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Identifying Hispanic mothers' salient beliefs about HPV vaccine initiation in their adolescent daughters

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Abstract

Guided by the Integrative Model of Behavioral Prediction, we identify mothers' salient beliefs regarding their daughters' initiation of the HPV vaccine series. Thirty-four Hispanic mothers responded to elicitation questions. Salient beliefs included: 1. Feeling secure, happy, relieved, concerned and fear about vaccinating; 2. believing that vaccinating prevents and protects from HPV but may result in side effects and sexual disinhibition; 3. Identifying the daughter, father, mother, aunt friends and grandmothers as supporters/non-supporters; and 4. Affordability, transportation, clinic distance and making appointments as facilitators/barriers. This study begins the process of building a model of HPV vaccine initiation for this population.

Keywords

Integrative Model; elicitation study; Hispanic mothers; HPV vaccination; beliefs

The three dose human papillomavirus (HPV) vaccine is approved for use in those between the ages of 9 and 26. However, the Advisory Committee on Immunization Practices (ACIP) recommends vaccination between 11 and 12 years of age and considers vaccination between the ages of 18 to 26 as a "catch-up" vaccination. (Markowitz et al., 2014) The vaccine is currently administered over a 6-month period and protects against low-risk HPV types 6 and 11, which cause approximately 90% of genital warts cases (Markowitz et al., 2014). It also protects against high-risk (i.e., cancer causing) HPV types 16, 18, 31, 33, 45, 52 and 58(Joura et al., 2015). In females, these high-risk HPV types can cause cervical, vulvar, vaginal, anal and oropharyngeal cancer (Amano, 2012; Forman et al., 2012). In fact, it is estimated that HPV 16 and 18 are responsible for approximately 65% of HPV-associated cancers in females (FDA, 2014; Saraiya, 2015; Serrano et al., 2012), with HPV types 31, 33, 45, 52 and 58 responsible for 14% of HPV-associated cancer cases(Markowitz et al., 2014; Saraiya, 2015).

While the vaccine is approved for use beginning at age 9, the emphasis is on having adolescents begin the series at age 11 (Markowitz et al., 2014). The National Immunization

Survey-Teen, 2014 found that HPV vaccine initiation among adolescent Latinas, between 13 and 17 years of age, in Texas was 55.1% (Jemal et al., 2013; Prevention, 2014). Healthy People 2020 set the HPV vaccine coverage goal at 80% for completion of the three dose series (U.S. Department of Health and Human Services, n.d.). However, with uptake rates in Texas at an estimated 55.1%, and the current completion rate at 39.3% in this population, we must increase our efforts to achieve and then surpass this coverage goal. This is vital given that researchers have estimated that we can reduce the incidence of cervical cancer by more than 90% if we vaccinate all 12 year old girls in the United States (Taira, AV, Neukermans, CP, Sanders, 2013). Further, vaccination is particularly important in this population given that Hispanic women suffer the highest incidence of cervical cancer in this country (Howlader, N., Noone, A. M., Krapcho, M., 2011) and are less likely to be screened for cervical cancer compared to non-Hispanic white and black women (Chen, Kessler, Mori, & Chauhan, 2012; Selvin & Brett, 2003).

Demographic factors such as income, health insurance coverage, age of both the mother and daughter and access to transportation appear to be associated with HPV vaccine uptake or the intention to initiate the series in this population (Berenson & Rahman, 2012; Brewer & Fazekas, 2007; Laz, Rahman, & Berenson, 2012). In addition, concerns about vaccine safety, low levels of awareness and knowledge about HPV and the HPV vaccine, along with a belief that the vaccine is not effective, also predict a lower likelihood of uptake (D. L. Kepka, Ulrich, & Coronado, 2012; Yeganeh, Curtis, & Kuo, 2010). Despite the information about predictors of HPV vaccine uptake in this population, we do not yet have a systematically developed theory-based model of the behavior for this population. A theory-based behavioral model that is culture-specific (Champagne, Fox, Mills, Sadler, Malcarne, 2016; Vamos, Lockhart, Vazquez-Otero, Thompson, Proctor, Wells, Daley, 2016) is necessary for a clear understanding of the behavior and also for the development of effective interventions (Glanz & Bishop, 2010).

The Integrative Model of Behavioral Prediction (IM) (Fishbein, 2000; Fishbein, Martin, Triandis, H, Kanfer, F, Becker, M, Middlestadt, SE, Eichler, 1992) is a popular public health theory that can be employed to build a model of the behavior. This theory is composed of constructs from existing behavioral theories including the theory of reasoned action, the theory of planned behavior, social cognitive theory, and the Health Belief Model. The IM (Fishbein & Yzer, 2003) posits that engaging in a certain behavior is predicted by: the intention to engage in the behavior, possessing the skills and abilities needed to engage in the behavior, and the absence of environmental constraints to engaging in the behavior. Intention to engage in a behavior is itself predicted by attitude toward the behavior, perceived behavioral norms and belief in the ability to engage in the behavior (self-efficacy). In turn, attitudes are predicted by behavioral beliefs. Behavioral beliefs consist of experiential attitudes (salient positive and negative feelings about the behavior) and instrumental attitudes (salient positive and negative effects of the behavior). Norms are predicted by normative beliefs which are the salient supporters and non-supporters of an individual carrying out the behavior. Self-efficacy is predicted by control beliefs, which are the salient behavioral facilitators and barriers. Identification of the salient beliefs is critical because, according to the IM, these beliefs drive behavior. As such, the intervention will only be successful if it is able to intervene upon these salient beliefs. Further, salient beliefs

are specific to the target behavior and target culture and must be identified by examining the population in question. Using qualitative research methods, namely content analysis, is recommended. This in-depth elicitation process identifies the salient beliefs which will serve as the content for intervention messages and also provides guidance for the subsequent survey to quantitatively build an IM of the behavior (Fishbein & Yzer, 2003; Francis et al., 2004; Yzer, 2012).

The purpose of this study was to identify the salient behavioral, normative and control beliefs that are associated with Hispanic mothers having their adolescent daughters, ages 11 to 17, initiate the HPV vaccine series. This was accomplished by employing qualitative research methods in the form of in-depth elicitation interviews. We focused on mothers given that adolescents are, in most cases, not legally allowed to consent to medical treatment on their own and, as such, mothers tend to make medical decisions for them (Fazekas, Brewer, & Smith, 2008; Leader, Weiner, Kelly, Hornik, & Cappella, 2009; Sperber, Brewer, & Smith, 2008).

Methods

Participants

We conducted in-depth interviews with Hispanic mothers of adolescent girls from May 2014 through January 2015. Participants were recruited from community health centers and clinics in Houston, TX. Eligibility criteria for the mothers included identifying as Latino or Hispanic, reporting Spanish as their primary language spoken and having a daughter between the ages of 11 and 17. IM experts recommend conducting between 15–20 interviews with a total sample in which ideally half of the participants have engaged in the target behavior and half of the participants have no, in order to reach saturation (Montaño & Kasprzyk, 2008). We conducted 34 in-depth interviews with Hispanic mothers of adolescent girls who had received 0, 1 or 2 doses of the HPV vaccine. Fifty-three percent (N=18) of participants had daughters who had not initiated the HPV vaccine series (i.e., 0 doses), 18% (N=6) had daughters who previously received one dose and 29% (N=10) participants had daughters who had received two doses of the vaccine.

Procedure

Research staff approached potential participants and provided them with a brief oral description of the study in Spanish. This description included the purpose of the study, eligibility criteria, the length of the interview, and the incentive amount. We then consented the eligible women who were interested in participating. The majority of mothers were interviewed at the recruitment sites, but when that was not possible, research staff conducted the interview at the participant's home. Participants first completed a brief demographic survey that included items about age, country of birth, marital status, and child's insurance status. Interviews took between 20 and 35 minutes to complete and participants were compensated $20 for their participation. All interviews were conducted and audio-recorded by bilingual female research assistants. All procedures were approved by the Institutional Review Board at UT Health (HSC-SPH-13-0594).

Interview Guide

The interview guide consisted of open-ended questions that were developed after an extensive review of existing literature in which the IM had been applied. Open-ended questions were designed to elicit participants' salient behavioral, normative, and control beliefs related to having their daughters initiate the HPV vaccine series. Two questions were employed to elicit salient experiential attitudes (i.e., positive and negative feelings about vaccinating) and two were used to elicit salient instrumental attitudes (i.e., positive and negative effects of vaccinating). Two open-ended questions were employed to elicit the salient normative beliefs (i.e., who would support vaccination and who would not support vaccination). The final two IM questions were employed to elicit salient control beliefs (i.e., barriers and facilitators to vaccinating).

The questions included:

1. Behavioral beliefs
   - Describe the positive feelings or emotions you felt/would feel about giving your daughter the first dose of the HPV vaccine.
   - Describe the negative feelings or emotions you felt/would feel about giving your daughter the first dose of the HPV vaccine
   - In your opinion, what are the positive effects of giving your daughter the first dose of the HPV vaccine?
   - In your opinion, what are the negative effects of giving your daughter the first dose of the HPV vaccine?
2. Normative beliefs
   - Who in your life supported/would support you giving your daughter the first dose of the HPV vaccine?
   - Who in your life did not support/would not support you giving your daughter the first dose of the HPV vaccine?
3. Control beliefs
   - What are some of the things that made it/would make it easier to give your daughter the first dose of the HPV vaccine?
   - What are some of the things that made it/would make it harder to give your daughter the first dose of the HPV vaccine?

Data Analysis

These data were collected and analyzed according to Middlestadt and colleagues' (Middlestadt, Bhattacharyya, Rosenbaum, Fishbein, & Shepherd, 1996) proposed methods. The interviews were transcribed verbatim by a Spanish-speaking transcriptionist. Content analysis (Hsieh, 2005) was employed to rank the beliefs mentioned and to select the most salient beliefs. The primary author read the transcripts and developed a list of themes for positive and negative experiential attitudes, positive and negative instrumental attitudes,

behavioral supporters and non-supporters and behavioral facilitators and barriers, respectively. Themes were created by assigning concepts to key words or phrases regarding a particular belief. Similar key words and phrases were then grouped and named with a particular theme. After developing these set of themes, independent coders, including the primary author, examined the text for the pre-determined themes. This strict coding procedure was preferred in order to keep the coders on task, given that we elicited specific types of beliefs (e.g. instrumental attitudes versus beliefs about supporters). The interview transcripts were then independently coded for themes by three coders, including the primary author. The interview transcripts were then independently coded for themes by three coders, including the primary author. Then, the frequencies and percentages for the theme counts were calculated in order to determine the majority responses for each construct. All discrepancies between the three coders' theme counts were examined, discussed and resolved by consensus. As recommended, (Ajzen, Icek, Fishbein, 1980) we retained the most salient beliefs which were defined as, at minimum, the top 75% of salient beliefs mentioned. This was calculated by dividing the number of times a belief was mentioned by the total number of beliefs mentioned.

Results

Demographics

The mean age of the women interviewed was 39.6 years (SD= 7.3) with 55.9% under the age of 40. The majority of participants were either married or living with a partner (64.8%), had not completed high school (82.4%) and were foreign born (97.1%). More specifically, 53% were born in Mexico, 17.7% were born in Honduras, 14.7% were born in El Salvador, 5.9% were born in Nicaragua, 2.9% were born in Guatemala, 2.9% were born in Bolivia and 2.9% were born in the United States. Regarding the daughters, 47.0% were between the ages of 11 and 12, 38.3% were between 13 and 14 years old and 14.7% were between 15 and 17. Twenty-nine percent of the daughters did not have health insurance coverage with the remaining daughters being covered by government funded or subsidized medical insurance. Over half had not received any doses of the HPV vaccine (53.0%); the remainder of the daughters had received either 1 or 2 doses (17.6% and 29.4% respectively). We present response percentages and translated sample quotes from the mothers in Table 1.

Behavioral Beliefs

Experiential attitudes-positive—The most salient positive feelings were: *secure* (34.2%), *good* (31.6%), *happy* (7.9%) and *relief* (7.9%). This comprised the top 81.6% of the total beliefs mentioned for this category. Mothers stated that they felt or would feel *secure* once their daughter began the vaccine series because vaccination would lead to a healthier future for her by preventing HPV. Mothers explained that they would feel *good*, *happy* or *relief* because they were ensuring that their daughter would have a healthier future and that she would be protected from HPV.

Experiential attitudes-negative—The most salient negative beliefs identified were: *no negative feelings* (33.3%), *concern* (21.2%), *fear* (18.2%) and *bad* (9.1%). This comprised 81.9% of the total beliefs mentioned for this category. Mothers who elaborated on their "no

negative feelings" response said that this was because the vaccine would protect their daughter and prevent HPV. However, those who responded that *concern* was a negative feeling associated with having their daughter initiate the vaccine series explained that this was due to the potential for short- and long-term side effects. Participants who elaborated on their response of *fear* said that it was due to potential vaccine side effects, low vaccine efficacy or a lack of knowledge about the vaccine. Those whose response was *bad* explained that this was due to the pain of the injection.

Instrumental attitudes-positive—The most salient positive effects mentioned were: for *prevention* (44.4%), *protection* (25.0%) and the *vaccine is good for her health* (11.1%). This comprised the 80.5% of the total beliefs mentioned for this category. The mothers explained that the vaccine would *prevent* "illnesses" such as HPV or *protect* their daughters from HPV. Mothers who responded that the *vaccine is good for her health* generally did not elaborate beyond the general belief that the vaccine was beneficial for her daughter's health.

Instrumental attitudes-negative—The most salient negative effects identified were: *no negative effects* (48.5%), *side effects* (21.2%), *sexual disinhibition* (9.1%) and the *vaccine is not effective* (9.1%). This comprised the 87.9% of the total beliefs mentioned for this category. Most mothers stated that having their daughters initiate the vaccine series would not result in any negative effects. This was followed by the response of vaccine side effects as a potential negative effect of the vaccine. Those responding that *sexual disinhibition* was a potential negative effect of vaccine initiation explained that the daughter might become sexually active and perhaps even have unprotected sex because she thought that she was protected from sexually transmitted diseases. The final belief was that low vaccine efficacy would result in infection with HPV despite vaccination.

Normative Beliefs

Supporters—The most salient supporters mentioned were: the *daughter's father* (36.7%), the *mother (participant herself (*32.7%), the *daughter* (6.1%) and the *daughter's maternal aunt* (6.1%). This comprised the 81.6% of the total beliefs mentioned for this category. The daughter's parents were by far the most important supporters of HPV vaccine initiation (69.4% combined). The daughter and the mother's sister (maternal aunt) were the next two supporters (12.2% combined).

Non-supporters—The most salient categories were: *no one* (48.5%), the *mother's friends* (12.1%), the *daughter* (9.1%), the *daughter's father* (6.1%) and the *daughter's maternal grandmother* (6.1%). This comprised 82.9% of the total beliefs mentioned for this category. The most salient response by far was *no one,* and many participants elaborated that this was because vaccinating a daughter was the mother's decision. Participants responding that their *friends* were not supporters explained that this was due to their belief that the vaccine is not good for her health and may have serious side effects. The *daughter* was a non-supporter due to the pain of the injection. Those who mentioned the *daughter's father* as a non-supporter explained that he did not agree, but either she was able to convince him or she was not concerned with his lack of support because it was ultimately her decision to make.

Control Beliefs

Facilitators—The most salient facilitators to vaccine initiation included: *health insurance* (37.8%), *cost of the vaccine* (15.6%), *transportation* (13.3%) and *vaccine information* (11.1%). This comprised 77.8% of the total beliefs for this category. The majority of responses were related to the affordability of the vaccine either through health insurance coverage or a subsidized cost (53.4%). Mothers having or being able to arrange transportation was the second most salient facilitator to vaccine series initiation followed by being provided with information about the vaccine which includes the benefits and dosing schedule.

Barriers—The most salient barriers to vaccine initiation were: *nothing* (32.5%), *cost of the vaccine* (15.0%), *health insurance* (15.0%), *clinic distance* (7.5%) and *making and keeping the vaccination appointment* (5.0%). This comprised 80.7% of the total beliefs for this category. The two most salient barriers were *no barriers* followed those related to the affordability of the vaccine (30.0%). Not having a clinic close by was also mentioned. The final barrier was the ability to make a vaccination appointment and to keep that appointment, especially during the school year.

Discussion

The current study is the first step toward building an IM-based behavioral model of HPV vaccine initiation among adolescent Hispanic girls. Our findings provide the content for intervention messages to increase HPV vaccine initiation. This is the first study, to our knowledge, to identify the salient beliefs of this population in regard to having their adolescent daughters initiate the HPV vaccine series.

Mothers' most salient positive experiential attitudes about having their daughters receive the first dose of the HPV vaccine (i.e., secure, good, happy and relief) were related to their beliefs that vaccinating was good for their daughters' health. The positive feelings also stemmed from a sense that they had a direct role in ensuring better health for their daughters. Research on general vaccine attitudes support the overall positive view about vaccines among parents of girls (Marlow, Waller, & Wardle, 2007). However, this is the first study to identify the positive feelings. These findings suggest that it is important to reinforce that giving their daughters that first vaccine dose will result in these positive feelings and emphasize how, by vaccinating, mothers are contributing to their daughters' future good health.

The most often mentioned negative experiential attitude mentioned included concern about possible side effects, fear that the vaccine would not work (vaccine efficacy) and fear about whether or not vaccinating was the right decision. Belief in the possibility of serious vaccine side effects (Moss, Reiter, & Brewer, 2015; Schuler & Coyne-Beasley, 2015) and doubts about vaccine efficacy (Brewer & Fazekas, 2007) are documented by existing research. However, this is the first study to identify the specific salient negative feelings associated with the possibility of side effects and low vaccine efficacy. These findings provide guidance regarding which salient negative feelings need to be addressed in interventions along with the reasons for these feelings.

Mothers' positive instrumental attitudes suggest that they believe that having their daughters initiate the HPV vaccine series will: prevent HPV, protect their daughters from HPV and that initiating the vaccine is good for their daughters' health. These findings indicate that mothers are familiar with the purpose of the HPV vaccine. Another possibility is that mothers' positive attitudes toward vaccines in general, which includes the belief that vaccines prevent illnesses and protect their children from illnesses and viruses, may extend to the HPV vaccine despite low knowledge. In fact, researchers have found that positive parental general vaccine attitudes are associated with greater acceptance of the HPV vaccine (Marlow et al., 2007). These findings provide information regarding how researchers should present the positive effects of the vaccine in interventions.

Side effects resulting from the first dose of the vaccine, sexual disinhibition and the vaccine not working (vaccine efficacy) were the potential negative effects mentioned most often. These findings are supported by the existing literature (Berenson & Rahman, 2012; Brewer & Fazekas, 2007; Kester, Zimet, Fortenberry, Kahn, & Shew, 2013) and suggest a need to identify mothers for whom these beliefs are salient and develop effective intervention strategies to address them. Our findings also suggest that negative effects of the vaccine may not be as salient as previously thought. Future research should further investigate the relative importance of the salient negative instrumental attitudes we identified.

Our findings highlight the salience of father's support or lack thereof and suggest the need for further investigation about the degree to which support versus non-support actually influences vaccine initiation. Existing research supports this finding (Hertweck et al., 2013). As such, interventions should provide mothers with skills to communicate the importance of vaccination to their daughters' fathers. The mother herself was the next most salient supporter, which is a novel finding. This suggests that interventions should reinforce the belief that mothers are their daughters' best and strongest health advocates. Our finding that the daughter is a salient supporter and non-supporter suggests that developing interventions for Hispanic adolescent girls to encourage HPV vaccine initiation might be effective because mothers seem to value their daughter's opinion. Mothers' friends as non-supporters, -has been found in previous studies (Hertweck et al., 2013). However, mothers' responses indicate that this lack of support did not or would not influence their decisions to vaccinate their daughters. Overall, it appears that Hispanic mothers of adolescent girls who have initiated or are considering initiating the HPV vaccine have a wide network of salient supporters and non-supporters. This opens the possibility for various strategies to encourage mothers to have their daughters receive the first dose of the vaccine.

The elicitation procedure allows us to approach each population and behavior without preconceived notions of the relevant beliefs that underlie the behavior under investigation. As such, we found that the role of the doctor was not salient in the minds of this population. Although existing research suggests that provider recommendation plays an important role in HPV vaccine initiation (Brewer & Fazekas, 2007; Rahman, Laz, McGrath, & Berenson, 2015; Rickert, Rehm, Aalsma, & Zimet, 2015) the doctor was mentioned by our participants only once (as a supporter). Future research should further explore the perceived role of the doctor in the minds of these mothers in order to determine how to incorporate them in interventions. One strategy might be to have the intervention make the role of the doctor as a

supporter of vaccination more salient so that these mothers will be encouraged to ask the doctor to vaccinate their daughter.

We found that being able to afford the vaccine (i.e., health insurance coverage and cost of the vaccine) was listed as the most salient facilitator and the second most salient barrier mentioned, after no barriers. Having health insurance that covers that cost of the vaccine or having the vaccine available for free or at a low cost have been found, in the past, to influence vaccination (Brewer & Fazekas, 2007). This indicates the need to continue to inform mothers that they can vaccinate their daughters at little or no cost through programs like *Vaccines for Children*. Transportation was listed as a salient facilitator but not a salient barrier. It is possible that since mothers live in an urban area, they have access to public transportation when private transportation is not available, which facilitates vaccine initiation. Existing research supports this finding (Tsui et al., 2013). On a related note, not having a clinic close by was a salient barrier to vaccine initiation. Previous research has found that proximity to clinics is related to vaccine compliance for other childhood vaccines (Fu, Cowan, McLaren, Engstrom, & Teach, 2009). Lacking information about the benefits was the final most salient barrier mentioned. This finding is supported by existing research (D. Kepka, Warner, Kinney, Spigarelli, & Mooney, 2014) and underscores the importance of providing vaccine information. Finally, researchers need to develop strategies and alternatives for mothers that will minimize the time children miss vaccination appointments, and they should also reinforce the importance of initiating the series so that mothers will prioritize vaccine uptake.

The Integrative Model has been successfully employed across cultures and behaviors to identify the relevant underlying behavioral beliefs. (Bai, Middlestadt, Peng, & Fly, 2009; Fishbein & Yzer, 2003; Fishbein, 2000; Kasprzyk, Montaño, & Fishbein, 1998; Montaño & Kasprzyk, 2008; Yzer, 2012) Consistent with this previous research, we found that the model is applicable to Spanish-speaking Hispanic mothers and HPV vaccination. It is precisely the elicitation interview that ensures that the model is applicable across cultures. The nature of the elicitation interview questions allow participants to separately consider the positive and negative aspects of engaging in a given behavior, thus providing a more comprehensive set of beliefs. For example, asking participants about facilitators and barriers separately informed us that both transportation (a potential facilitator) and clinic distance (a potential barrier) should be addressed in the subsequent intervention. If we had only asked about barriers, we would not have discovered that transportation is also important to address in this population. Further, knowing whether something or someone is viewed as: positive or negative, a supporter or non-supporter, and a facilitator or barrier provides valuable nuanced information regarding how each belief is viewed or classified by the population. This information is invaluable to developing culturally appropriate intervention messages.

The current findings are limited by several factors. To begin, we interviewed Spanish-speaking Hispanic mothers so our findings are limited to this population. We also limited our interviews to mothers and so our findings may not represent the beliefs of fathers. In addition, all of our participants resided in Texas with 53% of the sample reporting being born in Mexico; as such, our findings may not generalize to Hispanic mothers who live outside of Texas or to those who were born outside of Mexico and Central America. There is

also the possibility of interviewer bias because data were collected via one-on-one interviews. To minimize this bias, we provided extensive training to our interviewers and used a structured interview guide.

The current study identified the most salient beliefs associated with Spanish-speaking Hispanic mothers having their daughters receive the first dose of the HPV vaccine. Using the IM as our guiding theoretical framework, we describe the salient behavioral, normative and control beliefs that researchers should focus on reinforcing or changing in order to increase HPV vaccine initiation in this population. Our findings can inform intervention message content and can also inform the development of survey items to measure beliefs and build a model of the behavior. In sum, this study provides information that can assist in efforts to increase HPV vaccination among the adolescent Hispanic girls.

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Table 1

Behavioral, normative and control beliefs of the mothers regarding having their daughters initiate the HPV vaccine series.

BEHAVIORAL BELIEFS			
Experiential Attitudes			
Positive Feelings	**Frequency**	**Percent**	**Examples of Participant Responses**
Secure	13	34.2	*I felt more secure because I know that my daughter will be healthier in the future and that the vaccine will prevent that illness [HPV].*
Good	12	31.6	*I would feel good because I will be helping her to have a better future.*
Happy	3	7.9	*I would be happy because I know that I am taking care of my daughter, my little girl. I am protecting her.*
Relief	3	7.9	*I would feel a little more relieved because prevention is above everything. That and the love I have for my daughter.*
Negative Feelings	Frequency	Percent	Examples of Participant Responses
No negative feelings	11	33.3	*Negative feelings, no. When it comes to protecting our children, I do not believe that there is anything negative.*
Concern	7	21.2	*Yes, if there is the possibility of a side effect or if it can cause them to become sterile. These are the questions that concern me.*
Fear	6	18.2	*I would feel afraid about whether the vaccine works and if I am doing the right thing by vaccinating.*
Bad	3	9.1	*I only felt bad that my daughter did not want to be vaccinated because she did not want to have her arm poked with the injections.*
Instrumental Attitudes			
Positive Effects	Frequency	Percent	Examples of Participant Responses
Prevention	16	44.4	*I feel that [by vaccinating] I am preventing illness in my daughter.*
Protection	9	25.0	*Protection. I am protecting her against [HPV].*
Vaccine is good for her health	4	11.1	*I believe that the vaccine would be good for her [health].*
Negative Effects	Frequency	Percent	Examples of Participant Responses
No negative effects	16	48.5	*I do not believe that it has any negative effect.*
Side effects	7	21.2	*I am unsure of what her reaction to the vaccine will be because sometimes vaccines cause side effects.*
Sexual disinhibition	3	9.1	*After she is vaccinated she may want to get into other [sexual] things because she will think that with the vaccine she is protected.*
Vaccine is not effective	3	9.1	*The negative effect would be if I vaccinate my daughter and she still gets infected with HPV.*
NORMATIVE BELIEFS			
Supporters	Frequency	Percent	Examples of Participant Responses
Daughter's father	18	36.7	*My husband. I spoke with my husband and between the two of us we decided [to vaccinate her].*
Mother (participant)	16	32.7	*Me, as the mother.*
Daughter	3	6.1	*When they talked to my daughter about it, she told me that it was fine [to vaccinate her]. She agreed to receive [the HPV vaccine doses].*
Daughter's maternal aunt	3	6.1	*My sister recommended the vaccine to me when she had her daughters vaccinated [against HPV]. That is why I changed my opinion [to accept vaccination for my daughter].*
Non-supporters	Frequency	Percent	Examples of Participant Responses

BEHAVIORAL BELIEFS			
Experiential Attitudes			
Positive Feelings	**Frequency**	**Percent**	**Examples of Participant Responses**
No one	16	48.5	*No. No one.*
Mother's friends	4	12.1	*Several of my friends who have daughters who are my daughter's age. They scare me with their news stories. Like the one about a girl in Mexico who got sick [after being vaccinated] and another girl from somewhere in California who face became paralyzed [after receiving the vaccine] and so many other stories about bad reactions [to the vaccine]. So many stories that they invented that, truthfully, I no longer believe the stories are true.*
Daughter	3	9.1	*Only my daughter, because of the pain. She said that the injections were very painful.*
Daughter's father	2	6.1	*Her father [did not support her being vaccinated], but I am the one in charge.*
Daughter's maternal grandmother	2	6.1	*My mother, her grandmother. It is because she is someone with antiquated ideas and believes that vaccinating my daughter will make it more attractive for, in the future, to be more promiscuous.*
CONTROL BELIEFS			
Facilitators	Frequency	Percent	Examples of Participant Responses
Health insurance	17	37.8	*Having health insurance.*
Cost of the vaccine	7	15.6	*Well, the vaccine being a reasonable price or if it were free, that would be even better.*
Transportation	6	13.3	*Having transportation.*
Vaccine information	5	11.1	*The information they gave me about the benefits of the vaccine.*
Barriers	Frequency	Percent	Examples of Participant Responses
Nothing	13	32.5	*I did not find anything difficult.*
Cost of the vaccine	6	15.0	*Well, the cost of the vaccine, because there are three [that she needs].*
Health insurance	6	15.0	*My daughter not having health insurance.*
Clinic distance	3	7.5	*Not having a clinic close by.*
Making/keeping vaccination appointment	2	5.0	*It is sometimes difficult to make an appointment with the doctor and then once the day [of the appointment comes] and I do not have time to take her. This is what is making it difficult to vaccinate right now.*