sexuality facilitated the vaccination decision. In contrast, lack of open communication with family about sexuality and the belief that HPV vaccination would promote initiation of sexual activity were found to have a negative influence on HPV vaccination. Participants stated the difficulty of being informed about health behaviors that promote sexual health because sexuality is a taboo topic in Mexican culture and this makes it difficult for kin to recommend adoption of such behaviors. Under the PEN-3 category of enablers, participant responses suggested that trusted sources of information about the HPV vaccine would be a health care provider, her mother, and other family members.

The PEN-3 model of health behavior also indicates that when it comes to the study of cultural influences on health behavior among collectivists, it is important to consider the positive and negative influence of important others who are likely to influence the health behavior in question. Nine participants indicated that mothers' own beliefs about sexuality hindered their own thoughts about adoption of sexual health preventative behaviors. One participant stated that despite cultural norms precluding open discussions about sexuality, her mother did not abide by such norms and conveyed the importance of vaccination to her.

Intervention Development and Feedback

The above findings had implications for the development of the "How did this even happen?" fotonovela script. The goal was to identify and reinforce factors from the PEN-3 model that positively influence HPV vaccination and to identify and counteract factors from the PEN-3 model that negatively influence HPV vaccination among Latina young adults. The fotonovela narrative (see Appendix P) was informed by the identified themes discussed above. Themes

allowed for the development of a culturally-relevant narrative of a Mexican American young adult (named Sofia) making a decision to obtain the HPV vaccine. The principal characters of the fotonovela are Sofia and her mother, Sofia's friends Carla and Taylor, and the pharmacist administering the HPV vaccine. The gist of the storyline is that Sofia finds out that her friend, Carla, has just received a positive HPV diagnosis. Carla conveys to Sofia and their mutual friend, Taylor, the severity of the diagnosis. Preoccupied and in hopes of preventing the same fate for herself, Sofia goes home to ask her mother about her HPV vaccine status. When Sofia asks her mother about her vaccination status, Sofia's mother anxiously and judgmental asks her if she wants the vaccine because she had initiated sexual activity. Sofia reacts desperate and tells her mother that vaccination and initiation of sexual relations are not related. Sofia's mother calls her sister who tells her that she vaccinated her daughter because she could not bear the thought that her daughter may suffer from cervical cancer. Sofia's mom talks to Sofia and tells her that her health is the most important thing to her and that she would like to accompany Sofia to the Pharmacy to obtain the vaccine. The fotonovela displays Sofia's mom and the Pharmacist supporting Sofia's decision. The researcher requested the help of actor volunteers to enact the script. While the actors proceeded to enact the script, the researcher took still photographic shots. The photographic shots were edited and pictures with the facial expressions that best conveyed the emotion of the scene and with the best resolution were incorporated into the fotonovela.

To refine the initial draft of the "How did this even happen?" fotonovela, the fotonovela was presented to participants who provided feedback in the second round of interviews. The second round of interviews were conducted with 10 participants ($n = 6$ had received 1 shot of the HPV vaccine, $n = 1$ had received 2 shots of the HPV vaccine, and $n = 3$ had not been vaccinated) Participants were recruited from the Introduction to Psychology pool

on SONA-Systems. Additional demographic information was not obtained. During the second round of interviews the researcher sought participants' feedback regarding identification with characters, credibility of the story, and potential influence of the fotonovela on decisions to obtain the vaccine. Table 6 presents the feedback obtained from participants. Participants indicated a need to expand on the following HPV and HPV vaccine-related information: 1) explanation of a pap smear, 2) symptoms of HPV, 3) prevalence rates of HPV, 4) modes of HPV transmission, 5) the efficacy of the HPV vaccine, 5) how to detect whether or not you have HPV and 6) eligibility criteria for receiving the HPV vaccine. In addition, participants had suggestions for each of the character's storylines. For Carla, participants requested that she convey information about treatment for HPV, consequences of not receiving treatment, and more details regarding her diagnosis. For Sofia, participants wanted to know if she needed a pap smear before receiving the HPV vaccine. For Taylor, participants wanted her and Sofia to ask Carla more questions before she leaves the scene and for Taylor to show more concern for Carla. Finally, participants requested the following information from the pharmacist: 1) not to mention the vaccination status of his children and 2) to provide more specific information about HPV and the vaccine.

The researcher incorporated the feedback into a second edition of the "How did this even happen?" fotonovela (see Appendix Q). During study 2, we tested the efficacy of the culturally-tailored fotonovela in a two-arm randomized controlled trial with 2 repeated outcome assessment points (pre and post-test). Participants were randomly assigned to receive the culturally-tailored fotonovela (intervention) or to a condition where they were asked to read a CDC fact sheet providing information about HPV and the vaccine (control condition). During study 2, the following hypotheses were tested: Participants assigned to the fotonovela

condition will score higher on (a) HPV and HPV vaccine-related knowledge, (b) intention to seek additional information, (c) intention to disseminate the fotonovela among social networks, (d) intention to obtain the vaccine, (f) perceived susceptibility, perceived severity, benefits, and self-efficacy and score lower on the number of barriers compared to participants assigned to the CDC fact sheet condition.

Method: Study 2

Participants

One-hundred and forty-five female participants, ages 18 to 26 ($M_{age} = 19.99$, $SD = 1.84$) were recruited from the University of Texas at El Paso Introduction to Psychology research pool. Tables 7 and 8 present additional demographic characteristics. A total of 78 participants (53.8 %) were randomized to the fotonovela condition. Figure 2 shows the process of randomization.

Design

A two-arm randomized controlled trial was used to test the effect of the culturally-tailored fotonovela “How did this even happen?” (See Appendix Q) and the CDC fact sheet (See Appendix R). Participants were randomly assigned to one of the two conditions and assessment of outcome measures were taken at two-time points (pre and post-test).

Measures

Abbreviated Multidimensional Acculturation Scale (Appendix E). A 23-item questionnaire adapted from the original 42 item questionnaire developed by Zea, Asner-Self, Birman & Buki (2003) assessed U.S. acculturation and Latina acculturation. The adapted questionnaire includes the following subscales for U.S. and Latina acculturation: U.S. identity (questions 1-6), English language competence (questions 7-15), and Spanish language competence (questions 16-23). A sample item for U.S. identity: “I think of myself as being U.S. American.” A sample item for English language competence: “How well do you speak English in general?” A sample item for Spanish language competence: “How well do you speak your native language with family?” Response options for all questions ranged from 1 (Not at All) to 7 (Very much). Scores for each subscale was averaged, with higher scores indicating greater U.S. identity, English and Spanish language competence. The US cultural identity subscale has high

internal consistency ($\alpha = .96$), as does its two subscales: English language competence subscale ($\alpha = .96$), and Spanish language competence subscale ($\alpha = .97$) (Zea et al., 2003).

Knowledge about HPV and the Vaccine (Appendix F). A 17 item questionnaire was developed to assess knowledge of HPV and the HPV vaccine. The questionnaire included the following subscales for awareness of HPV (question 1), knowledge of HPV (questions 2-7) and knowledge of the HPV vaccine (questions 8-17). A sample item for awareness of HPV: “Have you ever heard of the Human Papillomavirus (HPV) before today?” A sample item for knowledge of HPV: “HPV infection can go away without treatment.” A sample item for knowledge of the HPV vaccine: “You are in the age group that health officials recommend get the HPV vaccine.” Response options were Yes, No, and Don’t Know. Knowledge scores were computed by counting the number of correctly marked items, with higher scores indicating greater knowledge. The psychometric properties of the subscales have not been reported

Evaluation of the Information Provided (Appendix G). A 15-item questionnaire was adapted from the interview questions used in both rounds of interviews. The questionnaire consisted of a combination of Likert-type and open-ended items assessing the quality of information provided in the fotonovela and the CDC fact sheet. Participants were asked to provide feedback on the information provided (open-ended item; e.g., “Which parts could be expanded upon more?”) and the likelihood that the information presented in either the CDC fact sheet or the culturally-tailored fotonovela would influence their decision to obtain the HPV vaccine (Likert-type item; e.g., “The information I just read about HPV and the vaccine will help me reach a decision about getting vaccinated against HPV?”). Participants were also asked their willingness to share either the fotonovela or CDC fact sheet with people within their social

network (Likert-type and open-ended; e.g., “Would you recommend that other people read the information that you just did if they are undecided about vaccinating against HPV?”).

Identification with Fotonovela Characters questionnaire (Appendix I). An 8-item questionnaire was adapted from the interview questions used in the second round of interviews. The questions assessed identification with characters in the fotonovela (questions 1-4). A sample item for character identification asked participants to identify the extent they identify with “Sofia”. In addition, questions assessed the extent to which the characteristics of the conversations depicted conversations participants would have with members of their social network (questions 5-8). A sample item asked participants the extent to which identify with the characteristics of “the conversation between Sofia and her mother”. Response options for all questions ranged from 1 (“I do not Identify at all”) to 7 (“I Identify Very Strongly”).

Behavioral Intentions Scale (Appendix H). An 8-item scale was used to assess HPV vaccine-related behavioral intentions. The scale was adapted from a previous 5-item measures assessing HPV vaccine intentions among Latina mothers ($\alpha = .91$; Lechuga, Swain, & Weinhardt, 2011). Items in the current study addressed participants intention to share information related to HPV and the HPV vaccine (questions 1-2), intention to seek additional information (questions 3, 7, 8), intention to recommend the vaccine (question 6), and intention to get the HPV vaccine (questions 4-5). A sample item for intention to share HPV-related information: “I intend to share the health information about HPV and the HPV vaccine provided today with friends”. A sample item for intention to seek additional information: “I intend to seek additional information about the HPV and the HPV vaccine.” A sample item for intention to recommend the vaccine: “I intend to recommend the vaccine to my friends”. A sample item for

intention to get the HPV vaccine: “I intend to get the HPV vaccine in the next month.” Response options for all questions ranged from: 1 (“Completely Disagree”) to 7 (“Completely Agree”).

Sexual Health Attitudes Questionnaire (Appendix I). A 16 item questionnaire assessed attitudes toward the pap smear test, cervical cancer, and the HPV vaccine. A sample item for attitudes toward the pap smear test: “If I have a pap smear test regularly, I don’t need to worry too much about cervical cancer.” A sample item for attitudes toward cervical cancer: “If cervical cancer is found early it can be successfully treated.” A sample item for attitudes toward the HPV vaccine: “The HPV vaccine is being pushed to make money for drug companies.” Response options ranged from 1 (“Completely Disagree”) to 7 (“Completely Agree”). A final question assessed attitudes toward the HPV vaccine: “How do you evaluate the HPV vaccine?” Response options ranged from 1 (“Very positively”) to 7 (“Very negatively”). The latter question was taken from a previous study (Lechuga, Swain, & Weinhardt, 2011). The psychometric properties of the measure have not been reported.

HPV Vaccine Discussions (Appendix K). A 4-item questionnaire assessed if participants had ever had a conversation with their parents and healthcare provider about the HPV vaccine (e.g., “Have you ever talked with your parents about the HPV vaccine at all?”). When participants responded affirmatively, they were asked to check all of the topics they discussed with their parent and healthcare provider about the HPV vaccine. Topics included: “protects against cervical cancer”, “protects against genital warts”, “shots may be painful”, “the HPV vaccine is for a sexually transmitted infection”, “long term effects are not known”, “should get the HPV vaccine before being sexually active”, “doctor recommended the HPV vaccine”, “HPV vaccine recommended for girls (age 10-18)”, “don’t know”, “sexuality and sex topics”, and “other (please specify)”.

Sexuality-related Communication with Parents (Appendix L). A 9-item questionnaire was developed to assess the participant's comfort when having conversations with their parent(s) about sexuality. The first question sought to identify the parent or another person with whom the participant felt most comfortable having sexuality-related discussions (e.g., "Please select a person with whom you felt most comfortable having conversations related to sexuality:"). Response options included "mother", "father" and "other (please specify)". Participants also reported how frequently they engaged in sexuality-related discussions with their selected parent or person (e.g., "How often do you have conversations about sexuality with your _____?"). Response options included "every day", "once every week", "once every month" and "once every year". Participants also completed questions regarding the topics discussed with the selected person or parent (e.g., "Which of the following topics have you discussed with your _____?"), and the selected person or parents' sexuality-related beliefs (e.g., "My _____ thinks I should wait to have sex until I get married."). Response options ranged from 1("Completely Disagree") to 5("Completely Agree"). The psychometric properties of the questionnaire have not been reported.

Health Belief Model Scale for HPV (Appendix L). A 21-item questionnaire was adapted from previous studies (Guvenc, Akyuz & Acikel, 2011; Lechuga, Swain, & Weinhardt, 2011). The questionnaire assessed the following HBM constructs: perceived susceptibility, benefits, barriers, severity, self-efficacy, and vaccine efficacy. A sample item for perceived susceptibility of HPV: "I can contract HPV." A sample item for perceived benefits: "There are benefits to getting the HPV vaccine." A sample item for perceived severity: "How severe would the consequences be for you if you were diagnosed with HPV?" A sample item for perceived self-efficacy: "Getting vaccinated against HPV is completely under my control." A sample item

for perceived vaccine efficacy: “How well do you think the HPV vaccine is in preventing genital warts/cervical cancer?” Response options for perceived benefits and severity ranged from 1 (“Completely Disagree”) to 7 (“Completely Agree”). Response options for perceived severity and self-efficacy ranged from 1 (“Not at All”) to 7 (“Very Much”). Response options ranged from 1 (“Completely Ineffective”) to 7 (“Completely Effective”) for perceived vaccine efficacy. The pap smear benefits and health motivation subscale ($\alpha = .86$), pap smear barriers subscale ($\alpha = .82$), seriousness subscale ($\alpha = .78$), susceptibility subscale ($\alpha = .78$), health motivation subscale ($\alpha = .62$) have been found to be reliable in a sample of women (Guvenc, Akyuz, & Acikel, 2010).

Sociodemographic Questionnaire (Appendix N). A 13-item sociodemographic questionnaire assessed the participants’ demographic information such as age, gender, marital status, current relationship status, current student classification, ethnicity, sexual orientation, and current city. In order to assess use and access to health services, participants reported whether or not they had a primary healthcare provider, their last regular check-up, the location where they typically sought healthcare, status and type of health insurance. Some questions were taken from a previous sociodemographic questionnaire (Lechuga, Swain, & Weinhardt, 2011).

Sexual Health History Questionnaire (Appendix M). A 23-item questionnaire was adapted from a previous study (Lechuga, Swain, & Weinhardt, 2011). The questions assessed the participants’ HPV vaccine status, history of pap smear tests, sexual activity, and STIs. A sample item for HPV vaccine status: “If you have been vaccinated against HPV, how many doses/shots of the HPV vaccine have you received?” A sample item for history of pap tests: “Do you get a yearly Papanicolaou test (also known as Pap smears, cervical screenings or well woman’s tests)?” A sample item for history of sexual activity: “Have you ever had sex?” A sample item

for history of STIs: “Have you ever had a sexually transmitted infection/disease?” Response options for HPV vaccine status was: 1 dose/shot, 2 doses/shots, all 3 doses/shots, and don’t know/unsure. Response options for history of pap smear tests: “Yes”, “No”, and “Don’t Know”. Response options for history of sexuality: “Yes”, “No”, and “Don’t Know”. Response options for history of STIs: “Yes”, “No”, and “I have never been tested for them”. The psychometric properties of the scale have not been reported.

Marlowe-Crowne Social Desirability Scale (Appendix P). A 13-item questionnaire was included to assess social desirability (Reynolds, 1982). Sample items include: “I have never deliberately said something that hurt someone’s feelings”, “I’m always willing to admit when I make a mistake” and “It is sometimes hard for me to go on with my work if I am not encouraged.” Response options for all questions were “yes” or “no”. The Cronbach’s alpha was .65 in a sample of female college students (Loo & Thorpe, 2000)

Culturally-tailored Fotonovela

The “How did this even Happen?” fotonovela includes 9 pages with 894 words (See Appendix S). Thirty-eight photos were included within the fotonovela depicting the storyline. Discussions between the characters were shown through word bubbles similar to a comic book. Characters included Carla, Sofia, Taylor, Sofia’s mother, Sofia’s aunt and the pharmacist at Walgreens. All characters excluding the pharmacist were Mexican-American. Carla, Sofia and Taylor were all between the ages of 18 to 26 years old in order to create greater similarity between the characters in the fotonovela and the participants.

Within the fotonovela, Carla defines HPV, reports the prevalence of HPV, states that transmission can occur with or without a condom, discusses the importance of the HPV vaccine in preventing HPV, and shares her emotions regarding the diagnosis of HPV to Sofia and Taylor.

Carla mentions how she learned about the diagnosis through the pap smear test (a form of screening), explains the pap smear procedure, and she reminds her friends to schedule a pap smear for themselves. She also discusses the potential consequences of HPV. She told her friends that HPV could lead to genital warts, penile or cervical cancer; however, she currently had no symptoms. She expresses concern regarding the costs of treatment and explains how the doctor will treat her precancer cells. Before Carla leaves Sofia and Taylor, she recommends that they get vaccinated against HPV and asks them if they have been vaccinated. Taylor reports that she had been vaccinated and the number of shots she received. Sofia did not know if she has been vaccinated so she leaves Taylor to check with her mother. Sofia's mother mentions the cultural value of waiting until marriage to have sex. Both Sofia and Sofia's aunt tell Sofia's mother the importance of preventing cancer by getting the HPV vaccine. The next day, Sofia and her mom visit Walgreens to get Sofia's next HPV vaccine shot. The pharmacist informs Sofia of who is eligible to receive the HPV vaccine, her eligibility, the HPV vaccine shot schedule, the importance of the pap smear test and the prevalence of HPV-related cervical cancer. After she receives the next HPV vaccine shot, the pharmacist reminds Sofia to get her last HPV vaccine and a pap smear test to screen for cervical cancer.

CDC Fact Sheet

The Genital HPV infection - CDC fact sheet includes two pages with 1,165 words (See Appendix T). Five photos are included of a set of ethnically diverse males and females. Also, 11 web links are included to provide further information related to HPV treatment, STD information in general, HPV, HPV vaccination, and Cervical Cancer-related information and resources. The fact sheet defines HPV as a STI that can either have no symptoms, lead to genital warts or cervical cancer. All possible modes of transmission and the most common modes of transmission

are included. The CDC fact sheet mentions that individuals living with HIV/AIDS or a weak immune system are more vulnerable to contracting HPV. The fact sheet includes the prevalence of HPV and HPV-related genital warts and cervical cancer within the United States each year. The CDC fact sheet also mentions the characteristics (size and shape) of genital warts and the type of HPV –related cancers (vulva, vagina, penis, anus or throat) you can develop. Treatment for genital warts and precancer are mentioned briefly. The CDC fact sheet provides several recommendations for preventing or avoiding HPV including: using a condom when engaging in sexual activity, having sex in a mutually monogamous relationship, screening using a pap smear test and testing for cervical cancer for women 30 years and older. Routine cervical cancer screenings are also recommended for women who are pregnant and have HPV. The CDC fact sheet also mentions who should get vaccinated against HPV. The HPV vaccine is recommended for certain age groups, the shot is safe and effective, and the shot schedule is included. The CDC fact sheet also recommends the vaccine for gay and bisexual men, individuals living with HIV/AIDS and individuals with a compromised immune system.

Procedure

Students were eligible to participate in the study if they were between 18 to 26 years of age, self-identified as Mexican-American and had not completed the HPV vaccine three-shot series. Students were ineligible to participate if they had participated in either the first or second round of interviews from Study 1. Participants received 2 hours of research course credit for their participation or entry into a raffle to win one of four one-hundred dollar Target gift cards. Random assignment to the experimental condition was done using an online random number generator (www.random.org) and a randomization log was maintained by the researcher. Upon arrival at the study location, participants were screened for eligibility

and signed the informed consent. Participants in both conditions received an identical pre-test survey packet. At completion of the pre-test survey packet, the participant was instructed to read through either the CDC fact sheet or fotonovela and to notify the researcher at completion. At completion, the participant received the post-test for either the CDC fact sheet or fotonovela condition. The only difference between the post-test surveys for each condition was that for the fotonovela condition participants received an additional questionnaire to assess participants' degree of identification with each of the characters within the fotonovela narrative.

To minimize practice effects, participant intentions to obtain the vaccine were assessed only at post-test. At study completion, participants across conditions were provided a copy of the CDC fact sheet with additional information about the HPV vaccine including cost and places where they could get the HPV vaccine in El Paso. The researcher identified five ineligible participants during private screening and eight additional participants were deemed ineligible by their post-test HPV vaccine status survey responses because they indicated they had completed the vaccination series. Additionally, any remarks made during the testing phase related to the fotonovela, CDC fact sheet, the HPV vaccine or HPV were recorded in the randomization log.

Results: Study 2

Analytic Strategies

Descriptive statistics were computed for all demographic variables (e.g., age, marital status and current relationship status) as well as for HPV status, HPV vaccine history, HPV knowledge, and HPV intentions. A composite index of behavioral intentions was created by averaging scores on three specific items assessed at post-test. The three items of the Behavioral Intention Scale were: “I will seek additional information about HPV and the HPV vaccine”, “I will get the HPV vaccine in the next month”, and “I will recommend the vaccine to a friend”. Scores on these three items were significantly intercorrelated (See Table 11). Therefore, a composite index of HPV behavioral intentions was created based on scores for the three items. Potential scores on the composite index could range from 1 to 7.

To assess the effect of the fotonovela on HPV behavioral intentions, two between-subjects ANOVAs were conducted. In the first ANOVA, experimental condition (fotonovela and CDC fact sheet) was the independent variable and the composite index of HPV behavioral intentions was the dependent variable. In the second ANOVA, experimental condition (fotonovela and CDC fact sheet) and vaccine status (whether or not the person received the HPV vaccine) were the between-subjects factors and the composite index of HPV behavioral intentions served as the dependent variable.

Additional Mixed ANOVAs were conducted to test the effect of the fotonovela on knowledge of HPV, knowledge of the HPV vaccine, perceived barriers, benefits, attitude toward HPV, vaccine efficacy, perceived severity, susceptibility, and self-efficacy. Reliability estimates of measures are included in Table 12. An exploratory structural equation model was conducted to test the influence of knowledge, constructs of the Health Belief Model (number of perceived

barriers to getting the HPV vaccine, perceived effectiveness of the HPV vaccine, perceived severity of HPV, and self-efficacy to get the HPV vaccine), embarrassment in getting the HPV vaccine, and the influence of cultural influences (discussions with mother about how to prevent pregnancy, comfort having sexuality-related discussions with mother, perceived parental objection to getting the HPV vaccine and Spanish competence) on intentions to obtain the vaccine at post-test. Finally, participant responses to the evaluation of the information provided questionnaire were content-analyzed.

Demographic Characteristics

Participants in the study were 145 undergraduate students living in El Paso ($n = 129$), Juarez ($n = 9$) and another location ($n = 2$). Participants rated themselves highly competent in English ($M = 6.75$, $SD = .51$, range = 4.11 -7.00; scale ranges from 1-7) and Spanish ($M = 6.49$, $SD = 1.23$, range = 1.00 -7.00; scale ranges from 1-7). Participants also identified moderately strongly with U.S. culture ($M = 6.14$, $SD = 1.14$, range 1.83-7.00; scale ranges from 1-7). One-hundred and four participants reported to have health insurance. Participants who currently had health insurance reported having either private insurance ($n = 81$), government assisted insurance ($n = 22$), or received healthcare from the UTEP healthcare center ($n = 1$). Eighty-four participants reported to have a primary healthcare provider. Participants sought healthcare from either a family practice clinic ($n = 68$), community healthcare clinic ($n = 37$), a clinic in Juarez ($n = 20$), Juarez pharmacy ($n = 1$), the UTEP health center ($n = 5$), or another location ($n = 5$).

Seventy-five participants had received 1-2 doses of the HPV vaccine. Participants who reported receiving the HPV vaccine, reported receiving one shot ($n = 30$), 2 shots ($n = 40$) or were unsure of how many shots they had received ($n = 45$). Ninety-three participants reported having unprotected sex at some point in their lifetime. Forty-seven participants had received a

pap smear test, and six participants were unsure. Eight participants had received an abnormal pap smear test result, and 7 participants were unsure. Four participants were previously told that they had HPV. See Table 7 for further demographics.

HPV Vaccination Barriers

Based on responses to the Health Belief Model Scale for Cervical Cancer and Pap Smear Test (See Appendix M), participants reported several barriers to HPV vaccination at post-test including: vaccine costs (“the vaccine costs too much”, $n = 43$), vaccine regimen (“the vaccine needs three shots”, $n = 32$), vaccine safety (“the vaccine is unsafe”, $n = 8$), vaccine knowledge (“I need more information on the vaccine”, $n = 62$), HPV knowledge (“I need more information on HPV”, $n = 43$), fear of needles (“I am afraid of needles”, $n = 18$), embarrassment (“I am embarrassed to request the vaccine”, $n = 5$), perceived risk of HPV (“I am not at risk for HPV”, $n = 9$), age (“I am too old to get the vaccine”, $n = 1$), a healthcare provider recommendation (“My doctor has not recommended I get the vaccine”, $n = 25$), parental objection (“My parents do not want me to get the HPV vaccine”, $n = 14$), spouse objection (“My spouse/partner does not want me to get the vaccine”, $n = 3$), and other reasons (“other”, $n = 21$).

Comparison of Fotonovela and CDC Fact Sheet Conditions

HPV Behavioral Intentions: Composite Index

An ANOVA with “experimental condition” (fotonovela and CDC fact sheet) as the between-subjects factor and the composite index of HPV behavioral intentions was the dependent factor revealed a significant between-subjects effect of condition, $F(1,143) = 7.41$, $p = .007$, $d = .45$. HPV behavioral intentions were higher for participants who received the culturally-tailored fotonovela ($M = 6.18$, $SD = .91$) than participants who received the CDC fact sheet condition ($M = 5.71$, $SD = 1.16$).

An ANOVA with “experimental condition” (fotonovela and CDC fact sheet) and “vaccination status” (received or have not receive the HPV vaccine) as the between-subjects factors and the composite index of HPV behavioral intentions was the dependent factor revealed a significant between-subjects effect of condition, $F(1,140) = 5.71, p = .01, d = .47$. HPV behavioral intentions were higher for participants who received the culturally-tailored fotonovela ($M = 6.17, SD = .90$) than participants who received the CDC fact sheet condition ($M = 5.71, SD = 1.10$). There was also a between-subjects effect of vaccination status, $F(1,140) = 6.45, p = .01, d = .47$. HPV behavioral intentions were higher for participants who received at least one dose of the HPV vaccine ($M = 6.19, SD = .95$) than participants who received the CDC fact sheet condition ($M = 5.72, SD = .99$). See Table 11 for the individual behavioral intention means and standard deviations.

HPV Knowledge

Results revealed a significant main effect of assessment time on HPV knowledge, $F(1,142) = 397.34, p < .001$, partial $\eta^2 = 0.74$. HPV knowledge was significantly higher at post-test ($M = 3.80, SE = .05$) than at pre-test ($M = 1.63, SE = .11$). There was also a significant interaction observed between condition and assessment time $F(1,142) = 13.99, p < .001$, partial $\eta^2 = 0.63$. HPV knowledge gains were greater for the CDC fact sheet condition from pre-test ($M = 1.52, SD = 1.28$) to post-test ($M = 4.10, SD = .70$) compared to the fotonovela condition from pre-test ($M = 1.73, SD = 1.29$) to post-test ($M = 3.49, SD = .58$).

HPV Vaccine Knowledge

Results revealed a significant main effect of assessment time on HPV vaccine knowledge, $F(1,142) = 435.64, p < .001$, partial $\eta^2 = 0.75$. HPV vaccine knowledge was significantly higher at post-test ($M = 7.73, SE = .10$) than at pre-test ($M = 4.38, SE = .17$). There

was not a significant interaction observed between condition and assessment time $F(1,142) = .640, p = .43$. HPV vaccine knowledge gains were not significantly different for the CDC fact sheet condition from pre-test ($M = 4.19, SD = 1.90$) to post-test ($M = 7.67, SD = 1.13$) compared to the fotonovela condition from pre-test ($M = 4.56, SD = 2.18$) to post-test ($M = 7.78, SD = 1.13$).

HPV Vaccine: Perceived Benefits

Results revealed a significant main effect of assessment time on the perceived benefits of the HPV vaccine $F(1,139) = 34.91, p < .001$, partial $\eta^2 = 0.201$. Perceived benefits of the HPV vaccine was significantly higher at post-test ($M = 6.35, SE = .10$) than at pre-test ($M = 5.71, SE = .11$). There was not a significant interaction observed between condition and assessment time $F(1,139) = .05, p = .82$. Gains in the perceived benefits of the HPV vaccine were not significantly different for the CDC fact sheet condition from pre-test ($M = 5.54, SD = 1.42$) to post-test ($M = 6.21, SD = 1.50$) compared to the fotonovela condition from pre-test ($M = 5.88, SD = 1.17$) to post-test ($M = 6.50, SD = 0.85$).

HPV Vaccine: Perceived Barriers

Results revealed that there was not a significant main effect of assessment time on the perceived barriers of the HPV vaccine $F(1,135) = .31, p = .58$. Perceived barriers of the HPV vaccine was significantly higher at post-test ($M = 3.92, SE = .16$) than at pre-test ($M = 3.79, SE = .17$). There was not a significant interaction observed between condition and assessment time $F(1,135) = 2.88, p = .09$. Gains in the perceived barriers of the HPV vaccine were not significantly different for the CDC fact sheet condition from pre-test ($M = 3.71, SD = 1.38$) to post-test ($M = 3.88, SD = 1.86$) compared to the fotonovela condition from pre-test ($M = 4.08, SD = 1.36$) to post-test ($M = 3.75, SD = 1.84$).

HPV Vaccine: Attitudes

Results revealed that there was not a significant main effect of assessment time on the attitudes toward the HPV vaccine, $F(1,140) = .09, p = .76$. Attitudes toward the HPV vaccine were significantly lower at post-test ($M = 2.24, SE = .73$) than at pre-test ($M = 2.46, SE = .16$). There was not a significant interaction observed between condition and assessment time $F(1,140) = 2.13, p = .15$. Gains in the attitudes toward the HPV vaccine were not significantly different for the CDC fact sheet condition from pre-test ($M = 1.54, SD = 12.55$) to post-test ($M = 2.82, SD = 2.12$) compared to the fotonovela condition from pre-test ($M = 2.95, SD = 1.44$) to post-test ($M = 2.11, SD = 1.70$).

HPV: Perceived Susceptibility

Results revealed a significant main effect of assessment time on the perceived susceptibility of contracting HPV, $F(1,142) = 44.57, p < .001$, partial $\eta^2 = 0.239$. Perceived susceptibility of contracting HPV was significantly higher at post-test ($M = 5.92, SE = .13$) than at pre-test ($M = 5.05, SE = .13$). There was not a significant interaction observed between condition and assessment time, $F(1,142) = 1.61, p = .21$. Gains in perceived susceptibility of contracting HPV were not significantly different for the CDC fact sheet condition from pre-test ($M = 4.78, SD = 1.69$) to post-test ($M = 5.81, SD = 1.56$) compared to the fotonovela condition from pre-test ($M = 5.33, SD = 1.53$) to post-test ($M = 6.03, SD = 1.41$).

HPV: Perceived Severity

Results revealed a significant main effect of assessment time on the perceived severity of HPV, $F(1,141) = 26.90, p < .001$, partial $\eta^2 = 0.16$. Perceived severity of HPV was significantly higher at post-test ($M = 5.79, SE = .07$) than at pre-test ($M = 5.43, SE = .08$). There was a significant interaction observed between condition and assessment time, $F(1,141) = 6.57, p =$

.011, partial $\eta^2=0.05$. Gains in perceived severity of HPV were significantly less for the CDC fact sheet condition from pre-test ($M = 5.38$, $SD = .94$) to post-test ($M = 5.92$, $SD = .78$) compared to the fotonovela condition from pre-test ($M = 5.48$, $SD = .90$) to post-test ($M = 5.67$, $SD = .99$).

HPV: Perceived Self-Efficacy to getting the HPV vaccine

Results revealed a significant main effect of assessment time on the perceived self-efficacy to get the HPV vaccine, $F(1,140) = 21.49$, $p < .001$, partial $\eta^2=0.13$. Perceived self-efficacy to get the HPV vaccine was significantly higher at post-test ($M = 6.22$, $SE = .13$) than at pre-test ($M = 5.67$, $SE = .14$). There was not a significant interaction observed between condition and assessment time, $F(1,140) = 0.04$, $p = .84$. Gains in perceived self-efficacy to get the HPV vaccine were not significantly different for the CDC fact sheet condition from pre-test ($M = 5.68$, $SD = 1.58$) to post-test ($M = 6.20$, $SD = 1.67$) compared to the fotonovela condition from pre-test ($M = 5.66$, $SD = 1.66$) to post-test ($M = 6.23$, $SD = 1.39$).

Content Analysis of Acceptability and Perceived Potential Intervention Effect

Culturally-Tailored Fotonovela

Table 10 presents the thematic categories that were derived from participants' open-ended evaluation of the fotonovela and CDC fact sheet. Recall that during the post-test questionnaire, participants in both conditions responded to 16 questions about the information they received. Participants were asked to indicate how satisfied they were with the information provided. Participants in the culturally-tailored fotonovela condition were very satisfied with the information provided ($M = 6.36$, $SD = 1.10$, range 1= "Very Dissatisfied" to 7 = "Very Satisfied"). Participants believed that the information provided in the culturally-tailored fotonovela was neither very long nor very short ($M = 4.10$, $SD = .57$, range 1= "Very Short to 7

= “Very Long”). Participants reported that the culturally-tailored fotonovela was very easy to understand ($M = 1.94$, $SD = 1.37$, range 1 = “Very Easy” to 7 = “Very Hard”). Participants reported that the information provided in the culturally-tailored fotonovela was very relevant to them ($M = 6.72$, $SD = .68$, range 1 = “Not at All” to 7 = “Completely”).

Participants were asked additional open-ended questions in order to identify information that required further elaboration and information that could be left out of the culturally-tailored fotonovela. These responses were grouped into themes and revealed the following topics required further elaboration in the culturally-tailored fotonovela: cost of the HPV vaccine ($n = 17$), information for local clinics ($n = 9$), insurance coverage ($n = 2$), facts about HPV ($n = 23$) and the HPV vaccine ($n = 22$), HPV treatment ($n = 10$), and pap smears ($n = 1$). In addition, one participant mentioned that information about the consequences of contracting HPV for men could be left out of the fotonovela.

Participants strongly agreed that the information in the culturally-tailored fotonovela about HPV and the HPV vaccine would help them reach a decision about getting vaccinated ($M = 6.59$, $SD = .81$, range 1 = “Disagree” to 7 = “Agree”). Participants reported that they would carefully consider the information provided in the culturally-tailored fotonovela when making the decision to get vaccinated ($M = 5.49$, $SD = 1.17$, range 1 = “Not at All” to 7 = “Completely”). Participants were also asked whether or not they would recommend that other people read the information in the culturally-tailored fotonovela if they were undecided about getting the HPV vaccine. Seventy-seven participants indicated “yes” and one participant reported “no” they would not recommend that others read the information in the culturally-tailored fotonovela when undecided about the HPV vaccine. Participants were then asked to provide an explanation for their answer. Participants recommended others read the culturally-tailored fotonovela to people

who were undecided due to the lack of awareness of HPV ($n = 20$), the easy to understand narrative ($n = 14$), in order to prevent HPV ($n = 20$), and the lack of knowledge of HPV and the vaccine ($n = 43$). One participant found that the information in the culturally-tailored fotonovela was not necessary to people who were undecided about the HPV vaccine. Participants were also asked an additional open-ended question in order to identify additional information the participant would need to make the decision to vaccinate against the HPV vaccine. Responses included facts about the HPV vaccine ($n = 55$), further discussion between character ($n = 5$), statistics ($n = 5$), and additional facts about HPV ($n = 20$). Participants were also asked to indicate their preference in format for the culturally-tailored fotonovela. Sixty-two participants indicated that they liked the culturally-tailored fotonovela “as it was presented”, six participants “would prefer to see it on a computer”, and nine participants “would prefer to see it in a YouTube video”.

CDC Fact Sheet

Participants were asked to indicate how satisfied they were with the information provided. Participants in the CDC fact sheet condition were very satisfied with the information provided ($M = 6.58$, $SD = .87$, range 1 = “Very Dissatisfied” to 7 = “Very Satisfied”). Participants believed that the information provided in the CDC fact sheet was neither very long nor very short ($M = 4.25$, $SD = .72$, range 1 = “Very Short” to 7 = “Very Long”). Participants reported that the CDC fact sheet was very easy to understand ($M = 2.03$, $SD = 1.62$, range 1 = “Very Easy” to 7 = “Very Hard”). Participants reported that the information provided in the culturally-tailored fotonovela was very relevant to them ($M = 6.78$, $SD = .55$, range 1 = “Not at All” to 7 = “Completely”).

Participants were asked additional open-ended questions in order to identify information that required further elaboration and information that could be left out of the CDC fact sheet. These responses were grouped into themes and revealed the following topics required further elaboration in the CDC fact sheet: cost of the HPV vaccine ($n = 5$), information for local clinics ($n = 1$), facts about HPV ($n = 10$) and the HPV vaccine ($n = 15$), HPV treatment ($n = 4$), and pap smears ($n = 1$).

Participants strongly agreed that the information in the CDC fact sheet about HPV and the HPV vaccine would help them reach a decision about getting vaccinated ($M = 6.66$, $SD = .71$, range 1 = “Disagree” to 7 = “Agree”). Participants reported that they would carefully consider the information provided in the culturally-tailored fotonovela when making the decision to get vaccinated ($M = 6.00$, $SD = 1.30$, range 1 = “Not at All” to 7 = “Completely”). Participants were also asked whether or not they would recommend that other people read the information in the CDC fact sheet if they were undecided about getting the HPV vaccine. Sixty-six participants indicated “yes” and one participant indicated “no” they would not recommend that others read the information in the CDC facts when others are undecided about the HPV vaccine. Participants were then asked to provide an explanation for their answer. Participants recommended others read the CDC fact sheet to people who were undecided due to the lack of awareness of HPV ($n = 12$), the easy to understand information ($n = 3$), in order to prevent HPV ($n = 8$), and the lack of knowledge of HPV and the vaccine ($n = 24$). One participant reported that she would not recommend the CDC fact to people who were undecided about the HPV vaccine because it is missing information. Participants were also asked an additional open-ended question in order to identify additional information the participant would need to make the decision to vaccinate against the HPV vaccine. Responses included facts about the HPV vaccine ($n = 23$), statistics (n

= 3), and additional facts about HPV (n = 10). Participants were also asked to indicate their preference in format for the CDC fact sheet. Fifty-five participants indicated that they liked the CDC fact sheet “as it was presented”, one participant “would prefer to see it on a computer”, and eleven participants “would prefer to see it in a YouTube video”.

SEM Results

Figure 3 presents the exploratory structural equation model which identifies factors that may explain the participant’s intention to vaccinate, with the following fit indices: $\chi^2 (29) = 54.53$, $\chi^2/df = 1.88$, $p = .003$, Comparative Fit Index (CFI) = .84, and Root Mean Square Error of Approximation (RMSEA) = .07. These indices indicate that the model fits the data well (Byrne, 2001). Results showed that greater perceived effectiveness of the HPV vaccine ($\gamma = .25$, $p < .001$) and greater perceived severity of the HPV ($\gamma = .36$, $p < .001$) were significantly associated with greater intentions to vaccinate. Post-test HPV vaccine knowledge was not significantly associated with vaccine intentions ($\gamma = .03$, $p = .67$).

Participant Spanish language competence was negatively associated with comfort with having sexuality-related discussions with their mother ($\gamma = -.18$, $p = .03$). Comfort having sexuality-related discussions with their mother was positively associated with discussions on how to prevent pregnancy ($\gamma = .25$, $p = .002$). In turn, discussions of pregnancy prevention was negatively associated with embarrassment in getting the HPV vaccine ($\gamma = -.18$, $p = .03$). Embarrassment in getting the HPV vaccine was positively associated with the number of barriers to get the HPV vaccine ($\gamma = .32$, $p < .001$) and negatively associated with self-efficacy to get the HPV vaccine ($\gamma = -.21$, $p = .01$). Number of barriers to getting the HPV vaccine ($\gamma = -.17$, $p = .02$) and self-efficacy to get the HPV vaccine ($\gamma = .20$, $p = .01$) were significantly associated with intention to vaccinate. Sexuality-related discussions were negatively associated with parental

objection to get the HPV vaccine ($\gamma = -.22, p = .01$). In turn, parental objection was negatively associated with self-efficacy ($\gamma = -.31, p < .001$) and intention to vaccinate ($\gamma = -.15, p = .04$).

Discussion

The purpose of this study was to develop and test a culturally-tailored fotonovela in order to promote HPV vaccine-related intentions among Latina young adults. We hypothesized that participants assigned to the fotonovela condition, a culturally-tailored intervention, would report greater intentions to get vaccinated, greater perceived benefits of vaccination, greater perceived effectiveness of the vaccine, increased perceived severity of acquiring HPV, and greater self-efficacy to get vaccinated than participants assigned to the CDC fact sheet condition. Results suggest that the culturally-tailored fotonovela significantly improved vaccination-related intentions and increased perceived severity of contracting HPV.

The influence of the HBM and the sociocultural PEN-3 constructs were tested in the SEM model. Results indicated that conversations about pregnancy prevention (e.g., enabler) exerted a direct effect on the participants' embarrassment over obtaining the HPV vaccine. Perceived parental objections to obtaining the HPV vaccine and embarrassment over getting the HPV vaccine directly influenced perceived self-efficacy to get vaccinated. SEM results suggest that key constructs of the HBM were significantly related to vaccination intentions. Perceived severity of contracting HPV was related to the intention to get the HPV vaccine. Emphasizing the consequences of contracting HPV may help to promote intentions to get the HPV vaccine. SEM findings may highlight the role of culture in HPV vaccination intentions. Results from the SEM indicated that parents may be key nurturers in influencing their daughter's confidence in getting the HPV vaccine and intention to receive the HPV vaccine. Perceived parental objection to getting the HPV vaccine was significantly associated with participant's self-efficacy and intentions to get the HPV vaccine. This finding suggests that parents may be a potential point of intervention in future research.

Results indicated that participants who received information via the fotonovela scored higher on behavioral intentions than participants who received the CDC fact sheet. Behavioral intentions include: intention to seek additional information about the HPV vaccine, intention to get the HPV vaccine in the next month, and the intention to recommend the vaccine to a friend. This finding may be explained by the use of narrative and its ability to transport readers into the story narrative. Transportation theory (Green & Brock, 2000) suggests that when individuals become engaged or transported into the story narrative, individuals identify with characters in the narrative and possibly decrease counter-arguments to the narrative, which can lead to behavior change (Green, 2006; Murphy et al., 2011). In the case of the fotonovela, participants' identification with Sofia (a character that shifts from a negative to positive behavior) and/or Carla (a character who is experiencing negative problems) could have made the potential negative consequences of getting HPV more vivid. Participants may have wanted to avoid the problems that Carla acquired from not vaccinating against HPV and thus intend to adopt the actions of Sofia in order to prevent contracting HPV. Character identification may have been strengthened by the use of characters that were similar to our target audience in terms of gender (female), age (18-26 years old), and ethnicity (Mexican-American; Murphy et al., 2011). Additionally, identifying implicit cultural values and making them explicit in the narrative may have increased character identification for the reader.

Since individuals may be more likely to adopt behaviors recommended and demonstrated by individuals similar to themselves (Bandura, 2002; Bandura, 2004), character identification may have increased participant transportation into the story narrative. This is important as transportation into the narrative may also reduce the participants' ability or motivation to develop counterarguments (Kreuter et al., 2007). Since engagement with the narrative has been

significantly associated with behavioral intentions (Frank et al., 2015; Kim, Bigman, Leader, Lerman, & Capella, 2012), participants who received the fotonovela may have reported increased intentions because the fotonovela narrative may have been effective at engaging participants. Additionally, participants who had already received the HPV vaccine may have reported greater intentions to continue due to the healthcare provider explaining the procedure for follow-up appointments.

Participants reported greater benefits of obtaining the HPV vaccination in both conditions from pre- to post-test, but there was not a significant difference between conditions. Although both the CDC fact sheet and fotonovela explained potential benefits to HPV vaccination such as preventing HPV-related cervical cancer and genital warts, the fotonovela may have been more effective if there was greater emphasis on the benefits for important others in the participants' life. For example, Reimer, Schommer, Houlihan, and Gerand (2014) found ethnic differences in intention to vaccinate against HPV. Although Latinas were less likely to have been vaccinated against HPV than non-Latina white women, Latinas and Latinos reported greater interest in being vaccinated against HPV for the safety of their partner (Reimer et al., 2014). Potential benefits could include protecting future partner(s) from contracting HPV and preventing parents' or the participants' future financial or emotional burdens that may come from contracting HPV.

While potential benefits did increase for participants in both conditions, there was not a significant main effect or interaction for perceived barriers of getting the HPV vaccine. The most frequently reported reasons for not obtaining the HPV vaccine included needing more information regarding the HPV vaccine, needing more info regarding HPV, and not receiving a recommendation from a physician. Since the majority of participants within the sample reported that the decision to vaccinate was up to them, and that they would be most likely to listen to a

doctor's recommendation to vaccinate, it may be that greater responsibility should be placed on the healthcare provider instead of Carla within the fotonovela to address information regarding HPV and the vaccine. A previous study found that Hispanic patients experienced less frequent HPV vaccine-related discussions with physicians than non-Hispanic whites (Reimer et al., 2014). This is worrisome as discussion and recommendations from healthcare providers have been shown to increase HPV vaccination among the catch-up population (19-26 years old; Rosenthal, Weiss, Zimet, Good, & Vichnin, 2011), increase Latina mothers uptake of the HPV vaccine for their daughters (Gerend, Zapata, & Reyes, 2013), and increase mammography adherence among Latina adults 40+ years old (Gonzalez & Borrado, 2010; Molina, Thompson, & Ceballos, 2014). Since about half of participants (57.9%) reported that a healthcare provider has encouraged them to get the HPV vaccine, it may help to model how to have a discussion about HPV and the HPV vaccine with a healthcare provider in order to elicit a recommendation to vaccinate against HPV.

There was not a significant difference in perceived self-efficacy between conditions. Participants' feedback on the information provided in both the CDC fact sheet and fotonovela were similar. Participants who received the fotonovela requested details on the cost of the HPV vaccine, treatment options, and symptoms of HPV and the potential side effects of the vaccine. Similarly, participants who received the CDC fact sheet requested further details on the cost of the vaccine, potential side effects of the vaccine and HPV-related information for pregnant women. It may be that in order to increase self-efficacy within the fotonovela condition, information would have to be provided regarding the when, where and how one can obtain the HPV vaccine using an if-then plan (also referred to as implementation intentions; Gollwitzer 1993). For example, information could be included on how much Sofia paid for the vaccine if she did or did not have health insurance, a scene could be added to show where and how she

searches for clinics that offered the HPV vaccine and information could be included on how she perceived the negative side effects of the HPV vaccine. If Sofia had modeled how she found the clinic, how she paid for the vaccine and how she approached the side effects of the vaccine, it may have created a more vivid mental model of the process of obtaining the HPV vaccine. Not only can social models transmit knowledge and help readers learn effective strategies and skills such as how to find a clinic that provides the HPV vaccine, they can also strengthen individuals' beliefs that they can successfully perform the behavior (HPV vaccination; Bandura, 1998).

Addressing this feedback by having Sofia model the logistics of obtaining the HPV vaccine may potentially strengthen participant self-efficacy beliefs within the fotonovela condition (Bandura & Well, 1994).

Participants assigned to the fotonovela condition scored higher on perceived severity of contracting HPV when compared to participants assigned to the CDC fact sheet condition at post-test. This finding may be explained by the perceived relevance of the storyline to participants. A previous study found that relevance of the storyline was positively associated with perceived severity of contracting HPV immediately and two weeks after viewing the film (Frank et al., 2015). In the narrative health film developed by Frank et al. (2015), one of the main characters, Lupita, was recently diagnosed with HPV and was confident that she knew how to manage it. Her sister, Connie, questions Lupita about HPV and her mother, Blanca, joins in on the conversation. Identification with Lupita or Blanca was negatively associated with perceived HPV severity and identification with Connie was not significantly related to HPV severity. The negative association between identification with Lupita and HPV severity may be explained by her confidence in relation to managing and treating her HPV. Participants in the present study may have perceived HPV as more severe after reading the fotonovela due to Carla's panic in

response to receiving an HPV diagnosis, concerns regarding her treatment and Sofia's immediate action to get vaccinated in order to prevent cancer.

Participants who received the CDC fact sheet reported significantly greater gains in HPV-related knowledge compared to participants who received the fotonovela. It may be that the similarity in how the information was presented in the CDC fact sheet and how the questions were phrased within the questions eased recall of the HPV-related information. There was not a significant difference in knowledge of the HPV vaccine between the fotonovela and CDC fact sheet conditions. This finding may be explained by the education level and health literacy of the participants. Fotonovelas are typically developed to be a more readable option for lower literate Latino audiences than technical health pamphlets such as the CDC fact sheet (Unger, Molina, & Baron, 2009). Since all participants were enrolled in college, participants may have understood the health information provided in both the CDC fact sheet and fotonovela to similar degrees.

The SEM analyses revealed direct associations between vaccine intentions and several variables that have previously been associated with vaccine intentions. For example, greater perceived severity of HPV and greater perceived barriers to vaccination were significantly associated with intention to get vaccinated against HPV (Gerend & Shepherd, 2012). Previous studies have shown that young adults who perceive barriers to HPV vaccination were less likely to receive the HPV vaccine (Donadiki et al., 2014; Zimet, Weiss, Rosenthal, Good, & Vichin, 2010). Additionally, greater perceived effectiveness of the vaccine was significantly associated with intentions to get vaccinated. However, HPV vaccine knowledge was not significantly associated with vaccination intentions, a finding that is inconsistent with earlier research (Zimet et al., 2010) which indicated that not having enough information about the vaccine was one of the primary reasons for female young adults not getting vaccinated against HPV. It may be that

perceived norms surrounding sexuality may have a greater influence than knowledge on the HPV vaccine decision making process (Allen et al., 2009; Dempsey, Zimet, Davis, & Koutsky, 2006; de Visser, Waites, Parikh, & Lawrie, 2011; Gerend & Shepherd, 2012).

Results from the SEM suggest that sexual socialization within Latino families may play a role in the HPV vaccine decision making process. Although young adults age 18-26 years old may have greater independence in HPV vaccine decision making than adolescents, the finding that HPV vaccine-related knowledge at post-test was not significantly associated with HPV vaccine intentions may be explained by how sexuality-related discussions occur within the family. Previous research shows that Latina mothers (Meneses, Orrell-Valente, Guendelman, Oman, & Irwin, 2006), especially those of Mexican native origin (Raffaelli & Green, 2003), have significantly less sexuality-related discussions with their children. When sexuality-related discussions do occur, less emphasis is placed on sexual education (Fox & Inazu, 1980; Raffaelli & Green, 2003; Romo, Lekowitz, Sigman & Au, 2002) and prevention strategies (Aguirre-Molina & Parra, 1995) such as birth control and STI prevention. Instead, greater emphasis is placed on traditional gender roles and the importance of not having sex until marriage (Raffaelli & Ontai, 2001). Conforming to parental beliefs and values surrounding sexuality-related behavior may be of greater importance to Latina young adults. A previous study found greater messages promoting no sex before marriage from Latino parents was associated with Latino college students having fewer sexual partners, sexual experiences and casual one-night stands (Manago, Ward, & Aldana, 2015).

Additionally, the extent to which individuals conform to the values, beliefs and behaviors of their host versus ethnic culture may influence health-related behavior (also termed acculturation; Hunt, Schneider, & Comer, 2004). Assessment of acculturation has been

conducted using proxy variables such as language use or nativity with greater use of Spanish versus English or Mexican versus non-Mexican origin as indicative of less acculturation to the host culture, respectively (Abraido-Lanza, Ambrister, Florez, & Aguirre, 2011; Hunt, Schneider, & Comer, 2004). In the present study, the participant's Spanish language competence was negatively associated with the participant's self-reported comfort about having sexuality-related discussions with their mother. Comfort having sexuality-related discussions with their mother was negatively associated with perceptions of parental objection of the HPV vaccine. This finding may be explained by the difference in how sexuality-related discussions may occur with low versus high acculturated Latina mothers. For example, Raffaelli & Green (2003) found that daughters of mothers who were of non-Mexican native origin reported a significantly greater frequency of direct sexuality-related communication and sexuality-related communication in general than those of Mexican origin. Notably, topics related to relationships such as the appropriate age to initiate dating were discussed more frequently than topics related to prevention such as birth control and STIs within the entire Latino parent sample. It may be that low acculturated participants within the present study perceived the lack of discussion regarding sexuality as a sign that sexually-related discussions were discouraged and their parents' perceptions of behaviors promoting sexual protection as inappropriate, such as getting the HPV vaccine.

Participants who reported strong parental objections to the HPV vaccine also reported less confidence in their ability to get the vaccine. According to the theory of self-efficacy, individuals will take action to prevent illness (HPV) if they know how to prevent the illness (HPV vaccine) and feel confident that they can perform the health action (obtaining the HPV vaccine 3-shot series). Since self-efficacy may function differently within collectivist versus

individualist cultures (Burke et al., 2009), participants may have endorsed lower confidence in their ability to get the HPV vaccine in response to the perceived objection from their parents to vaccinate. Within traditional Latino families, *respeto* for parents is an important value (Allen, Svetaz, Hardeman, & Resnick, 2008) which emphasizes respect (Calzada, Fernandez, & Cortez, 2015) to parents and elders within the family over autonomy (Harwood, 1992). For example, the participant could demonstrate *respeto* by consulting with her parents before making a decision to get vaccinated in order to ensure that the behavior is acceptable. Participants may feel a greater desire to respect the hierarchy within their family especially if they perceive that the HPV vaccine is seen as unacceptable by their parents over their autonomy (Villanueva Dixon, Graber, & Brooks-Gunn, 2008)

Behavior that deviates from what is considered appropriate within the family may lead to feelings of discomfort among Hispanic young adults. Previous research has found that Latinas who engaged in sexual activity despite their parent's recommendation for abstinence reported significant feelings of guilt and betrayal of their family's expectations (Raffaelli & Ontai, 2001). Similarly, Latina mothers have reported feelings of embarrassment and difficulty when discussing detailed, sexuality-related factual information (Morales-Campos, Markham, Peskin, & Fernandez, 2013) as opposed to general abstinence until marriage messages with their children (Marin, 2003). Mothers suggest that these feelings stem from the lack of sexuality-related discussions within their own families growing up (Guilamo-Ramos et al., 2006; Marin, 2003).

The absence of sexuality-related discussion is termed sexual silence. Sexual silence may stem from religious beliefs that the purpose of sexual behavior is for procreation within marriage, so sexuality-related discussions may be considered inappropriate (Bowden, Rhodes, Wilkin & Jolly, 2006) and sexuality-related knowledge may suggest sexual experience.

Attempting to get the vaccine after parental objection may suggest that the daughter is sexually active or experienced and requires protection against a future STI (Guilamo-Ramos et al., 2006; Morales-Campos et al., 2013). Participants who perceived parental objection to HPV vaccination may have felt less confident about managing the potential social and/or personal consequences of disrespecting their parents which may have negatively influenced their intentions to get the HPV vaccine. The lack of sexuality-related discussions may also explain the results that greater embarrassment to request the HPV vaccine was negatively associated with self-efficacy to get the HPV vaccine.

Latina young adults may be ill equipped to have specific discussions regarding sexually-protective behaviors such as obtaining the HPV vaccine with a healthcare professional. Previous research has shown that Latina patients experience greater difficulty disclosing information regarding sexuality, including sexually transmitted infections, to their healthcare providers (Julliard et al., 2008). Previous research has shown that greater retention of Latino culture is positively associated with endorsement of traditional gender role attitudes (Phinney & Flores, 2002). Latina young adults may feel embarrassed by their deviation from traditional gender roles which stress the importance of innocence and abstinence until marriage (Raffali & Ontai, 2001).

In past research, Latina mothers reported that the lack of parent-child communication regarding sex and HPV may put their children at greater risk for HPV and cervical cancer (Morales-Campos et al., 2013). In a previous study, the majority of high school aged Latinas reported that only sexually active individuals are at risk for HPV (Morales-Campos et al., 2013). Although the HPV vaccine was developed to prevent cervical cancer, and is recommended before the initiation of sexual activity, the vaccine also prevents a sexually transmitted infection. Therefore, requesting the HPV vaccine may be viewed as an admission of current sexual activity

or plans to engage in sexual activity before marriage, which is may be discouraged within the Latino culture (Rafaelli & Ontai, 2001).

Greater comfort in engaging in sexuality-related conversations with mother was positively associated with having conversations about pregnancy prevention. Previous research has found that more comfortable sexuality-related conversations between Latina mothers and daughters were significantly associated with increased intention to delay sex (Guzman et al., 2003). Discussion of pregnancy prevention was negatively associated with embarrassment over requesting the HPV vaccine. It may be that participants who had discussions with their mothers about pregnancy prevention may feel more prepared and confident to have conversations with their physician, partner(s) and parent(s) about the HPV vaccine.

Results from the SEM model suggest potential intervention points given the context in which the Latina young adult may make the decision on whether or not to get vaccinated against the HPV. Although constructs from the HBM were significantly associated with intentions to vaccinate, parental objection was negatively associated with participants' self-efficacy and intention to vaccinate against HPV. Additionally, the content of sexuality-related discussions with mother was significantly associated with embarrassment in requesting the HPV vaccine. Although participants were adults, and may have greater autonomy than adolescents, parents may be key nurturers in influencing participant HPV vaccine-related beliefs and intentions. Future intervention efforts may want to consider addressing individual perceptions such as perceived effectiveness of the HPV vaccine, perceived severity of contracting HPV and perceived barriers while also addressing the cultural norms (i.e. *respeto*) that influence the Latina young adults' decision to get vaccinated.

Limitations

Although conducting interviews with the target audience allowed for the development of a culturally-tailored fotonovela, the characteristics of the sample limit generalizability.

Additionally, there were some limitations regarding the survey data. First, sexual health history (e.g., HPV vaccination status, number of doses) was self-reported. Second, constructs were assessed using single-item measures. Single-item measures may be at greater risk for ambiguity in participant interpretation of the item in comparison to multiple-item measures (Hoeppner, Kelly, Urbanoski, & Slaymaker, 2011). Third, the psychometric properties of many of the scales used in the current study were unknown. Some of the predicted relationships in the present study may have been present but not detected if the scales had poor psychometric properties. Fourth, the present study did not assess the impact of the fotonovela on vaccination. Future research should consider collecting information regarding HPV vaccination status following the intervention. Finally, only questions regarding character identification were included in the questionnaire. We did not include a formal measure of narrative engagement or narrative transportation which may have helped explained some of our findings regarding the efficacy of the fotonovela.

Based on the results of the content analysis, suggested changes for the CDC fact sheet include explaining the potential side effects of the HPV vaccine, information for women who are pregnant and the cost of the vaccine. Additionally, recommendations for the fotonovela include addressing symptoms and treatment options for HPV, clinics that offer the vaccine, the cost and potential side effects of the HPV vaccine. Since findings from the present study demonstrate the efficacy of the fotonovela in significantly influencing behavioral intention, future research should consider testing the improved fotonovela in combination with the CDC fact sheet against the CDC fact sheet alone. Findings could inform patient-provider communication regarding HPV

vaccination and help to identify the most effective health education intervention for Latina young adults. Finally, future research should consider testing a mediation/moderation model with proxy variables assumed to correlate with culture. Doing so may provide further insight into how the fotonovela is exerting its effect on HPV vaccine intention.

Conclusion

In conclusion, the present study was a first attempt at developing and testing a culturally-tailored fotonovela aimed at promoting HPV vaccination among Latina young adults.

Participants who received the fotonovela reported greater behavioral intentions and perceived severity of HPV than participants who received the CDC fact sheet. Future fotonovela narratives should consider addressing the feedback provided for both the fotonovela and CDC fact sheet, which may increase self-efficacy and further reduce barriers to vaccination. Additionally, transportation into the narrative should be formally assessed in future studies in order to identify the ways in which participants are becoming engaged with the narrative as transportation can influence beliefs and behavior.

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Appendix A
First Round Interview: SONA-Systems Posting

Title Development of a Culturally Tailored Intervention to Promote HPV Vaccination Intentions in Latino Young Adults

Description

The study aims to develop a culturally tailored health communication intervention to promote uptake of the HPV vaccine. If you sign up for the study, the appointment should last up to 2 hours and you will receive \$15.00 participating. Participation is completely voluntary and you have the opportunity to withdraw from the study at any time without penalty.

Appendix B

First Round: Screening and Interview Questions

Screening Questions

1. Are you a female between the ages of 18 to 26 years old?
2. Do you self-identify as Mexican-American?
3. Have you received all three shots of the HPV vaccine?

Brief Introduction

- Welcome to the interview session. My name is Erica Landrau. Today, we will be talking about adopting health behaviors that prevent one from acquiring a STI such as HPV. We will be recording our conversation today. All of the information that you provide will be kept confidential. Your name will not be revealed in any reports. There are no right or wrong answers, so please feel free to share your point of view.
- Please introduce yourself
 - 1st warm-up: What is your major and year in school?
 - 2nd warm-up: What was the last concert you attended?

Content Questions (General to specific)

- Have you even been to the UTEP health clinic?
 - Are you familiar with the services at the health clinic?
 - Could you please provide an example of a service provided?
- Who do you trust to receive health advice from?
 - Probe: newspapers? Parents? Friends? Television? Healthcare providers?
 - Prompt: how should the information be made available for young adults?
 - Prompt: How would you feel most comfortable receiving information about HPV/HPV vaccination?
 - Probe: video? Paper brochure?
- What comes to your mind when you think about vaccinations?
 - What are some bad things about vaccines?
 - What are some good things about vaccines?
 - Are you in favor or against vaccinations?
- What have you heard or know about the human papillomavirus (HPV), HPV vaccine?
 - Who did you first hear about it from?
- How serious do you think it would be for you to get HPV?
- What do you think about the HPV vaccine?
 - What were the major factors that influenced you? (Benefits, risk, anyone you know whose done it before, cost of vaccination, Media?)
 - What would help you finish all three doses? What stopped you from completing all three doses?
- Who makes up your social network? (Support system) who do you turn to when you need help?
 - What is each person's position in your network? (Who are the leaders, decision makers?)

- When it's time to make decisions about your health, who do you talk to? (father, aunts, uncles, grandparents, friends, romantic partner)
 - Who in your support network did you talk to when deciding to vaccinate or not to vaccinate with the HPV vaccine? (friends, relatives, grandparents, romantic partners)
 - Who didn't you talk to & why?
- Growing up how did your parents talk to you about reproduction, or sexual health?
 - Who talked to you about these things?
 - What did they say?
 - Did a conversation about sex accompany you getting the vaccine?
- How did the way your family talked to you about sex affect how you think and talk about sex and reproductive health today?
 - Who do you talk to about these things?
- What cultural factors- things that we learned from our parents and relatives- may influence people from your culture's decision whether or not to accept HPV vaccination?
 - How do you think this influenced you?
- Are there any stories or cultural beliefs passed down from within your family that would make you mistrust the medical community or vaccinations?
 - Have these aspects of your culture shaped your view on vaccines? The HPV vaccine?
- Has a doctor or health care provider ever talked to you about vaccines?
 - How did they discuss the HPV vaccine?
 - How do you think this influenced you?
- Have you seen anything in the media that would make you trust or mistrust vaccinations in general? HPV vaccine?

UTEP researchers are thinking of developing an educational program to make people aware of the HPV vaccine and interested in getting it.

- Present fotonovela on screen
- How likely are you to read a fotonovela?
 - Why?
- Would you take it seriously?
 - Would it persuade you to get the vaccine?
- If we decide to develop the fotonovela, would you find it interesting?
 - How else could we deliver the information?
 - What setting would be best for the fotonovela? Should it be presented in individual or group sessions?
 - What would motivate you to be in the program? What would prevent you?
 - Would you pass the fotonovela along to people in your social network?
 - Would time or place serve as a barrier?

Conclusion

Thinking about everything we discussed today, what is the one thing about the HPV/HPV vaccine that is most important for UTEP students to know?

Appendix C

Intervention: SONA-Systems Posting

Title A Culturally Tailored Intervention

Description

The study aims to test a culturally tailored health communication intervention to promote uptake of the HPV vaccine. If you sign up for the study, the appointment should last 60-90 minutes and you will receive either 2 research credits or entry into a raffle for a chance to win 1 of 4 \$100 gift cards for participating. Participation is completely voluntary and you have the opportunity to withdraw from the study at any time without penalty. Eligible participants will be: female, 18 to 26 years old, have not completed all 3 shots of the HPV vaccine, and self-identify as Mexican-American.

Appendix D

Second Round: Screening and Interview Questions

Screening Questions

1. Are you a female between the ages of 18 to 26 years old? What is your age?
2. Do you self-identify as Mexican-American? What is your ethnic identification?
3. Have you ever received a formal HPV intervention at UTEP?
4. Have you received all three shots of the HPV vaccine?
5. What is your classification?
6. Have you ever been to the UTEP health center to get services?

Introduction

Welcome to the focus group session. You have been invited to take part in this study that aims at identifying the best way to present health information to young adults attending college to motivate them to protect their health. During today's session, I will ask you your opinions about an educational intervention to promote vaccination against the Human Papillomavirus or HPV in young women attending college. The intervention consists of a fotonovela, a fotonovela is.....The feedback you will provide to us today is very valuable as it will help us modify the fotonovela to make it more appealing and hopefully more successful in promoting adoption of vaccination. So please be very sincere and outspoken as your opinion will really matter in shaping this educational intervention. Everything we present in the fotonovela is factual (true). I will begin by asking a series of questions about HPV and then move on to ask you your opinion about specific details of the fotonovela. There are no right or wrong answers. We are very interested in what everyone has to say. I will record the conversation today to accurately keep track of what everyone is saying. Remember that everything you say will be kept confidential. Please keep what is said here, along with the names of who was here, confidential. So that everyone has a chance to speak please speak one person at a time. If one person is speaking please allow her to finish what she has to say. This will allow us to keep better track of what you everyone is saying.

Vaccinations

What comes to mind when you think about vaccinations?

Could you tell me if you are for or against vaccinations?

What have you heard or what do you know about the human papillomavirus or the HPV vaccine?

How serious do you think it would be to get HPV?

Have you been vaccinated against HPV?

If yes,

How many doses do you have?

Tell me how did you decide or if someone made the decision for you how was the decision made?

Did a health care provider speak to you about the vaccine?

How did the healthcare provider discuss the HPV vaccine?

How do you feel about being vaccinated?

If no,

Why have you not been vaccinated?

Would you be interested in getting vaccinated?

What would motivate you? What are some reasons why you would not get vaccinated?

Fotonovela

1. What are the first thoughts that come to mind?
 - a. What was the fotonovela about?
 - b. How likely is this story to be true? Why?
 - c. How strongly do you identify with Sofia? Why?
2. How did the fotonovela make you feel?
3. What effect do you think the fotonovela will have on your behavior?
 - a. Did it make you want to get vaccinated/complete vaccination series? Why?
 - i. If yes, what part?
 - ii. If no, what would you change about the story? What should we change to motivate college aged young women to get vaccinated/finish the series?
 - b. Did it make you want to speak with a health care provider about the vaccine? Why?
 - c. Did it make you want to get more information from other sources? Which ones?
4. How helpful do you consider the information provided in helping you reach a decision on whether to get vaccinated/finish the doses?
 - a. If yes, what was the most helpful part?
 - b. If no, what would you change? What kind of story would motivate you?
5. Did you learn anything new? What?
 - a. Was the information credible?

- b. If yes, what made it credible?
 - c. If no, what can we do to make it credible?
- 6. What are the parts that you liked the most? Why?
- 7. What are the parts that you disliked the most? Why?
- 8. Which parts could be expanded upon more?
- 9. Which parts could be left out?
- 10. Overall, how effective do you think the fotonovela is likely to be to motivate college young adults to get vaccinated? Why?
- 11. If you are asked to share this fotonovela with people you know, would you do it?
 - a. If yes, how would you go about doing that?
 - b. If no, what would make you want to share it?
- 12. If someone you know would ask you to read this fotonovela, would you do it?
 - a. If yes or no, what would attract you to reading it?
 - b. Which person (mom, friend, aunt, sister, other relative) could really motivate you to read it?
 - c. What could this person say to motivate you to read it?
 - d. Would you prefer a booklet, video? Why?
- 13. What do you think about the information provided?
 - a. Was it hard to understand?
 - b. How important/relevant was it?
 - c. What information would you add?
 - d. What information would you remove?
 - e. Which information did you think was particularly effective?

Please give us your opinion about each of the characters

- 1. Sofia
 - a. How credible?
 - b. What made her credible/not credible?
 - c. What would you change?
- 2. Carla
 - d. How credible?
 - e. What made her credible/not credible?
 - f. What would you change?

3. Taylor

- g. How credible?
- h. What made her credible/not credible?
- i. What would you change?

4. Sofia's mother

- j. How credible?
- k. What made her credible/not credible?
- l. What would you change?

5. Sofia's aunt

- m. How credible?
- n. What made her credible/not credible?
- o. What would you change?

6. the health care provider

- p. How credible?
- q. What made her credible/not credible?
- r. What would you change?

Please give us your opinion about the story line and characters

1. What do you think about the conversations?
 - a. Sofia, Carla and Taylor
 - b. Taylor and Carla
 - c. Sofia and her mother
 - i. At the beginning
 - ii. At the end
 - d. Sofia's mother and her sister
 - e. Sofia's interaction with the health care provider
2. What do you think about the clothing they wore?
 - a. Is this in anyway relevant to how credible you perceive the fotonovela?
 - i. If yes, what would you change?
3. What do you think about their facial expressions?
 - a. Is this in anyway relevant to how credible you perceive the fotonovela?
 - i. If yes, what would you change?

Appendix E
Abbreviated Multidimensional Acculturation Scale

Please answer the following questions regarding your cultural identity

	Not At All	Very Much					
1. I think of myself as being U.S. American.	1	2	3	4	5	6	7
2. I feel good about being U.S. American.	1	2	3	4	5	6	7
3. Being U.S. American plays an important part in my life.	1	2	3	4	5	6	7
4. I feel that I am part of U.S. American culture.	1	2	3	4	5	6	7
5. I have a strong sense of being U.S. American.	1	2	3	4	5	6	7
6. I am proud of being U.S. American.	1	2	3	4	5	6	7
7. How well do you speak English at school or work?	1	2	3	4	5	6	7
8. How well do you speak English with American friends?	1	2	3	4	5	6	7
9. How well do you speak English on the phone?	1	2	3	4	5	6	7
10. How well do you speak English with strangers?	1	2	3	4	5	6	7
11. How well do you speak English in general?	1	2	3	4	5	6	7
12. How well do you understand English on television or in movies?	1	2	3	4	5	6	7
13. How well do you understand English in newspapers and magazines?	1	2	3	4	5	6	7
14. How well do you understand English words in songs?	1	2	3	4	5	6	7
15. How well do you understand English in general?	1	2	3	4	5	6	7
16. How well do you speak your native language with family?	1	2	3	4	5	6	7
17. How well do you speak your native language with friends from the same country as yours?	1	2	3	4	5	6	7
18. How well do you speak your native language on the phone?	1	2	3	4	5	6	7

19. How well do you speak your native language in general?	1	2	3	4	5	6	7
---	----------	----------	----------	----------	----------	----------	----------

20. How well do you understand your native language on television or in movies?	1	2	3	4	5	6	7
--	----------	----------	----------	----------	----------	----------	----------

21. How well do you understand your native language in newspapers and magazines?	1	2	3	4	5	6	7
---	----------	----------	----------	----------	----------	----------	----------

22. How well do you understand your native language words in songs?	1	2	3	4	5	6	7
--	----------	----------	----------	----------	----------	----------	----------

23. How well do you understand your native language in general?	1	2	3	4	5	6	7
--	----------	----------	----------	----------	----------	----------	----------

Appendix F

Knowledge about HPV and the Vaccine

Please answer the following questions regarding HPV knowledge

1. Have you heard of Human Papillomavirus (HPV) before today?

☐ Yes ☐ No ☐ Don't know

2. Have you heard of the vaccine for the Human Papillomavirus (HPV) before today?

☐ Yes ☐ No ☐ Don't know

3. Human papillomavirus (HPV) is a sexually transmitted disease.

☐ Yes ☐ No ☐ Don't know

4. Human papillomavirus (HPV) infection can go away without treatment.

☐ Yes ☐ No ☐ Don't know

5. Human Papillomavirus (HPV) causes genital warts.

☐ Yes ☐ No ☐ Don't know

6. Human Papillomavirus (HPV) causes herpes

☐ Yes ☐ No ☐ Don't know

7. People with Human Papillomavirus might not have any symptoms.

☐ Yes ☐ No ☐ Don't know

8. The Centers for Disease Control and Prevention recommends the Human Papillomavirus (HPV) vaccine for girls and boys age 11-12 years old.

☐ Yes ☐ No ☐ Don't know

9. The Human Papillomavirus (HPV) vaccine catch up doses can be administered to individuals up to age 26.

☐ Yes ☐ No ☐ Don't Know

10. Getting regular Papanicolaou tests (also known as Pap smears, cervical screenings, or well woman's tests) reduces a woman's chances of getting cervical cancer.

☐ Yes ☐ No ☐ Don't know

11. The Human Papillomavirus (HPV) can cause abnormal Papanicolaou tests (also known as Pap smears, cervical screenings, or well woman's tests).

☐ Yes ☐ No ☐ Don't Know

12. You are in the age group that health officials recommend get the HPV vaccine.

☐ Yes ☐ No ☐ Don't know

13. The HPV vaccine works best if you get it before you start having sex.

☐ Yes ☐ No ☐ Don't Know

14. The HPV vaccine prevents most cervical cancers.

☐ Yes ☐ No ☐ Don't know

15. HPV is a sexually transmitted disease

☐ Yes ☐ No ☐ Don't Know

16. The HPV vaccine prevents most genital warts.

☐ Yes ☐ No ☐ Don't know

17. How many needle shots are required for the HPV vaccine? _____

Appendix G

Evaluation of Information

The following questions are about the information you just read. Please circle your response to each question.

1. How satisfied are you with the amount of information provided?

1	2	3	4	5	6	7
Very Dissatisfied				Very Satisfied		

2. How long was the information provided?

1	2	3	4	5	6	7
Very Long			Just Right		Very Long	

3. Was the information provided easy to understand?

1	2	3	4	5	6	7
Very Easy			Just Right		Very Hard	

4. Was the information provided relevant?

1	2	3	4	5	6	7
Relevant		Not at All Relevant			Completely Relevant	

5. Which parts could be expanded upon more?

6. Which parts could be left out?

7. What would you tell your friends about the HPV vaccine or HPV?

8. The information I just read about HPV and the vaccine will help me reach a decision about getting vaccinated against HPV?

1	2	3	4	5	6	7
Disagree				Agree		

9. I will carefully consider the information I just read about HPV and the vaccine when making my decision to get vaccinated? 1 2 3 4 5 6 7

Relevant Not at All Completely
Relevant

10. Would you recommend that other people read the information that you just did if they are undecided about vaccinating against HPV?

☐ Yes ☐ No ☐ Don't know

Please explain your answer:

11. Please tell us your preference regarding the format of the information that you just read:

- ☐ Liked it as it was presented
- ☐ Would prefer to see it on a computer
- ☐ Would prefer to see it in a YouTube video

12. How persuasive was this information?

13. What other information would help you make a decision about whether or not to vaccinate against HPV?

14. What other type of guidance would help you make a decision about whether or not to vaccinate against HPV?

15. How likely are you to get vaccinated because of this information?

16. Overall, how effective do you think this information is likely to be to motivate college young adults to get vaccinated? Why?

Appendix H

Behavioral Intention

Please indicate the extent to which you agree with the following statements.

	Completely Disagree	1	2	3	4	5	6	Completely Agree	7
1. I intend to share the health information about HPV and the vaccine provided today with friends.									
2. I intend to share the health information about HPV and the vaccine provided today with family members.									
3. I intend to seek additional information about HPV and the HPV vaccine.									
4. I intend to get the HPV vaccine.									
5. I intend to get the HPV vaccine in the next month.									
6. I intend to recommend the vaccine to my friends.									
7. I will ask healthcare provider about the vaccine.									
8. I intend to find more information about HPV									

Appendix I

Character Identification

Please indicate the extent to which you identify with the following components of the HPV material you were given to read.

	I do not Identify at all		I Neutral		Identify		
	1	2	3	4	5	6	7
1. Sofia	1	2	3	4	5	6	7
2. Carla	1	2	3	4	5	6	7
3. Taylor	1	2	3	4	5	6	7
4. Sofia's Mother	1	2	3	4	5	6	7
5. The conversation between Sofia and Carla	1	2	3	4	5	6	7
6. The conversation between Carla and Taylor	1	2	3	4	5	6	7
7. The conversation between Sofia and her mother	1	2	3	4	5	6	7
8. The conversation between Sofia and pharmacist	1	2	3	4	5	6	7

Appendix J

Sexual Health Attitudes

SECTION G: Please answer the following questions regarding sexual health attitudes.

	Completely Disagree	Neutral	Completely Agree
1. If I have a pap smear test regularly, I don't need to worry too much about cervical cancer.	1 2	3 4	5 6 7
2. A pap smear test can detect changes to the cervix, before they turn into cancer.	1 2	3 4	5 6 7
3. If cervical cancer is found early it can be successfully treated.	1 2 3 4 5 6 7		
4. Having a regular pap smear test is the best way to detect cervical cancer early.	1 2 3		4 5 6 7
5. Having regular pap smear tests will decrease my chances of dying from cervical cancer.	1 2	3 4	5 6 7
6. The HPV vaccine is unsafe.	1 2	3 4	5 6 7
7. The HPV vaccine might cause short term problems, like fever or discomfort.	1 2	3 4 5 6 7	
8. The HPV vaccine might cause lasting health problems	1 2	3 4	5 6 7
9. The HPV vaccine is being pushed to make money for drug companies.	1 2 3 4	5 6 7	
10. The HPV vaccine is so new that I want to wait awhile before deciding if I should get it.	1 2 3 4	5 6 7	
11. I am too young to get a vaccine for a sexually transmitted infection like HPV	1 2 3 4	5 6 7	
12. If someone gets the HPV vaccine, they will be more likely to have sex.	1 2 3 4	5 6 7	
13. Other people my age are getting the HPV vaccine.	1 2 3 4	5 6 7	
14. I am concerned that the HPV vaccine costs more than I can pay.	1 2 3 4	5 6 7	
15. I don't have enough information about the HPV vaccine to decide whether to get it.	1 2 3 4	5 6 7	
	Very positively		Very negatively
16. How do you evaluate the HPV vaccine?	1	2 3 4	5 6 7

Appendix K

HPV Vaccine discussions

SECTION G: Please answer the following questions regarding communication with a healthcare provider.

1. Have you ever talked with your parents about the HPV vaccine at all?

- ☐ Yes ☐ No ☐ Don't Know

2. What did you discuss with your parents? Check all that apply.

- ☐ Protects against cervical cancer
- ☐ Protects against genital warts
- ☐ Shots may be painful
- ☐ The HPV vaccine is for a sexually transmitted infection
- ☐ Long term effects not known
- ☐ Should get the HPV vaccine before being sexually active
- ☐ Doctor recommended the HPV vaccine
- ☐ HPV vaccine recommended for girls (age 10-18)
- ☐ Other (please specify): _____
- ☐ Don't know
- ☐ sexuality and sex topics

3. Have you ever talked with your doctor or nurse about the HPV vaccine at all?

- ☐ Yes ☐ No ☐ Don't Know

4. What did you discuss with your doctor or nurse. ? Check all that apply.

- ☐ Protects against cervical cancer
- ☐ Protects against genital warts
- ☐ Shots may be painful
- ☐ The HPV vaccine is for a sexually transmitted infection
- ☐ Long term effects not known
- ☐ Should get the HPV vaccine before being sexually active
- ☐ Doctor recommended the HPV vaccine
- ☐ HPV vaccine recommended for girls (age 10-18)
- ☐ Other (please specify): _____
- ☐ Don't know
- ☐ sexuality and sex topics

Appendix L

Sexuality-related Communication with Parents

SECTION I: The following questions are about the communication you have with either of your parents about sexuality.

Please select a person with whom you felt most comfortable having conversations related to sexuality: ☐ Mother ☐ Father ☐ Other (please specify): _____

Now, please think fill in the parent you selected in the blank and think of this parent when answering the following questions.

1. How often do you have conversations about sexuality with your _____?

☐ Every day ☐ Once every week ☐ Once every month ☐ Once every year

2. Which of the following topics have you discussed with your _____? (select all that apply)

☐ What it is to have intercourse ☐ When it is appropriate to have sexual relations
☐ How to prevent a pregnancy ☐ Sexually Transmitted Infections (for example, AIDS)
☐ Contraceptive methods (for example, condoms) ☐ Other topics (specify): _____

3. How long ago did your _____ begin to talk to you about sexuality/ how old were you? [____] years.

	Not Comfortable	Extremely Neutral	Comfortable							
4. How comfortable do you feel having conversations with your _____ about sexuality?	1	2	3	4	5	6	7			
	Completely Disagree							Completely Agree		
5. My _____ thinks I should wait to have sex until I get married.			1	2	3	4	5	6	7	
6. My _____ thinks I am mature enough to talk about sexuality with her/him.			1	2	3	4	5	6	7	
7. I feel comfortable when my _____ tries to have a conversation about sexuality			1	2	3	4	5	6	7	

with me.

8. My _____ thinks that I get information 1 2 3 4 5 6 7
about sexuality at school, so there is no need
for her to have a conversation with me about
sexuality.

9. My _____ feels embarrassed when I try 1 2 3 4 5 6 7
to ask him/her questions about sexuality.

Appendix M

Health Belief Model Scale for HPV

Please indicate the extent to which you agree with the following statements.

Completely Disagree Neutral Completely Agree

1. I can contract HPV.

1 2 3 4 5 6 7

2. HPV is serious enough to get vaccinated.

1 2 3 4 5 6 7

3. There are benefits to getting the HPV vaccine.

1 2 3 4 5 6 7

4. There are barriers in getting the HPV vaccine.

1 2 3 4 5 6 7

5. I would feel embarrassed to get the HPV vaccine.

1 2 3 4 5 6 7

6. What are your reasons for not getting the HPV vaccine (check all that apply):

- ☐ The vaccine costs too much
- ☐ The vaccine needs 3 shots ☐ The vaccine is unsafe
- ☐ I need more information on the vaccine
- ☐ I need more information on HPV
- ☐ I am afraid of needles ☐ I am embarrassed to request the vaccine
- ☐ I am not at risk for HPV ☐ I am too old to get the vaccine
- ☐ My doctor has not recommended I get the vaccine
- ☐ My parents do not want me to get the vaccine
- ☐ My spouse/partner does not want me to get the vaccine
- ☐ Other (please specify): _____

Completely Ineffective Completely Effective

7. How effective do you think the HPV vaccine is in preventing genital warts?

1 2 3 4 5 6 7

8. How effective do you think the HPV vaccine is in preventing cervical cancer?

1	2	3	4	5	6	7
9. What is your chance of getting HPV in the future?						
1	2	3	4	5	6	7
Not at All		Very Much				
10. How severe would the consequences be if you were diagnosed with HPV?						
1	2	3	4	5	6	7
11. How traumatic would it be for you if you were diagnosed with HPV?						
1	2	3	4	5	6	7
12. How likely are you to die from HPV?						
1	2	3	4	5	6	7
Not Serious		Very Serious				
13. How serious would it be if you got cervical cancer?						
1	2	3	4	5	6	7
Not at All		Very Much				
14. How confident are you that you could find time to go to a Health Clinic to get vaccinated against HPV?						
1	2	3	4	5	6	7
15. I will discuss the HPV vaccine with my romantic partner.						
1	2	3	4	5	6	7
16. I will discuss the HPV vaccine with my parents						
1	2	3	4	5	6	7
17. I will discuss the HPV vaccine with my health care provider.						
1	2	3	4	5	6	7
18. I will suggest that my partner gets the HPV vaccine						
1	2	3	4	5	6	7
19. I will ask my partner if he or she had the HPV vaccine.						
1	2	3	4	5	6	7
20. Getting vaccinated against HPV is completely under my control.						
1	2	3	4	5	6	7

Appendix N

Sociodemographic Questionnaire

Demographic Questionnaire

1. What is your age? ____

2. What is your gender?

☐ Male ☐ Female ☐ Transgender Male ☐ Transgender Female

3. What is your marital status?

☐ Single ☐ Married ☐ Living together
☐ Other (please specify): _____

4. What is your current relationship status?

☐ Living with a sexual partner and neither of us has sex with anyone else
☐ Living with a sexual partner, and one or both of us is having sex with someone else
☐ In a sexual relationship, but we don't live together
☐ In a non-sexual relationship
☐ Not currently in a relationship
☐ Other (please specify): _____

5. What is your current classification?

☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Master's Student
☐ Doctoral Student

6. What do you consider your ethnicity to be?

☐ Mexican/Mexican-American ☐ Other/Hispanic ☐ Non-Hispanic/White
☐ Black/African American ☐ Asian/Pacific Islander ☐ American Indian
☐ Other (please specify): _____

7. What is your sexual orientation?

☐ Heterosexual ☐ Gay or Lesbian ☐ Bisexual
☐ Other (please specify): _____

8. In what city do you live?

☐ El Paso ☐ Juarez ☐ Other (please specify): _____

9. Do you have a primary health care provider?

☐ Yes ☐ No ☐ Don't Know/Unsure

10. When was the last time you got a regular check-up (medical/physical exam)?

☐ 1 month ago ☐ 6 months ago ☐ 1 year ago ☐ More than a year ago

11. From the following options, where do you typically seek healthcare?

☐ Community health care clinic ☐ Hospital ☐ UTEP student health center
☐ Juarez clinic or doctor ☐ Juarez pharmacy ☐ Doctor's clinic
☐ Other (please specify): _____

12. Do you have health insurance?

- ☐ Yes ☐ No (if no, proceed to section L)

13. What type of health insurance do you have?

- ☐ Private insurance through my job ☐ Private insurance through my parents
☐ Government assisted insurance (Medicare or Medicaid)
☐ Access to treatment through UTEP student health center only

Appendix O

Sexual Health History Questionnaire

Please answer the following questions regarding your sexual health history

1. Have you ever been vaccinated for Human Papillomavirus (HPV)?

☐ Yes ☐ No ☐ Don't Know

2. If you have been vaccinated against HPV, how many doses/shots of the HPV vaccine have you received?

☐ 1 dose/shot ☐ 2 doses/shots ☐ all 3 doses/shots ☐ don't know/unsure

3. When and where did you get the HPV vaccine?

2. Have you been told that you have the Human Papillomavirus (HPV)?

☐ Yes ☐ No ☐ Don't Know

3. Have you ever been told that you have genital warts?

☐ Yes ☐ No ☐ Don't Know

4. Has anyone you know ever received the Human Papillomavirus (HPV) vaccine?

☐ Yes ☐ No ☐ Don't Know

5. Has anyone that you were close to ever had the Human Papillomavirus (HPV)?

☐ Yes ☐ No ☐ Don't Know

6. Have you ever had a pap smear test?

☐ Yes ☐ No ☐ Don't Know

7. Do you get a yearly Papanicolaou test (also known as Pap smears, cervical screenings or well woman's tests)?

☐ Yes ☐ No ☐ Don't Know

8. When was your last Papanicolaou test (also known as Pap smears, cervical screenings, or well woman's tests)?

☐ A year ago ☐ 2 years ago ☐ 3 years ago ☐ 4 years ago

☐ More than 5 years ago ☐ I have never received a Papanicolaou test

☐ Don't Know

9. Have you ever had an abnormal pap smear test?

☐ Yes ☐ No ☐ Don't Know

10. Have you ever had sex?

☐ Yes ☐ No ☐ Don't Know

11. How many sexual partners have you had in your lifetime?

☐None ☐1-2 ☐3-5 ☐6-8 ☐9-11 ☐12-14 ☐15-17 ☐19-20 ☐21 or above ☐ Don't Know

12. Have you ever had unprotected sex?

☐ Yes ☐ No ☐ Don't Know

13. What is your main form of protection used during sex (Check all that apply):

☐None ☐Condoms ☐Hormonal method (the pill, the patch, rings)
☐Calendar based contraceptive
☐Intrauterine Device/IUD
☐Surgical procedure (vasectomy, tube ligation)
☐Infertility
☐My partner/or I withdraws before ejaculation
☐Other (please specify): _____

14. In the past year, how many times have you talked with a sex partner about using condoms or having safer sex?

☐Never ☐Once or Twice ☐Most of the time ☐Always

15. In the past year, how many times did you talk with a sex partner about getting tested for STDs/STIs?

☐Never ☐Once or Twice ☐Most of the time ☐Always

16. Do you rely on your partner for protection during sex?

☐ Yes ☐ No

17. Have you ever had a Sexually transmitted Infection/Disease?

☐ Yes ☐ No (if no, go to question 19) ☐ I have never been tested for them (if never tested, go to question 19)

18. What sexually transmitted disease/infection(s) have you had (check all that apply)?:

☐ Hepatitis B ☐ hepatitis C ☐ HIV/AIDS ☐ HPV/Warts ☐ Human papillomavirus (HPV)

19. If you wanted more information about HPV and the HPV vaccine from whom would you feel most comfortable getting it?

☐ Healthcare provider ☐ friend ☐ parent ☐ other (please specify): _____

20. In your opinion, how many of your friends have received the HPV vaccine?

☐ None of them ☐ Some of them ☐ Almost all of them ☐ All of them
☐ Don't Know

21. If someone from the following list recommended the vaccine to you, who would you be more likely to listen to (Select all that apply)

- ☐ Healthcare provider ☐ Parent ☐ Partner/Spouse
☐ Friend ☐ Religious figure ☐ Other (please specify): _____

22. How much of the decision to vaccinate against HPV is up to you?

Not at all					Very much		
1	2	3	4	5	6	7	

23. If the decision to vaccinate is not entirely up to you, who else shares the decision?

Appendix P

Marlow-Crowne Questionnaire

Please answer the following questions

1. It is sometimes hard for me to go on with my work if I am not encouraged.

☐ Yes ☐ No

2. I sometimes feel resentful when I don't get my own way.

☐ Yes ☐ No

3. On a few occasions, I have given up doing something because I thought too little of my ability.

☐ Yes ☐ No

4. There have been times when I felt like rebelling against people in authority even though I knew they were right.

☐ Yes ☐ No

5. No matter who I'm talking to, I'm always a good listener.

☐ Yes ☐ No

6. There have been occasions when I took advantage of someone.

☐ Yes ☐ No

7. I'm always willing to admit it when I make a mistake.

☐ Yes ☐ No

8. I sometimes try to get even, rather than forgive and forget.

☐ Yes ☐ No

9. I am always courteous, even to people who are disagreeable.

☐ Yes ☐ No

10. I have never been irked when people expressed ideas very different from my own.

☐ Yes ☐ No

11. There have been times when I was quite jealous of the good fortune of others.

☐ Yes ☐ No

12. I am sometimes irritated by people who ask favors of me.

☐ Yes ☐ No

13. I have never deliberately said something that hurt someone's feelings.

☐ Yes ☐ No

Appendix Q
Questionnaire

Please answer the following questions

1. Have you heard about this study before today? If yes, what did they tell you?

2. Do you know what we are interested in finding out with this study? Explain in 1-2 sentences.

Appendix R

Fotonovela Narrative

AT KINLEY'S

Taylor: we won't fail this test, right?

Sofia: I mean, I think we can, so Carla needs to get here quick.

Carla: Sorry I'm late! I just got back from the doctor's office. I'm so scared. He told me I have HPV. I didn't even think I could get a sexually transmitted infection! I've only had sex with my boyfriend and we ALWAYS use condoms. I was told HPV can cause cervical cancer and that you can contract it even when you use a condom. He also told me to keep an eye out for genital warts.

Sofia: Oh wow, I am so sorry, what were your symptoms?

Carla: I didn't have any. I found out because I had an abnormal pap smear test result. My doctor said that most people don't know that they're infected because you can have HPV without any symptoms. Some people find out because they have genital warts but I don't have any!

Sofia: Wait- What's a pap smear test?

Carla: A gynecologist swabs cells from the cervix to test for any abnormal cells. I had abnormal cells and these can turn into cervical cancer.

Taylor: oh wow, that sounds very serious. so what is HPV?

Carla: It's a virus that is transmitted sexually, and you can contract it even when you use a condom. The doctor said HPV can infect the areas that are not covered by a condom. I also need to keep an eye out for genital warts over the next couple of weeks.

Sofia: If condoms don't fully protect you from HPV, then what does?

Carla: The doctor told me there's a HPV vaccine. I didn't know about it before but I wish I would have so I could have prevented all of this. I should probably head out, I need to figure out how to pay for treatment.

Sofia: One more question, how do you treat HPV?

Carla: The doctor will need to remove the abnormal cells from my cervix. If you guys don't have the vaccine, you should get it.

Taylor: I've never heard of HPV before. How many people have it?

Carla: The doctor told me around 80% of sexually active people are infected with HPV at some point. She also told me that the vaccine is recommended at 9 years old because it's most effective BEFORE you've become sexually active. I never had it, do you guys?

Sofia: I don't know.

Taylor: I think so. I only remember I had to go for three shots but my little brother and sister only need two. I didn't realize that's why I got the shot.

Carla: I have to go. I don't think I can stay calm and study.

Taylor: so are we going to study?

Sofia: I don't want cancer. How do I know if I have the HPV vaccine?

AT SOFIA'S HOME

Sofia [thinking] this is going to be awkward, but I need to ask my mom if she knows.

Sofia: Mom, have I been vaccinated against HPV?

Mom: Sofia, HPV is a sexually transmitted disease, why are you asking? Are you having sex? We taught you values in this house! I thought there was no reason for you to get vaccinated, mija.

Sofia: mom, why are you so difficult? This has nothing to do with having sex, I want to prevent cancer!

-Sofia leaves, mom calls sister

Mom: Sofia asked me about the HPV vaccine. I didn't think she'd need the vaccine because she's will have sex until she gets married. What do I do?

Sister: I vaccinated my kids. The doctor told me HPV could cause penile or cervical cancer, and I wanted to make sure my kids were protected. I don't know what I'd do if they had cancer!

Mom: I did not think of it that way, I don't want Sofia to worry either. I will have to talk with her when she gets back.

Sister: It will be okay.

***[Sofia and mom sitting in the house]**

Mom: Sofia, you only have one shot of the HPV vaccine. I didn't take you back because I was afraid it would encourage you to have sex. I can take you to get the other two shots tomorrow because your health is important to me.

[Sofia and mom at pharmacy]

Sofia: Hi, Can you tell me about the HPV vaccine? I have one shot but I don't know much about it.

Pharmacist: Of course! HPV Stands for the Human Papillomavirus and it can be passed from person to person through sex. Once a woman has the virus, it can cause genital warts or penile or cervical cancer. Any signs of the virus can be detected by a pap smear test. The vaccine prevents most types of HPV. But in order to be effective, you need to get 3 shots at 3 different times with the second shot 6-12 months after the first. If you don't get all 3 shots, the vaccine will not fully protect you.

Sofia: Can I get vaccinated?

Pharmacist: The vaccine is recommended for males and females 9-26 years old. You can still receive the vaccine even if you received the 1st shot when you were younger.

Sofia: I'm 26. But, do I need to get a pap smear test first?

Pharmacist: No, but remember, the pap smear test will let you know if you have HPV or show warning signs for cervical cancer so even if you have the vaccine you still need to get pap smears

[Sofia- fills out paperwork with mom]

Sofia [to mom]: thanks for coming with me.

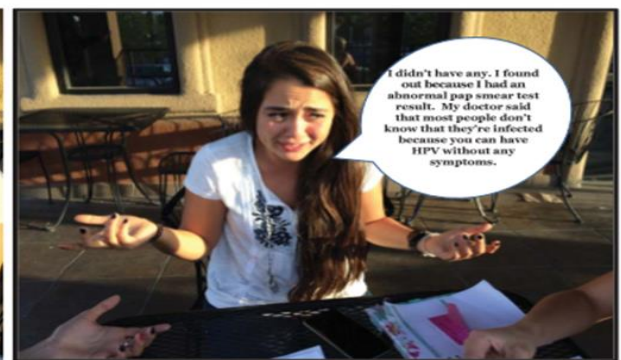
Sofia gets shots

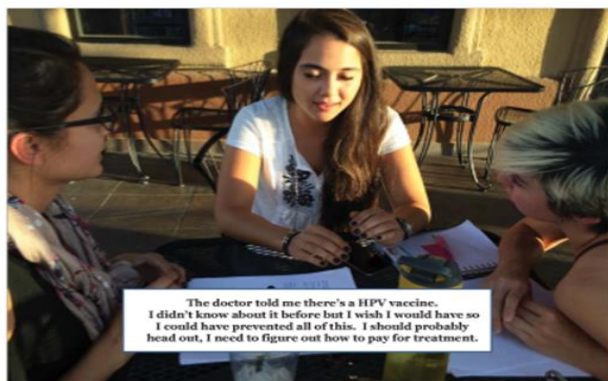
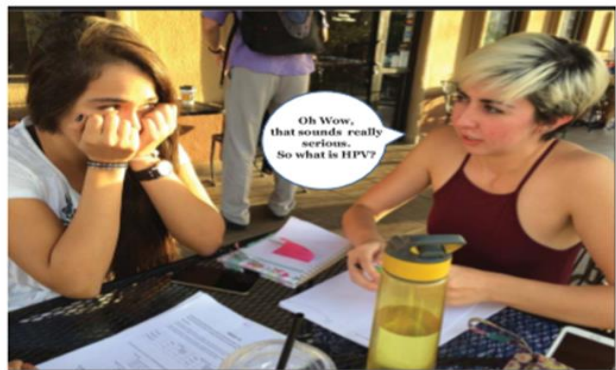
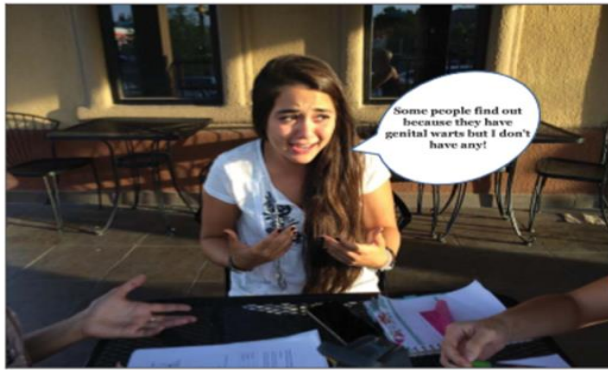
Sofia [to pharmacist] Do many people have cervical cancer?

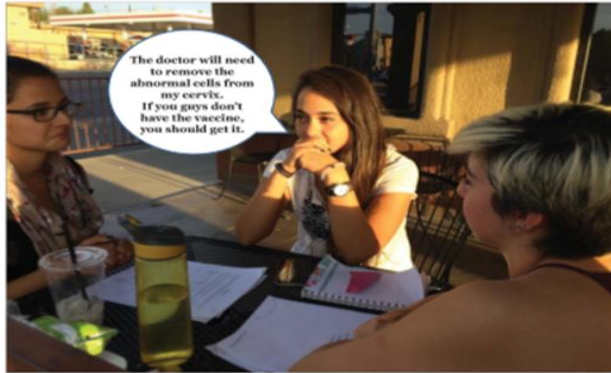
Pharmacist: Cervical cancer is the second-most common type of cancer among women, and is caused by HPV. Make sure to schedule your pap smear test to check.

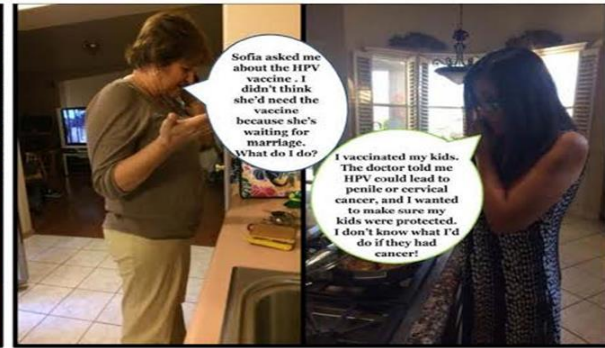
Appendix S

Fotonovela











Appendix T

CDC Fact Sheet

Genital HPV Infection – CDC Fact Sheet



Human papillomavirus (HPV) is the most common sexually transmitted infection in the United States. Some health effects caused by HPV can be prevented with vaccines.



What is HPV?

HPV is the most common sexually transmitted infection (STI). HPV is a different virus than HIV and HSV (herpes). HPV is so common that nearly all sexually active men and women get it at some point in their lives. There are many different types of HPV. Some types can cause health problems including genital warts and cancers. But there are vaccines that can stop these health problems from happening.

How is HPV spread?

You can get HPV by having oral, vaginal, or anal sex with someone who has the virus. It is most commonly spread during vaginal or anal sex. HPV can be passed even when an infected person has no signs or symptoms.

Anyone who is sexually active can get HPV, even if you have had sex with only one person. You also can develop symptoms years after you have sex with someone who is infected making it hard to know when you first became infected.

Does HPV cause health problems?

In most cases, HPV goes away on its own and does not cause any health problems. But when HPV does not go away, it can cause health problems like genital warts and cancer.

Genital warts usually appear as a small bump or group of bumps in the genital area. They can be small or large, raised or flat, or shaped like a cauliflower. A healthcare provider can usually diagnose warts by looking at the genital area.

Does HPV cause cancer?

HPV can cause cervical and other cancers including cancer of the vulva, vagina, penis, or anus. It can also cause cancer in the back of the throat, including the base of the tongue and tonsils (called oropharyngeal cancer).

Cancer often takes years, even decades, to develop after a person gets HPV. The types of HPV that can cause genital warts are not the same as the types of HPV that can cause cancers.

There is no way to know which people who have HPV will develop cancer or other health problems. People with weak immune systems may be less able to fight off HPV and more likely to develop health problems from it, this includes people with HIV/AIDS.

How can I avoid HPV and the health problems it can cause?

You can do several things to lower your chances of getting HPV.

Get vaccinated. HPV vaccines are safe and effective. They can protect males and females against diseases (including cancers) caused by HPV when given in the recommended age groups (see "Who should get vaccinated?" below). HPV vaccines are given in three shots over six months; it is important to get all three doses.

Get screened for cervical cancer. Routine screening for women aged 21 to 65 years old can prevent cervical cancer.

If you are sexually active

- Use latex condoms the right way every time you have sex. This can lower your chances of getting HPV. But HPV can infect areas that are

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Division of STD Prevention



not covered by a condom - so condoms may not give full protection against getting HPV;

- Be in a mutually monogamous relationship – or have sex only with someone who only has sex with you.

Who should get vaccinated?

All boys and girls ages 11 or 12 years should get vaccinated.

Catch-up vaccines are recommended for males through age 21 and for females through age 26, if they did not get vaccinated when they were younger.

The vaccine is also recommended for gay and bisexual men (or any man who has sex with a man) through age 26. It is also recommended for men and women with compromised immune systems (including people living with HIV/AIDS) through age 26, if they did not get fully vaccinated when they were younger.

How do I know if I have HPV?

There is no test to find out a person's "HPV status." Also, there is no approved HPV test to find HPV in the mouth or throat.

There are HPV tests that can be used to screen for cervical cancer. These tests are recommended for screening only in women aged 30 years and older. They are not recommended to screen men, adolescents, or women under the age of 30 years.

Most people with HPV do not know they are infected and never develop symptoms or health problems from it. Some people find out they have HPV when they get genital warts. Women may find out they have HPV when they get an abnormal Pap test result (during cervical cancer screening). Others may only find out once they've developed more serious problems from HPV, such as cancers.

How common is HPV and the health problems caused by HPV?

HPV (the virus): About 79 million Americans are currently infected with HPV. About 14 million people become newly infected each year. HPV is so common that most sexually-active men and women will get at least one type of HPV at some point in their lives.

Health problems related to HPV include genital warts and cervical cancer.

Genital warts: About 360,000 people in the United States get genital warts each year.

Cervical cancer: More than 11,000 women in the United States get cervical cancer each year.

There are other conditions and cancers caused by HPV that occur in persons living in the United States.

I'm pregnant. Will having HPV affect my pregnancy?

If you are pregnant and have HPV, you can get genital warts or develop abnormal cell changes on your cervix. Abnormal cell changes can be found with routine cervical cancer screening. You should get routine cervical cancer screening even when you are pregnant.

Can I be treated for HPV or health problems caused by HPV?

There is no treatment for the virus itself. However, there are treatments for the health problems that HPV can cause:

1. Genital warts can be treated by you or your physician. If left untreated, genital warts may go away, stay the same, or grow in size or number.
2. Cervical precancer can be treated. Women who get routine Pap tests and follow up as needed can identify problems before cancer develops. Prevention is always better than treatment. For more information visit www.cancer.org.
3. Other HPV-related cancers are also more treatable when diagnosed and treated early. For more information visit www.cancer.org.

Where can I get more information?

STD information

<https://www.cdc.gov/std/>

HPV Information

<https://www.cdc.gov/hpv/>

HPV Vaccination

<https://www.cdc.gov/vaccines/vpd-vac/hpv/>

Cancer Information

<https://www.cdc.gov/cancer/>

Cervical Cancer Screening

https://www.cdc.gov/cancer/cervical/basic_info/screening.htm

CDC's National Breast and Cervical Cancer Early Detection Program

<https://www.cdc.gov/cancer/nbccedp/>

CDC-INFO Contact Center

1-800-CDC-INFO

(1-800-232-4636) Contact

<https://www.cdc.gov/dcs/ContactUs/Form>

CDC National Prevention

Information Network (NPIN)

<https://npin.cdc.gov/disease/stds>

P.O. Box 6003

Rockville, MD 20849-6003

E-mail: npin-info@cdc.gov

National HPV and Cervical Cancer

Prevention Resource Center

American Sexual Health

Association (ASHA)

<http://www.ashasexualhealth.org/stdsstis/hpv/>

P.O. Box 13827

Research Triangle Park,

NC 27709-3827

1-800-783-9877

Table 1

Demographics of the First Round of Interviews

<u>Variable</u>	<u>Frequency</u>	<u>%</u>
Sexual Orientation ^{“a”}		
Heterosexual	13	68.4
Lesbian	3	15.8
Bisexual	3	15.8
HPV Vaccine Status ^a		
Yes	10	52.6
No	9	47.4
HPV Doses Received ^a		
0	9	47.4
1	5	26.3
2	4	21.1
HPV Vaccine Recommendation ^{“a”}		
Yes	11	57.9
No	8	42.1
HPV Vaccine Intentions ^{“a”}		
Yes	13	68.4
No	3	15.8
Undecided	2	10.5
Relationship Status		
Living with a Sexual Partner	4	21.1
In a Sexual Relationship, not living together	6	31.6
Non-sexual Relationship	5	26.3
Not currently in a Relationship	4	21.1

Note. $N = 19$. “a” denotes missing information. Survey data for one participant was lost.

Table 2. Themes that Influence Latina Young Adults' HPV Vaccine Acceptance.

	Positive (encouraging vaccination)	Negative (Discouraging vaccination)
Perceptions	<ul style="list-style-type: none"> • Positive attitudes toward vaccines (N=17) • Perceived susceptibility (N=2) • Perceived severity (N=16) • Vaccines as prevention (N=17) 	<ul style="list-style-type: none"> • Lack of Information (N=10) • Skepticism of Medical Industry (N=3) • Lack of perceived susceptibility (N=2) • Fear of pain and unknown side-effects(N=7)
Enablers	<ul style="list-style-type: none"> • Open communication with family about sexuality (N=1) 	<ul style="list-style-type: none"> • Vaccination as condoning sex (N=5) • Lack of open communication with family about sexuality (N=7) • Trusted sources of information
Nurturers	<ul style="list-style-type: none"> • Positive influence of mother (N=1) 	<ul style="list-style-type: none"> • Negative influence of mother (N=9)

*Note: N refers to the number of times the theme was mentioned.

Table 3. Perceptions that Influence Latina Young Adults' HPV Vaccine Acceptance.

Themes	Illustrative Quotes	Implications for Fotonovela Script
Positive Attitudes toward Vaccines	<i>"I mean it's kind of hard you don't feel a difference after you take it or like a major impact but I mean just having that feeling you are protected in some way or helping to prevent that from happening is like a peace of mind." P16</i>	Emphasize the importance of prevention of HPV before is too late
Lack of Information	<i>"Get more information on what it is and what the vaccine has and how would it help me. I like when I have more information to make a decision rather than just people saying I should get it. I think I need to have a background or something to support why I should get it." P5</i>	Provide information about HPV and the vaccine
Skepticism of Medical Industry	<i>"the medical people think that [this is] going to help you [but] it's not as beneficial as they claim...so I don't really know, I just don't think that there is something that can actually convince me to like okay 'well this works and this is why it works' maybe seeing a scientific kinda or maybe the actual breakdown through medicine like hey this is how I guess through education maybe is like the closest I can think of so actually showing me hey this is what it does, this is how it intervenes and this is how it will help you and that's, other than that I don't see" P3</i>	Provide information about HPV and the vaccine by a health care provider
Perceived Susceptibility	<i>"Just to be on the safe side just like a lot of other vaccinations, just to be safe, just to make sure cause I know that I think especially after having a child I think you're more at risk for cervical cancer I've heard" P4</i>	Emphasize the nature of HPV as an STI for which condoms are not enough protection
Lack of Perceived Susceptibility	<i>"I mean I was younger so I, you always think when you're younger nothing can happen to me so i guess I kind of pushed it off" P8</i>	Emphasize the nature of HPV as an STI for which condoms are not enough protection and neither having only one partner
Perceived Severity	<i>"Very serious. I think maybe it will change my life completely; it will for sure impact my parents life in a negative way, my life. I guess I could learn to cope with it afterwards" P7</i>	Emphasize the psychological stress, cost, and uncertainty that entails being diagnosed with HPV
Vaccines as Prevention	<i>"I mean there seems to be a lot of benefits because if it, if it helps you fight a lot of serious diseases that could be potentially fatal that seems to be a really great upside." P3</i>	Emphasize the importance of prevention of HPV before is too late
Fear of Pain or Unknown Side-Effects	<i>"I don't know. no I would say that like vaccines that they are going to work in the long run you're going to I don't have mistrust in them. I'm just sometimes scared because what if it gives me side effects so that's yeah" P9 and "I'm like super sensitive so like the vaccination just it hurts and then like it'll kind of stay that area where the vaccine was it'll be like sore or I bruise easily" P2</i>	Emphasize the psychological stress, cost, and uncertainty that entails being diagnosed with HPV

Table 4. Enablers (or cultural factors) that Influence Latina Young Adults' HPV Vaccine Acceptance.

Themes	Illustrative Quotes	Implications for Fotonovela Script
Vaccination as Condoning Sex	<i>"Well, I'm Hispanic and although I'm not catholic a lot of my family is. And normally, when Hispanics are Catholics they look down on sex. HPV wouldn't even be an option. They'd be like well you're not even going to have sex so I don't see what the issue is so it's kind of like one of those things." P6</i>	Model an interaction between mother and daughter about the decision to obtain the vaccine in light of fears that vaccination may condone sexual activity
Open communication with family about sexuality	<i>"it was my mother and the doctor and I remember being in the doctor's room with me sister both in there together to get the shot and my mom said it was a good idea because it prevented some potential sexual issues in the future and then they discussed like sexual safety with me and they specifically discussed I remember a little bit about the statistics of sexual transmitted diseases in the area how it was really common at least where we were living and I remember my mom just telling me that it was a good idea and then just basically said I don't want you having sex if it happens I want you to be safe and here are the things that help you be safe." P11</i>	Reinforcing the possibility of enacting health preventative sexual health behaviors with important others
Lack of open communication with family about sexuality	<i>"I think it's a topic that is not talked a lot and I think that's pretty much why a lot of people don't get it because they're not aware. And I think sex is a little more private in Mexico. Not a lot of people talk openly about it. Sometimes, especially youth, I don't think it's a topic you would bring up with your friends that easily unless it's joking around or like telling a story, but not about sickness or health" P5</i>	Model an interaction between mother and daughter about the decision to obtain the vaccine in light of fears that vaccination may condone sexual activity

Table 5. Nurturers (or Important Others) that Influence Latina Young Adults' HPV Vaccine Acceptance.

Themes	Illustrative Quotes	Implications for Fotonovela Script
Positive Influence of Mother	<i>"My mother was really open and she explained pretty much different ages and you know in a way that I could understand. And I think it started in like fourth grade. Does that answer your question? I think she had gotten to her gynecologist and I think that's where she got it from. She just told me, I think one day she told me, she had an appointment with her gynecologist and that she wanted to make sure that I got the vaccine. And she started like pressuring me to get it." P4</i>	Reinforcing the possibility of enacting health preventative sexual health behaviors with important others
Negative Influence of Mother	<i>"I have ask her about certain things like 'what did you do to keep me from getting anything when I was younger you know it might be hereditary you know? She's just like well I don't know. How was I supposed to intervene? You know that's your mom how was I supposed to ask her? Well, but when she passed what have you done preventative? And she's like well what is there to do? It's just. If it's going to happen, it's going to happen. Just don't be a slut." P2</i>	Model an interaction between mother and daughter about the decision to obtain the vaccine in light of fears that vaccination may condone sexual activity
Trusted Sources of Information	<i>"I would probably go to a doctor, then my mom and then my friends and then my partner." P11</i>	Model the adoption of a sexual health preventative behavior amidst an interaction between mother and daughter and a health care provider

Table 6. Feedback on the Fotonovela in the Second Round of Interviews

Themes	Illustrative Quotes	Implications for Fotonovela Script
Identification with Sofia	<i>"[Do you identify with Sofia?] I do because that's how I feel like I feel freaked out and I feel like my mom kept me from something that I think was more my decision than hers and um my mom is very understanding I think she got a little freaked out because of what my aunt said but I'm pretty sure my aunt had the same perspective as Sofia's mom and my aunt sees me as a daughter too and she didn't get her daughter the shots because she didn't want to feel like she was allowing them to go and have sex so I feel like my aunt put it in different words to manipulate my mom to tell her like oh don't get the shot and I guess my mom just listened to her and I feel like I would want to get my three shots whenever I could." P6</i>	Keep the interaction between Sofia and her mother about HPV and the HPV vaccine.
Friends discussing HPV	<i>"[What about the conversation between Sofia, Carla and Taylor?] Maybe if they would all sit down and have a clear conversation and I don't know develop sharing their not sharing their stories but be more clear and careful about it. [So you want each of them to share more information?] I guess Carla to her friends. Well, yeah I think it was good for Carla to say that at the beginning so that they should all become more precautious about the HPV... Maybe share a little bit more so they can be more informed and decide to take action faster." P2</i> <i>"I think she left kind of suddenly though because she just came from the doctor and then she just came to study but she's going back to the doctor." P3</i>	Expand upon Carla's discussion with her doctor after receiving the HPV diagnosis with Sofia and Taylor.
Vaccine Effectiveness	<i>"If after the 3 shots, you can, that they're 100% that it's immune, more information about that. [Who would you want to give this information? Her friends or the pharmacist?] Probably from the pharmacist." P2</i>	Expand upon the efficacy of the HPV vaccine after finishing the recommended 3 shots.
HPV Prevalence Rates	<i>"I want to know like that's the if there's like 25 people in like 60 that have the HPV virus I think that's more of what I want to know" P6</i>	Include information on HPV prevalence rates.
Identification with Taylor	<i>"Maybe her classmate worrying about her test. That was probably it [that needed to be changed]. I mean it's like her health and she's like my test... [later in the interview] She didn't even care, like No, I can't even trust her. I think we kinda needed her because there's people like that who don't really care like yeah it's HPV but I think we needed her." P1</i> <i>"If she [Taylor] has more words to say I would keep her in. Like, if she made herself seem more of a close friend to Carla because right now she just seems really worried about school." P6</i>	Participants had opposing views on Taylor's role. Specifically, students either thought she needed to be more of a caring friend or remain uncaring about Carla's concerns regarding HPV. In order to address this, we had Taylor express greater concern and interest in Carla's situation but still remain worried about her test at the end of the scene.

Table 7.
Demographics of the Randomized Control Trial Sample

<u>Variable</u>	<u>Frequency</u>	<u>%</u>
Sexual Orientation ^a		
Heterosexual	133	91.7
Lesbian	3	2.1
Bisexual	8	5.5
Health Insurance ^a		
Yes	104	71.7
No	39	26.9
Primary Health Care Provider		
Yes	84	57.9
No	40	27.6
Don't Know	21	14.5
HPV vaccine receipt ^a		
Yes	75	51.7
No	45	31.0
Don't Know	24	16.6
HPV vaccine Doses		
0	30	20.7
1	30	20.7
2	40	27.6
Don't Know	45	31.0
Pap Smear ^a		
Yes	47	32.4
No	90	62.1
Don't Know	6	4.1
Ever had sex		
Yes	112	77.2
No	32	22.1
Unprotected Sex ^a		
Yes	93	64.1
No	50	34.5
HPV status ^a		
Yes	4	2.8
No	140	96.6

Note. "a" indicates that at least one response was missing.

Table 8.

Demographics of the Randomized Control Trial by group

<u>Variable</u>	<u>Fotonovela (N = 78)</u>	<u>CDC fact sheet (N = 67)</u>
Age in Years	<i>M</i> = 20.01 (<i>SD</i> = 1.84)	<i>M</i> = 19.95 (<i>SD</i> = 1.85)
Sexual Orientation ^a		
Heterosexual	72 (92.3%)	61 (91.0%)
Lesbian	1 (1.3%)	2 (3.0%)
Bisexual	4 (5.1%)	4 (6.0%)
Health Insurance ^a		
Yes	56 (71.8%)	48 (71.6%)
No	21 (26.9%)	18 (26.9%)
Primary Health Care Provider		
Yes	42 (53.8%)	42 (62.7%)
No	25 (32.1%)	15 (22.4%)
Don't Know	11 (14.1%)	10 (14.9%)
HPV vaccine receipt ^a		
Yes	44 (56.4%)	31 (46.3%)
No	18 (23.1%)	27 (40.3%)
Don't Know	15 (19.2%)	9 (13.4%)
HPV vaccine Doses ^a		
0	18 (23.1%)	10 (14.9%)
1	18 (23.1%)	12 (17.9%)
2	23 (29.5%)	17 (25.4%)
Don't Know	18 (23.1%)	27 (40.3%)
Pap Smear ^a		
Yes	28 (35.9%)	19 (28.4%)
No	47 (60.3%)	43 (64.2%)
Don't Know	2 (2.6%)	4 (6.0%)
Ever had sex ^a		
Yes	66 (84.6%)	46 (68.7%)
No	11 (14.1%)	21 (31.3%)
Unprotected Sex ^a		
Yes	54 (69.2%)	39 (58.2%)
No	22 (28.2%)	28 (41.8%)
HPV status ^a		
Yes	3 (3.8%)	1 (1.5%)
No	74 (94.9%)	66 (98.5%)
Don't Know	0 (0%)	0 (0%)

Note. "a" indicates that at least one response was missing.

Table 9. Suggestions for the culturally-tailored fotonovela and CDC fact sheet

	Culturally-tailored Fotonovela	CDC fact sheet
Expand on this information	<ul style="list-style-type: none"> • Cost of vaccine ($n = 17$) • Local clinics ($n = 9$) • Insurance Coverage ($n = 2$) • HPV Knowledge ($n = 23$) • HPV Vaccine Knowledge ($n = 22$) • HPV treatment ($n = 10$) • Pap Smear ($n = 1$) 	<ul style="list-style-type: none"> • Cost of vaccine ($n = 5$) • Local clinics ($n = 1$) • HPV Knowledge ($n = 10$) • HPV Vaccine Knowledge ($n = 15$) • HPV treatment ($n = 4$) • Pap Smear ($n = 1$)
Remove this information	<ul style="list-style-type: none"> • Consequences for men ($n = 1$) 	<ul style="list-style-type: none"> • Genital Warts ($n = 5$)
Why would you recommend this source of information	<ul style="list-style-type: none"> • Lack of HPV awareness ($n = 20$) • Easy to Understand ($n = 14$) • Prevention ($n = 20$) • Lack of Knowledge ($n = 43$) 	<ul style="list-style-type: none"> • Lack of HPV awareness ($n = 12$) • Easy to Understand ($n = 3$) • Prevention ($n = 8$) • Lack of Knowledge ($n = 24$)
Additional Information required to make a vaccine decision	<ul style="list-style-type: none"> • HPV vaccine facts ($n = 55$) • More discussion between characters ($n = 5$) • Statistics ($n = 5$) • HPV facts ($n = 20$) 	<ul style="list-style-type: none"> • HPV vaccine facts ($n = 23$) • Statistics ($n = 3$) • HPV facts ($n = 10$)

*Note: Themes were derived from the Elaboration of Information Provided Questionnaire

Table 10.

Means and Standard Deviations for each HPV-related behavioral intention

<u>Variable</u>	<u>Fotonovela (N = 78)</u>	<u>CDC fact sheet (N = 67)</u>
I intend to seek additional information about HPV and the HPV vaccine.	$M = 6.48 (SD = .88)$	$M = 6.00 (SD = 1.30)$
I intend to get the HPV vaccine in the next 30 days.	$M = 5.76 (SD = 1.35)$	$M = 5.17 (SD = 1.66)$
I intend to recommend the HPV vaccine to my friend.	$M = 6.29 (SD = .93)$	$M = 5.95 (SD = 1.36)$
I intend to share information with my friends.	$M = 6.29 (SD = 1.03)$	$M = 6.23 (SD = 1.09)$
I intend to find more information about HPV.	$M = 6.53 (SD = .78)$	$M = 6.30 (SD = 1.09)$
I intend to share information with family members.	$M = 6.24 (SD = 1.13)$	$M = 6.06 (SD = 1.42)$
I intend to get the HPV vaccine.	$M = 6.29 (SD = 1.07)$	$M = 6.04 (SD = 1.27)$
I intend to ask a healthcare provider about the HPV vaccine.	$M = 6.41 (SD = .96)$	$M = 6.01 (SD = .96)$

Table 11.

Correlation Matrix of the HPV behavioral intention items

	<i>M (SD)</i>	I intend to recommend the HPV vaccine to my friend.	I intend to get the HPV vaccine within the next month.	I intend to seek additional information about HPV and the HPV vaccine.
I intend to recommend the HPV vaccine to my friend.	6.14 (1.16)			
I intend to get the HPV vaccine within the next month.	5.49 (1.52)	.709**		
I intend to seek additional information about HPV and the HPV vaccine.	6.26 (1.12)	.508**	.377**	

*Note: ** $p = .01$

Table 12.

Reliability Estimates of Measures

<u>Measure</u>	<u>Number of Items</u>	<u>Cronbach's Alpha (α)</u>
Behavioral Intentions Scale: Composite Index	3	.764
Behavioral Intentions Scale	8	.900
HPV Knowledge	5	.516
HPV Vaccine Knowledge	9	.510
English Competence	8	.947
US Cultural Identity	6	.933
Spanish Competence	9	.604
Marlowe-Crowne Social Desirability Scale	13	.645

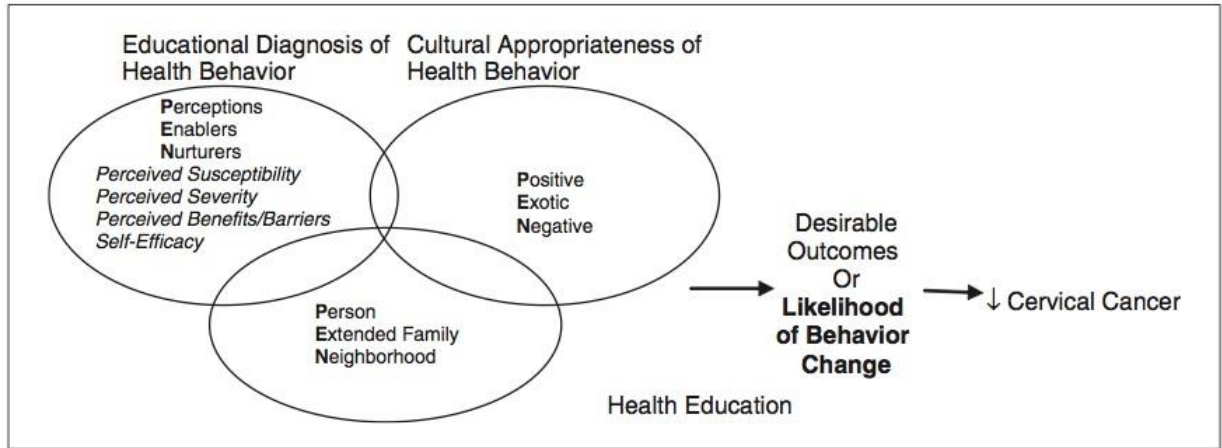


Figure 1: PEN-3 Model and Health Belief Model Combined

Source: Scarinci, I. C., Bandura, L., Hidalgo, B., & Cherrington, A. (2012).

Development of a theory-based (PEN-3 and HBM), culturally relevant intervention on cervical cancer prevention among Latina immigrants using intervention mapping. *Health Promotion Practice*, 13(1), 29-40. doi: 10.1177/1524839910366416

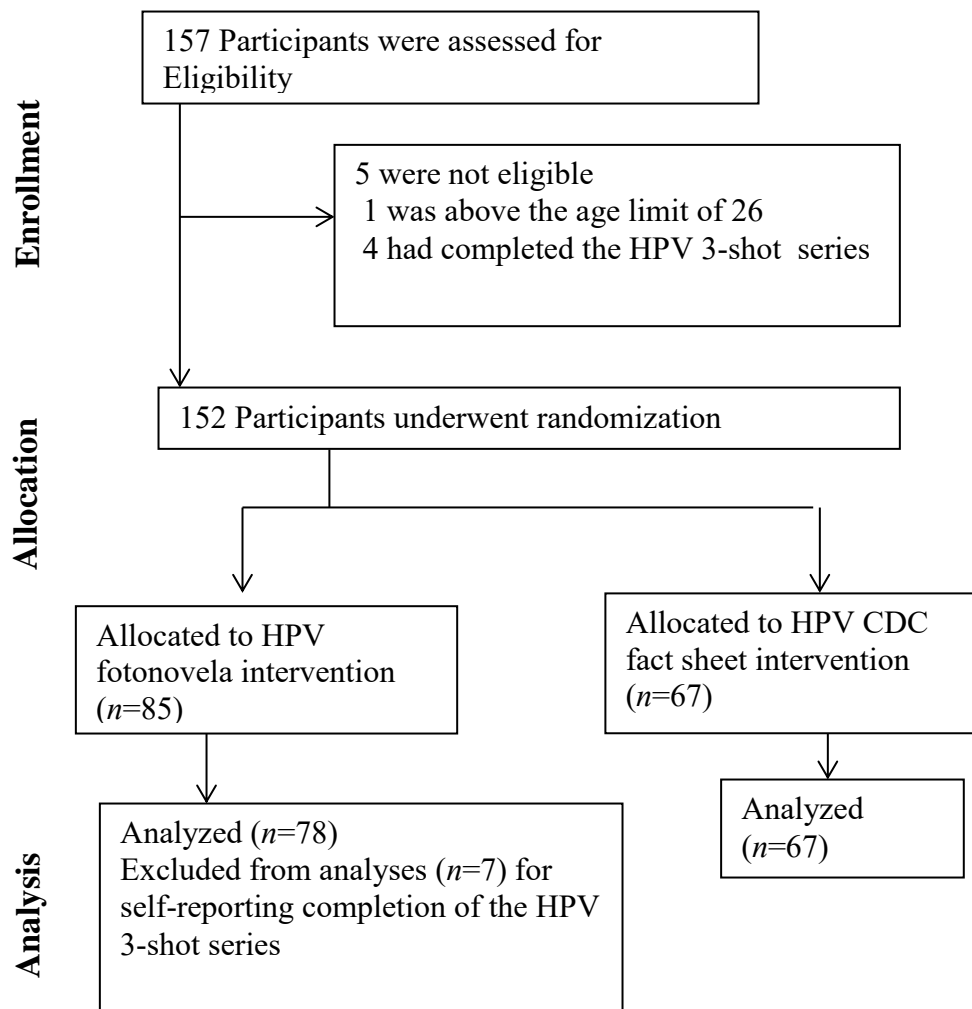


Figure 2. Diagram of Excluded Participants

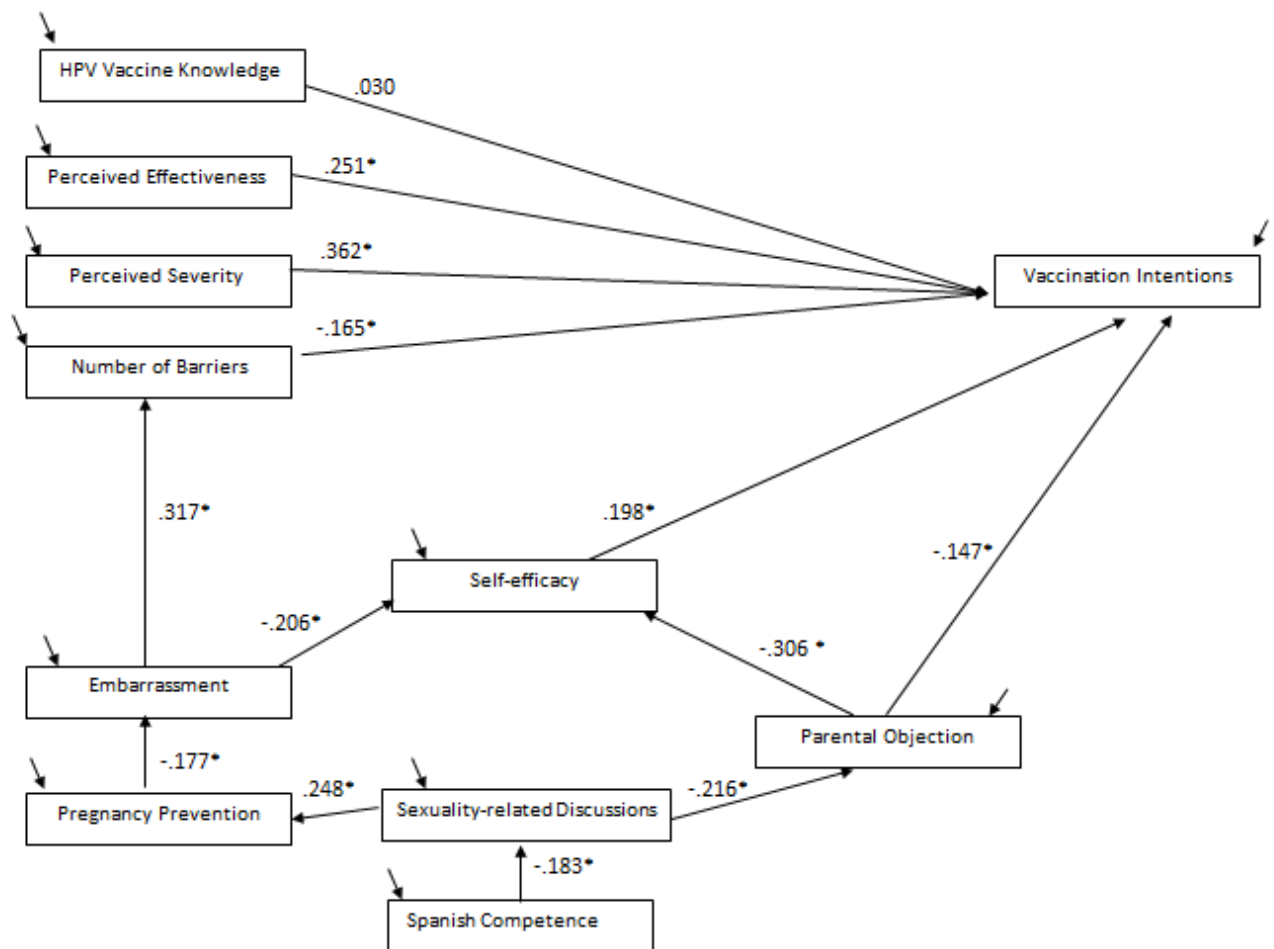


Figure 3. Exploratory Structural Equation Model

Note: * $p < .05$

Vita

Erica Landrau graduated from George Mason University with her bachelor's degree in 2010. Erica entered the doctoral program in Psychology at the University of Texas at El Paso in 2012.

Permanent address: PO Box 2656

Surf City, NC 28445

This thesis was typed by Erica Landrau.