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PROVIDER RECOMMENDATION OF HPV VACCINATION: BRIDGING THE
INTENTION-BEHAVIOR GAP

by

ERICA S. LANDIS
B.S. University of Central Florida, 2013

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Arts
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Major Professor: Lindsay Neuberger

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ABSTRACT

The present study, guided by preproduction formative research principles, employed in-depth interviews and a brief survey with pediatric healthcare providers (N=15) to investigate the consistency between behavioral intention to strongly recommend the HPV vaccine, and implementation of the actual behavior. Specifically, the Integrative Model of Behavioral Prediction (IMBP) was used as a framework to examine the impact of skills and environmental constraints on that behavioral intention-behavioral performance relationship. Results suggest providers intend to strongly recommend the HPV vaccine at a high level, but actually recommend the vaccine with a slightly lesser frequency. A thematic analysis of interview transcripts yielded a list of skills (e.g., tact, cultural competence) and environmental constraints (e.g., a lack of policy or school entry requirement, limited time designated for each patient) that contribute to that consistency gap. Additionally, healthcare providers indicated several preferences on training design (e.g., Continuing Medical Education course, delivered by medical and communication professionals) that could be used to inform future message construction. Suggestions for overcoming the environmental constraints reported by providers are presented, and implications for incorporating the emergent skills and preferences into training as a novel strategy for improving provider communication about the HPV vaccine outlined.

DEDICATION

To my Papa, Allan Feld, who taught me to tenaciously pursue my purpose and goals, strive to be distinguishable, and always have a burning desire to learn more. In your words, “I do, and most assuredly always will, love you”.

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CHAPTER ONE: INTRODUCTION

Human papillomavirus (HPV), the most common sexually transmitted infection, currently affects approximately 79 million individuals in the United States, and this number grows by about 14 million per year (Centers for Disease Control and Prevention [CDC], 2015a). The most prevalent aftereffects of HPV infection include genital warts and cervical cancer, which affect approximately 360,000 and 12,000 individuals each year respectively (CDC, 2015a). This pervasiveness is alarming due to the availability of three United States Food and Drug Administration (FDA) approved vaccines that largely protect against HPV infection and its manifestations. Because of this concern, a large amount of research has been generated with the aim of improving HPV vaccination coverage (e.g., Cohen & Head, 2013; Kim & Nan, 2015; Krieger & Sarge, 2013). Yet, rates for adolescent females aged 13 to 17 continues to remain low with only 57% receiving one dose of a three dose series, and only 38% receiving all three doses (CDC, 2015b). For females aged 13 to 15, Healthy People 2020 (Office of Disease Prevention and Health Promotion, 2014) outlines a national priority to reach 80% coverage for HPV vaccination, which is substantially higher than the current vaccine coverage for that target audience.

Although considerable scholarship has focused on persuading parents to vaccinate their children (Kennedy, Sapsis, Stokley, Curtis & Gust, 2011; Nan, Zhao & Briones, 2014; Valdez, Stewart, Tanjasari, Levy & Garza, 2015), little research has focused on improving provider communication as a means of increasing HPV vaccine coverage. This is a critical issue as provider recommendation of HPV vaccination is the most cited reason for vaccine acceptance among parents of adolescent females (Brewer & Fazekas, 2007; Feemster et al., 2014; Rahman,

Laz, McGrath & Berenson, 2015). The present study, guided by preproduction formative research principles (see Atkin & Freimuth, 2013), utilizes the Integrative Model of Behavioral Prediction (IMBP) as a theoretical framework to examine provider recommendation of HPV vaccination. Like the Theory of Planned Behavior, the IMBP (Fishbein, 2000) posits attitude, subjective norm, and perceived behavioral control are determinants of behavioral intention. Although behavioral intention is posited to precede behavior, meta-analyses suggest a significant consistency ‘gap’ between the two exists (Sheeran, 2002; Webb & Sheeran, 2006). The IMBP addresses this issue by calling attention to the influence of skills and environmental constraints on the relationship between behavioral intention and behavior.

While a large majority of providers report high intentions of communicating a strong HPV vaccine recommendation to parents (Kahn et al., 2007; Rahman et al., 2015; Roberto et al., 2011), a substantially lower number of providers report actually delivering a strong recommendation (Allison et al., 2016; Gilkey et al., 2015a; Gilkey et al., 2015b). Why? This is an issue of behavioral intention translating to behavior and the IMBP may provide a novel glimpse into this relationship. Thus, the focus of the present study is on the variables, including skills and environmental constraints as suggested by the IMBP, which influence the intention-behavior relationship. A multi-methodological approach involving in-depth interviews and a brief survey was utilized to examine provider communication about the HPV vaccine. Results from the study could inform the construction of a training aimed at improving provider recommendation of the HPV vaccine through building capacity among providers and addressing environmental constraints. In turn, this may increase HPV vaccine uptake among adolescent females.

CHAPTER TWO: LITERATURE REVIEW

This section includes a review of literature about human papillomavirus, provider recommendation, the integrative model of behavioral prediction, and formative research.

Human Papillomavirus

Human papillomavirus, a group of more than 150 related viruses, has emerged as a disease of concern due to high prevalence rates, despite the availability of preventative vaccines (CDC, 2015a). Currently, HPV affects approximately 79 million women and men in the United States, and this number grows by about 14 million per year (CDC, 2015a). While HPV is a self-limited virus, indicating the capacity of an individual's immune system to clear the virus naturally within two years, serious health consequences can result from infection. The name HPV is derived from the warts, or papilloma's, that nononcogenic, low risk HPV types can cause. Each year there are approximately 360,000 new cases of genital warts among women and men in the United States, and 90% of these cases are caused by HPV (CDC, 2015a; American Cancer Society [ACS], 2015). For women, HPV types that are oncogenic, high-risk infections can also cause such cancers as cervical cancer, vulvar cancer, vaginal cancer, anal cancer, and oropharyngeal cancer. Of these, cervical cancer stands as the most common threat to women infected with HPV since almost all of cervical cancer diagnoses begin as HPV infections (CDC, 2015a). In the United States, HPV-related cervical cancer affects over 12,000 women, and results in 4,000 deaths each year (ACS, 2015).

Transmission of Human Papillomavirus

Transmission of HPV, the most commonly sexually transmitted infection, occurs through skin-to-skin contact during vaginal, anal, or oral sex with an infected partner. Since HPV is often asymptomatic, detection is difficult and transmission of the virus is likely. That is, individuals do not always recognize they are infected until they receive an abnormal test result during cervical cancer screening, or until they develop genital warts or cancer, which may occur long after unknowingly infecting an intimate partner. As a result, the majority of sexually active individuals are expected to acquire HPV in their lifetime (CDC, 2015a). Because of this, the CDC recommends all girls and women age 9 to 26 receive a HPV vaccine. Additionally, because the vaccines are only effective in individuals who have not been previously exposed to the virus, the CDC recommends the target age of vaccination as 11 or 12 to effectively precede sexual activity. While the HPV vaccine is also approved for boys and men age 9 to 26, the present study focuses exclusively on females, as previous research suggests parents with adolescent sons and parents with adolescent daughters may be in different stages of the adoption process (Allen et al., 2010; Reiter, Mcree & Brewer, 2011).

Human Papillomavirus Vaccines

The United States FDA licensed three vaccines that prevent infection of common HPV types and the consequences associated with HPV infection: Cervarix, Gardasil, and Gardasil 9. Cervarix is a bivalent vaccine, indicating protection against two types of HPV, types 16 and 18, which are responsible for 70% of cervical cancer cases. Gardasil, a quadrivalent vaccine, protects against four types of HPV. In addition to the aforementioned types 16 and 18, Gardasil protects against HPV types 6 and 11. HPV types 6 and 11 cause approximately 90% of genital wart cases.

Lastly, Gardasil 9, a 9-valent vaccine, protects against HPV types 18, 31, 33, 45, 52, and 58 in addition to the above-mentioned types 6,11,16, and 18. HPV types 18, 31, 33, 45, 52, and 58 are responsible for 15% of cervical cancer cases collectively (CDC, 2015a). All three vaccines are administered in a three dose series over a six-month period, with the second dose administered one to two months post vaccine initiation, and the third dose administered six months after the first dose. For the vaccine to be effective, all three doses of the series must be completed. Recent studies following vaccinated individuals over the past ten years provides support for the vaccines long-lasting protection (CDC, 2015a). For example Markowitz and colleagues (2016) found a 64% decrease in HPV types 6, 11, 16 and 18 among females aged 14 to 19 years, a 34% decrease in HPV types 6, 11, 16 and 18 among females aged 20 to 24 years, and a significantly lower prevalence of HPV types 6, 11, 16, and 18 in vaccinated (2.1%) versus unvaccinated (16.9%) females aged 14 to 24 years.

Improving human papillomavirus vaccination coverage

Previous research aimed at improving vaccination rates has targeted a multitude of audiences including parents (Hofman et al., 2013; Krieger & Sarge, 2013; Nan et al., 2014; Valdez et al., 2015), young adults age 18 to 26 years (Cohen & Head, 2013; Kim & Nan, 2015; Wong, 2014), mothers (Kahn et al., 2009; Krieger, Kam, Katz & Roberto, 2011; Shafer, Cates, Diehl & Hartmann, 2011), and providers (Daley et al., 2010; Feemster, Winters, Fiks, Kinsman & Kahn, 2008; Roberto et al., 2011). Despite these efforts, vaccination rates remain low. According to the National Immunization Survey (CDC, 2015b), only 57% of females aged 13 to

17 years received at least one dose of the HPV vaccine. Additionally, only 38% received the entire three dose series of a vaccine.

Healthy people 2020 human papillomavirus vaccination goals

The increasing need for health efforts focused on improving HPV vaccination rates for adolescent females is demonstrated by its presence as an objective in the Healthy People 2020 agenda. Focused on females aged 13 to 15 years, this objective outlines a goal of 80% coverage by 2020, yet only 32.7% had completed a three dose series at the end of 2013 (Office of Disease Prevention and Health Promotion, 2014). This represents a mere four percent increase in coverage since 2010 (Office of Disease Prevention and Health Promotion, 2014), indicating the nation is not on track to meet this objective. In contrast, coverage estimates for tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap), and quadrivalent meningococcal conjugate (MenACWY) -- also recommended for individuals aged 11 to 12 years -- have reached 80.5% and 71.5%, respectively. This indicates an 80% coverage goal for HPV vaccination is attainable. To achieve this goal, results of previous studies suggest focusing on pediatric provider communication with parents to improve adolescent vaccination rates, because provider recommendation serves as one of the most salient predictors of vaccine uptake among parents of adolescent patients (Brewer & Fazekas, 2007; Dempsey et al., 2006; Feemster et al., 2014; Kahn et al., 2007; Opel et al., 2013; Rahman et al., 2015).

Provider Recommendation

Pediatric providers are consistently cited as a key factor and credible source in HPV vaccine decision-making among adolescents and their parents (Brewer & Fazekas, 2007; Daley

et al., 2006; Nan et al., 2014; Opel et al., 2013; Rahman et al., 2015; Zimet, Mays, & Fortenberry, 2000). In a systematic review of 28 studies related to predictors of HPV vaccine acceptability, Brewer & Fazekas (2007) found HPV vaccine acceptance significantly increased when parents received a direct recommendation for the vaccine from the provider. Additionally, in a cross-sectional analysis of a nationally representative sample of parents of 12- to 17-year old adolescent females, Lau and colleagues (2012) found provider recommendation led to a significantly higher percentage of vaccine acceptances. That is, 84% of parents accepted the HPV vaccine when a provider delivered a recommendation, whereas only 20% of parents accepted the HPV vaccine when a provider did not give a recommendation. Perhaps this is because adolescent females are twice as likely to visit a pediatric office than any other provider, and therefore view pediatric providers as a trusted source for health information (Daley et al., 2006; Kahn et al., 2007; Roberto et al., 2011; Zimet, Mays, Winston, 2000).

In addition to the sheer presence of a recommendation, findings from previous research suggests successful initiation of an HPV vaccine relies heavily on the strength, timing, and frequency of vaccine recommendation by the provider (Brewer & Fazekas, 2007; Dempsey et al., 2006; Feemster et al., 2014; Opel et al., 2013; Zimet, 2005). That is, vaccine acceptance is more likely when the provider delivers a strong recommendation, prioritizes HPV vaccine discussion, and persistently recommends the HPV vaccine. For example, after conducting interviews with thirty seven providers, Perkins and colleagues (2014) found those who self-reported a greater than 80% vaccine initiation rate gave a strong recommendation focused on emphasizing cancer prevention and approaching HPV vaccination as a coadministration with Tdap and MenACWY. In another study, Opel and colleagues (2013) analyzed 111 discussions about vaccination

between pediatric providers and parents, and found approximately half of parents who were initially resistant to vaccination ultimately accepted the vaccine if the provider remained persistent with a strong recommendation. Because provider recommendation has been found to greatly influence vaccine acceptance among parents and adolescent patients, there is a need to better understand, and identify ways for improving, the provider recommendation process (Feemster et al., 2014; Gilkey et al., 2015a; Gilkey et al., 2015b; Rahman et al., 2015; Zimet, 2005).

Integrative Model of Behavioral Prediction

Utilizing a theory-based approach assists in identifying key constructs applicable to understanding and improving the provider recommendation process. The most recent formulation of a reasoned action approach, the Integrative Model of Behavioral Prediction, will serve as the theoretical framework for the current research.

Reasoned Action Approaches

At the most basic level, reasoned action approaches explain and predict an individual's social behavior as consistent with their beliefs about performing the behavior (Fishbein, 2008). Two major theories concerning attitude-behavior relations include the theory of reasoned action (TRA; Fishbein & Ajzen, 1975) and the theory of planned behavior (TPB; Ajzen, 1985). Previous research supports the utility of reasoned action approaches as a framework for predicting a variety of social behaviors and intentions in the field of health communication (Anderson, Noar & Rogers, 2013; Andrews, Silk & Eneli, 2010; Boudewyns & Paquin, 2011; Kim & Nan, 2015; Park, Klein, Smith & Martell, 2009; Siegel, Alvaro, Lac, Crano & Dominick,

2008; Yun, Silk, Bowman, Neuberger & Atkin, 2009). In addition, these approaches are frequently applied to the context of HPV vaccination (Askelson et al., 2010; Britt, Collins, Wilson, Linnemeier & Englebert, 2015; Fisher, Kohut, Salisbury & Salvadori; Roberto et al., 2011). For example, Roberto and colleagues (2011) found the determinants of behavioral intention outlined in the TRA and TPB were all significant predictors of pediatricians' intention to encourage the parents of adolescent females to get their daughter's vaccinated.

Theory of reasoned action and theory of planned behavior

The TRA suggests beliefs pertaining to certain outcomes and the approval of referent others precede the development of attitude and subjective norm, which are determinants of an individual's intention and behavior. To expand upon this, the TPB includes a third construct predictive of behavioral intention, perceived behavioral control (PBC), which addresses control beliefs and accounts for the potential of social behaviors to include varying degrees of volitional control. In general, the combination of a favorable attitude and subjective norm, with a higher level of perceived behavioral control will result in a stronger intention to engage in a desired behavior (Ajzen, 1991). However, the relative importance for each determinant of intention varies across situations and behaviors. For example, Boudewyns & Paquin (2011) found college student's attitude toward STD testing to be the most salient predictor of behavioral intention whereas Bae (2008) found subjective norm and perceived behavioral control to best predict intention to register as a cornea donor.

Determinants of intention

Attitude, the first determinant of behavioral intention, encompasses an individual's favorable or unfavorable assessment of performing a behavior (Ajzen, 1991). Beliefs concerning the positive or negative expected outcome of a behavioral performance, or outcome beliefs, influence this sense of favorability. Individuals learn to form favorable or unfavorable attitudes based on the desirable or undesirable consequences associated with the behavior. When an individual associates a positive outcome with a behavior, a more favorable attitude is formed, and the likelihood of performing a behavior increases (Fishbein & Ajzen, 2010). On the other hand, a negative outcome evaluation leads to a more unfavorable attitude, which reduces the likelihood of behavioral performance. Attitude has been found to significantly influence a variety of health-related social behaviors including intention to utilize condoms (Fazekas, Senn & Ledgerwood, 2001), intention to comply with a food recall message (Freberg, 2013), college students intention to receive the H1N1 vaccine (Yang, 2015), fruit and vegetable consumption behavior (Della, DeJoy & Lance, 2009), intention to attend a prostate-specific antigen screening (Hevey et al., 2009), and pediatrician's intention to recommend HPV vaccination (Kahn et al., 2007; Roberto et al., 2011).

The second determinant of behavior, subjective norm, reflects the perceived social pressure associated with performing a behavior (Ajzen 1991; Ajzen, 2002). Subjective norm is a function of normative beliefs, or the probability important referent others approve or disapprove of a behavior, along with the individual's level of motivation to comply with referent others. In other words, if a provider holds positive subjective norms concerning recommending HPV vaccination to patients, they believe significant others think they should recommend vaccination

to patients. On the other hand, if providers hold negative subjective norms concerning recommending HPV vaccination to patients, they believe significant others think they should not recommend vaccination to patients. Subjective norms have been found to influence a range of health-related social behaviors and intentions including intention to become an organ donor (Stephenson et al., 2008), cancer risk information seeking behaviors (Hovick, Liang & Kahlor, 2014), use or nonuse of dental check ups (Anderson et al., 2013), and pediatrician's intention to communicate with parents about HPV vaccination (Roberto et al., 2011).

Perceived behavioral control (PBC), the third and final determinant of intention, refers to an individual's perception of the ease or difficulty associated with performing a behavior (Ajzen, 2002). These perceptions are shaped by control beliefs, which encompass the individual's level of perceived self-efficacy and perceived controllability. Perceived self-efficacy refers to whether or not an individual believes they are capable of carrying out a behavior, and perceived controllability reflects the level of command an individual feels they have in carrying out a behavior (Ajzen, 2002). In addition to predicting behavioral intention, the IMBP holds perceived behavioral control directly influences behavioral performance (Ajzen, 1991). That is, PBC can influence behavior via behavioral intention, or can influence behavior directly. PBC has been found to predict a number of behaviors and intentions in the realm of health including smoking cessation intentions of college students (Lee, 2006), the influence of media campaigns on physical activity (Paek, Oh & Hove, 2012), intention to quit smoking (Norman, Conner & Bell, 1999), and provider intention to recommend HPV vaccination (Roberto et al., 2011).

Behavioral intention

Behavioral intention indicates an individual's motivation to perform a behavior (Ajzen, 1991; Fishbein, 2008). In this sense, motivation encompasses the direction of the intention (i.e., to perform the behavior or not to perform the behavior), the amount of readiness an individual feels towards performing a behavior, and the amount of time and effort they are prepared to exert (Fishbein, 2000). Reasoned action approaches converge on the notion that behavioral intention is the key determinant and direct antecedent to behavioral performance (Ajzen, 1985; Albarracín, Johnson, Fishbein & Muellerleile, 2001; Fishbein & Ajzen, 1975).

Intention to behavior consistency gap

While intentions are often used to predict behavioral performance (Fazekas et al., 2001; Freberg, 2013; Lee, 2006; Norman et al., 1999; Stephenson et al., 2008; Yang, 2015), extant research indicates a discrepancy between forming a behavioral intention and successfully carrying out the intention (McEachan, Conner, Taylor, & Lawton, 2011; Sniehotta, Scholz, & Schwarzer, 2005). Further, meta-analyses suggest this 'gap' in consistency is not trivial (Sheeran, 2002; Webb & Sheeran, 2006). In a meta-analysis of 47 experimental tests of the intention-behavior relationship, Webb & Sheeran (2006) found only a small-to-medium change in behavior ($d=0.36$) resulting from a medium-to-large change in behavioral intention ($d=0.66$). This indicates a change in intention does not always translate into a change in behavior, and having strong intentions is necessary but not adequate for carrying out a behavior. In a meta-analysis of meta-analyses, Sheeran (2002) attributes the intention-behavior 'gap' to individuals with positive intentions who fail to act upon these intentions, and individuals with negative

intentions who behave in a way that contradicts these intentions. Perhaps individuals do not carry out their intended behavior because they do not have the competencies to adequately address the obstacles that present themselves during execution of the behavior.

In the context of HPV vaccination, a large majority of providers report high intentions of providing a strong recommendation (Kahn et al., 2007; Rahman et al., 2015; Roberto et al., 2011). Kahn and colleagues (2007) found 94% of practicing pediatrician's reported high intentions of recommending HPV vaccination to adolescent female patients. Similarly, Feemster and colleagues (2014) found 91% of pediatric providers reported high intentions of recommending HPV vaccination to female patients aged 11 to 18 years. However, a substantially lower number of providers report actually delivering a strong recommendation (Allison et al., 2016; Gilkey, Malo, Shah, Hall & Brewer, 2015) and a considerably lower number of patients report receiving a recommendation from their provider (Brewer et al., 2011; Feemster et al., 2014; Ylitalo, Lee & Mehta, 2013). Allison and colleagues (2016) found only 60% of pediatricians self-reported delivering a strong recommendation to parents with adolescent daughters. Additionally, findings from the National Immunization Survey- Teen show approximately 55% of adolescents aged 13 to 17 years report receiving a recommendation from a provider, which is markedly lower (Ylitalo et al., 2013). Comparably, Rahman and colleagues (2015) found only 59% of parents reported receiving a provider recommendation to immunize their adolescent girls against HPV.

This indicates a gap between provider intention to recommend HPV vaccination and the successful performance of that behavior. While there may be some reporting inaccuracies or accidental misrepresentations of recommendation level among providers, parents and young

adults, the intention to behavior gap in provider recommendation remains substantial. Therefore, instead of only targeting behavioral intention as the final recommended response, there is a need to assess behavior, and the variables that influence the relationship between intention and behavior. To gain a deeper understanding of how providers generally recommend the HPV vaccine to patients, the following research question is posed:

RQ 1: How do providers operationally recommend HPV vaccination to patients?

Skills and environmental constraints in the IMBP

Fishbein (2000) created the most recent formulation of the reasoned action approach, the Integrative Model of Behavioral Prediction (IMBP). Previous research supports the utility of the IMBP to explain diverse, health-related behaviors and intentions such as behaviors associated with preventing influenza outbreak on college campuses (Kim & Niederdeppe, 2013), cognitive predictors of intention to engage in healthy sleep behavior (Robbins & Niederdeppe, 2015), the impact of sexual media content on adolescent sexual behavior (Bleakely, Hennessy, Fishbein & Jordan, 2011), and attitude toward methamphetamine use (Richards, 2014).

Different from the TRA and TPB, the IMBP outlines the indirect influence of background variables in shaping the beliefs that precede attitude, subjective norm, and perceived behavioral control. Consequently, the IMBP can remain flexible to the unique needs of audiences varying in demographics, cultures, and contexts. In addition to recognizing the influence of background variables, the IMBP acknowledges the possible moderating effect of variables on the relationship between behavioral intention and behavior. While the direct antecedents to behavioral intention (i.e., attitude, subjective norm, PBC) and their associated beliefs remain the same, the IMBP

addresses the potential influence of skills and environmental constraints on the relationship between intention and behavior, which are of particular importance in the current study.

The IMPBP posits that, in addition to holding a strong intention, an individual has the greatest likelihood of performing a behavior when they acquire the skills necessary to perform a behavior, and remain free from environmental constraints that may impede behavior (Fishbein & Cappella, 2006; Fishbein, 2008). On the other hand, an individual is unlikely to perform a desired behavior when they hold a weak intention, lack the necessary proficiencies, or become hindered by contextual barriers. For example, in the context of HPV vaccination, a provider may not be able to produce a strong recommendation if they do not acquire the necessary competencies (i.e., skills), or feel limited by external obstacles (i.e., environmental constraints). While a number of studies acknowledge the influence of skills and environmental constraints on the relationship between intention and behavior (Frank et al., 2012; Richards, 2014; Robbins & Niederdeppe, 2015), research focusing on these constructs are limited. However, Fishbein and Yzer (2003) postulate communication efforts focused on building skills and altering environmental constraints produce a greater change in behavior than communication efforts focused solely on changing intentions. With this, the following research questions are raised:

RQ 2: What skills impact the relationship between a provider's intention to strongly recommend an HPV vaccine and the actual strong recommendation of an HPV vaccine?

RQ 3: What environmental constraints impact the relationship between a provider's intention to strongly recommend an HPV vaccine and the actual strong recommendation of an HPV vaccine?

Formative Research

Formative research assists health communication researchers gain a deeper understanding of their target audience and the nature of the behavior of interest (Andreasen, 1995; Fishbein & Cappella, 2006; Horner et al., 2008; Noar, 2006). Evaluations of key constructs such as perceptions, efficacy, attitudes, norms, and beliefs are conducted through a variety of methods including focus groups (Lederman & Stewart, 2003; Lin, Harris & Lagoe, 2014; Lindsey et al., 2007), in depth interviews (Horner et al., 2008; Ports, Reddy & Rameshbabu, 2013; Shafer et al., 2011), and surveys (Beaudoin, Thorson & Hong, 2006; Gray & Harrington, 2011). With this information, researchers can design messages informed by the target audience's preferences and choose the most favorable channel for message delivery (Atkin & Freimuth, 2013; Horner et al., 2008). Preproduction research is generally the first step in the formative evaluation process.

Preproduction Research

The preproduction stage of formative evaluation allows the researcher to identify and gain a thorough understanding of the target audience and target behavior prior to developing messages and employing training (Atkin & Freimuth, 2013). Identifying an audience segment allows designers to strategically prepare message content customized to the qualities and preferences specific to the intended audience. While specifying the behavior of focus, the researcher assesses the intended audiences level of openness to potential actions. After defining the audience and behavior, researchers utilize this stage to better understand the behavior of interest, and assess a number of variables key to designing an effective training including knowledge, attitudes, beliefs, priorities, motivations, and skills (Atkin & Freimuth, 2013; Noar, 2006; Shafer et al., 2011). Lastly, researchers utilize this phase to determine the channel usage

patterns and preferences of the intended audience (e.g., Shafer et al., 2011). Utilizing preproduction research improves the effectiveness of trainings since designers acquire more knowledge and a deeper understanding of how to produce quality messages that meet the preferences of the target audience. The following research question is proposed to gage the preferences of providers in terms of training source, channel, delivery style, content, and medium:

RQ 4: How should a training aimed at improving provider recommendation of HPV vaccination be designed?

The current study utilizes preproduction formative research strategies to gather data that could inform training for providers. Specifically, the data could suggest training should focus on improving provider recommendation by addressing the skills and environmental constraints that influence the relationship between providers intending to give a strong recommendation of the HPV vaccine, and providers actually giving a strong recommendation of the HPV vaccine. This training may be able to increase HPV vaccination coverage as a result.

CHAPTER THREE: METHODOLOGY

The current research used a multi-methodological approach to assess a diverse group of providers in the position to deliver HPV vaccination to adolescent females. Semi-structured informant interviews were utilized to gather information related to the provider recommendation process. To examine this data, interviews were transcribed, and thematic analysis principles (i.e., open coding, axial coding) were applied to the text. Further, a brief survey was employed to collect demographic information, and quantitatively assess behavioral intention and behavioral performance. SPSS was utilized to report descriptive statistics.

Participants

Participants ($N=15$) were practicing providers recruited from two private pediatric practices in the southeast. One of the practices solely serves patients with private health insurance, whereas the other practice serves patients with private and public health insurance. The sample included medical doctors (53.3%), physician assistants (26.7%), and nurse practitioners (20%). Key individuals were identified and selected based on their involvement with, and knowledge of, the HPV vaccine recommendation process (i.e., purposive sampling was utilized). Access to these providers was granted via gatekeepers at the respective locations. Participants included women (53.3%), and men (46.7%) who ranged in age from 30-64 years ($M= 46.73$, $SD= 11.06$). Of participants, 80% were White/Caucasian, but 13.3% self-identified as Asian/Pacific Islander, and 6.7% as Black/African American. The amount of time participants spent working in the medical field ranged from 1-42 years ($M=20.10$, $SD=10.87$). Inclusion

criteria required participants be at least 18 years of age and in the position to routinely recommend HPV vaccination to adolescent females.

Procedure

After receiving approval from the University of Central Florida Institutional Review Board for the protection of human subjects, individual semi-structured interviews were conducted. Each face-to-face interview lasted approximately 60 minutes and took place at the providers' location of choice. Most interviews occurred at the providers' place of practice, but some took place at nearby restaurants. Interviews were audiotaped for transcription purposes. Each participant was assigned a participant number to ensure confidentiality. After the researcher provided a brief description of the study, participants gave informed consent to partake in the research. During the interview, open-ended questions and planned follow-ups were utilized to elicit accounts related to recommending HPV vaccination. Participants were encouraged to respond openly and were given the opportunity to withdraw their participation or responses at any point. After the interview, participants were asked to complete a brief survey containing 14 closed ended items.

Measures

The present research utilized in depth interviews and a brief survey to gather qualitative and quantitative data related to provider recommendation of HPV vaccination.

Interview Schedule

The interview schedule was created to assess (a) how providers recommend HPV vaccination to patients (e.g., the type of information providers disclose during HPV vaccination

recommendation); (b) challenges providers encounter when discussing HPV vaccination with patients, and associated skills to address these challenges; (c) environmental constraints providers encounter that prevent a strong recommendation; and (d) providers' preferences on how the most valuable training aimed at improving provider recommendation of HPV vaccination should be designed (e.g., channel, format, and source preferences). Refer to Appendix A for the complete interview schedule.

Survey Measures

In addition to the interviews, participants completed a brief survey measuring demographics, behavioral intention, and behavior. Unless otherwise noted, all items were measured on a five-point Likert-type scale with higher numbers indicating higher levels of agreement (i.e., 1=strongly disagree to 5=strongly agree, 1=Never to 5=Always). Data was collected utilizing a paper survey. Refer to Appendix B for the complete survey.

Behavioral intention. Five items were used to measure the degree of motivation to perform a behavior ($M=4.87$, $SD = 0.35$, $\alpha= 1.00$). Survey items included statements such as, "Thinking about the future, I plan to encourage parents of adolescent females to get their children vaccinated," and "I intend to recommend HPV vaccination to parents of adolescent females".

Behavior. Three items were used to measure frequency of behavioral performance ($M= 4.02$, $SD= 0.50$, $\alpha= .91$). Survey items included statements such as, "In the past, I have recommended HPV vaccination to parents of adolescent female patients."

Data Analysis

Data collected from in-depth interviews were examined through a qualitative thematic analysis, and data collected from the survey was assessed via a quantitative method of analysis, utilizing SPSS software.

Qualitative Analysis

Interview transcripts were examined to provide qualitative assessments based on thematic analysis principles (LeCompte & Schensul, 1999; Lindlof & Taylor, 2011; Owen, 1984). First, audio recordings were transcribed for analysis. All verbal communication (i.e., spoken words) was put into written form; however, nonverbal communication (e.g., pauses, sighs, laughter) and nonverbal features (e.g., tone, inflection) were not included in the transcription. This process yielded 168 pages of transcripts. After transcribing, the researcher used line-by-line open coding to categorize the data based on research questions posed and the theoretical framework advanced (LeCompte & Schensul, 1999). Next, axial coding was utilized to explore how each code was related, and to develop thematic categories (N=19). Frequency and intensity were used as indicators of a category (Owen, 1984). That is, recurring and repetitive patterns across datasets, and strong lexical choices from participants were highlighted. An ongoing process of reading and comparing the data (i.e., constant comparative method) was utilized to ensure the categories were representative of the participants' responses (Lindlof & Taylor, 2011). Data collection and analysis continued until no new properties emerged in the data (i.e., saturation was met). This approach to analyzing interview transcripts qualitatively is widely used in health communication research (see De Brun, McCarthy, McKenzie & McGloin, 2015; Noland & Carmack, 2015;

Oetzel, Simpson, Berryman, Iti & Reddy, 2015; Rixon, Braaf, Williams, Liew & Manias, 2015; Scott, Martin, Stone & Brashers, 2011).

Quantitative Analysis

Data collected through paper surveys was analyzed using IBM SPSS software.

Descriptive statistics (i.e., means and standard deviations) are reported below.

CHAPTER FOUR: RESULTS

Results from the survey confirm a gap between behavioral intention to recommend an HPV vaccine ($M=4.87$, $SD = 0.35$), and implementing the actual behavior ($M= 4.02$, $SD= 0.50$) exists. That is, participants self-reported that they intended to strongly recommend the HPV vaccine at a high level, but actually recommend the vaccine with a slightly lesser frequency. This indicates providers are not always delivering the strong recommendation they intend to give. The qualitative analysis below provides insight into why that behavioral intention to behavior gap exists. Each research question will be addressed by identifying and explicating the themes that emerged in the data. Information about theme frequency and intensity is included, and exemplars from the transcripts are provided to illuminate emergent themes related to recommendation practices, skills, environmental constraints, and training preferences.

Provider Recommendation

Research question one asked how providers recommend HPV vaccination to patients. To elicit information related to this research question, participants were asked to describe what the process generally looks like when recommending HPV vaccination to female patients. The main themes that emerged were as follows: providers (a) adopt a participatory communication style when recommending the HPV vaccine, (b) present the HPV vaccine as an anti-cancer vaccine, (c) discuss HPV vaccination at the annual well visit, and (d) delay recommendation until a patient is 13 to 15 years old.

Adopt a Participatory Communication Style

Most participants reported using a participatory format when recommending HPV vaccination to patients. That is, participants give HPV vaccine decision-making autonomy to parents by recommending HPV vaccination in a collaborative manner (e.g., “these vaccines are recommended for your child today, what would you like to do?”). Participant 293, a medical doctor, described their philosophical beliefs about the role of a provider, and patient during HPV vaccine decision-making:

... I feel like it is our job is to present patients with the information, and the availability of this option and even present them with our recommendation and how we feel, but our job is not to force their hand to make this decision, but to make sure they are properly educated and to make sure that they have all of their questions answered.

While the majority of participants believe a participatory approach should be adopted, few participants reported initiating HPV vaccine discussion with a direct statement (e.g., “these are the vaccines your child will receive today”). However, these providers explained that they often transition to a participatory approach when a parent is hesitant about the vaccine.

Participant 321, a medical doctor, described one example of this:

I start off with providing them with a statement about getting vaccinated, trying to make it very clear where I stand in terms of my beliefs about the vaccine. And if that is successful, then we are done. But if it is not, and they want to discuss it, then I switch to a collaborative discussion where we discuss the vaccine together and I try to answer and address all of their questions and concerns so they can make an educated decision.

Present the HPV Vaccine as an Anti-Cancer Vaccine

The majority of participants reported they frame the HPV vaccine as an anti-cancer vaccine. That is, providers emphasize the protection for cancer when discussing the HPV vaccine with parents. Framing the HPV vaccine as an anti-cancer vaccine is a strategic attempt to

increase perceived threat about HPV and HPV-related cancers, and discourage parents from focusing on the vaccines association with sexual activity. Participant 157, a medical doctor, explained why framing the HPV vaccine as an anti-cancer vaccine is potentially more effective than framing it as a vaccine that prevents genital warts:

I think the single most effective thing to say is that it is an anti cancer vaccine. People understand cancer. The word cancer still puts fear into people's thoughts. And to say you have an anti cancer vaccine is still the best thing. Protection against genital warts, you know, in and of itself, I mean obviously it isn't a pleasant circumstance to have genital warts but I don't think, I think that thought doesn't really convince a patient one way or the other. I think it is the anti-cancer part that really does.

Participant 872, a physician assistant, reported framing the HPV vaccine as an anti-cancer vaccine in an attempt to take attention away from the association with sexual activity:

I leave the kind of, I leave the whole sex part out of it unless they bring it up. I don't associate it with sex at all. It is just a cancer prevention vaccine. I just focus on the cancer prevention. I have never once mentioned genital warts, or anal warts. Because, I feel like if you bring that up, forget it. You just completely lose them.

Discuss HPV Vaccination at the Well Visit

All participants reported discussing the HPV vaccine primarily at the patients' annual check-up. That is, HPV vaccine discussion is generally reserved for well visits only, and is not generally discussed during sick visits. Participant 923, a nurse practitioner, stated, "we typically, well, I typically discuss vaccines at the annual check up, so well visits. If a child has the flu and is coming in, I don't typically discuss it with them then." Likewise, Participant 231, a nurse practitioner, explained that the HPV vaccine is primarily discussed at the well visit, and rarely recommended at a sick visit:

Usually we are just discussing it at the well visit. If I remember to look at the vaccine schedule and the chart at a sick visit, we will do it every once and awhile, but typically it is just at the well visit.

Delay Recommendation until the 13- to 15-Year Old Visit

Several participants reported a high intention to strongly recommend the HPV vaccine at the 11- to 12-year old visit, but a greater likelihood of actually doing so when the patient is 13 to 15 years old. That is, providers reported a stronger likelihood of carrying out their intention to recommend the HPV vaccine when a patient is 13 to 15 years old versus when a patient is 11 to 12 years old. Participants explained it is easier to discuss HPV vaccination with parents when their child is 13 to 15 years old, as they are more open to the idea of their child becoming sexually active and at risk for contracting HPV. Participant 157, a medical doctor, explained the intention to deliver a strong recommendation at 11 to 12 years of age, but a greater likelihood of this occurring when the patient is 13 to 15 years of age:

Ideally, I would recommend it to be given to our middle school children particularly at age 11 when they are coming in for their 11-year-old shots anyhow. That would be the ideal situation. But practically, that is not what happens. You know, more often than not, I'm waiting until a little bit later, or early adolescence, or later, and at that time we are really trying to push it with the parents, the child, and uh giving them information about the pro's and con's about the vaccine...As a group, I'd say we are mostly strongly recommending it with the 13-, 14-, 15-year olds, that is the typical age group we are realistically doing it, or older if they haven't had it at that point. Because, you know, like I said, there are a number of difficulties that come with recommending vaccination that young, or, you know, really recommending HPV vaccination in general. So it is a little easier when they are a little older... but that is not to say, I don't want to say it always happens, that I always recommend at 13 to 15, because that certainly is not the case, but definitely more so then at 11 to 12. You know, easier said then done. Sometimes what I want to do, well that is not exactly what I actually do.

Participant 597, a physician assistant, explained that it is easier to deliver a stronger recommendation for the HPV vaccine when the patient enters high school, as parents are more open to acknowledging the risk factors:

I mean when a parent is looking at you and is adamant about not discussing the vaccine. It is kind of hard to continue to do so. Or if they are just completely convinced that there are horrendous side effects that outweigh the benefits, it is hard to convince them otherwise. I would say it becomes easier, at least in terms of the sexuality aspect, to discuss and more strongly recommend parents receive the shot when their child has started high school. It's a little harder to ignore the risk factors then.

Skills

Research question two asked what skills impact the relationship between a provider's intention to strongly recommend an HPV vaccine and the actual strong recommendation of an HPV vaccine. During the interview, questions including "what types of challenges do you encounter when discussing HPV vaccination with patients," and "can you think of any specific skills that could assist you in addressing these challenges" were posed to elicit accounts related to this research question. The skills most frequently described were as follows: (a) tact, (b) persistence, (c) persuasion, (d) refutation, and (e) cultural competence.

Tact

The majority of participants reported that discomfort transpires from discussing a vaccine associated with sexual activity. Specifically, participants described the challenge of facilitating a discussion with a parent who is resistant to accepting the idea that their child will one day engage in sexual activity. Thus, providers may benefit from acquiring skills related to discussing sensitive topics with parents, and specifically learning how to be tactful when introducing a parent to the idea of their child becoming a sexually active being. Participant 157, a medical doctor, succinctly described one example of this:

...having certainly done this for years now we realize there are a subset of patients who are actually taken aback that you are talking about this vaccine. You know, realizing that, that, you know, the eventuality of that child becoming sexually active seems a bit much

for some of our parents. And, they, really, they, you know the, the talking about it with them. They seem a little bit uncomfortable even just addressing the whole issue of sexuality of their child. Or the eventual sexuality of their child. And how do you help them get to that point?

Similarly, Participant 923, a nurse practitioner, described the difficulty associated with helping parents understand their child needs preventive care related to sexual health:

... most of the time I find that a lot of the barriers that families present, that parents present, is that they are not really ready to see their child move to a level that requires that kind of health care, so that you are not only dealing with the projection of their own philosophies and prejudices, attitude, but also their own resistances to moving to the next phase. And that is a lot.

Persistence

Every participant in the present study explained that they do not continue discussing HPV vaccination in the same visit when a parent initially shows disinclination or rejects the HPV vaccine. Therefore, it may be helpful for providers to learn how to be persistent with their recommendation (i.e., learn how to firmly continue vaccine discussion in spite of hesitance from parents). Participant 321, a medical doctor, recounted the conversation that follows HPV vaccine rejection:

... once they reject it, I tend to just move on and discuss it at the next office visit. I tell them that we are going to continue to discuss it at the next visit, and that they should not be annoyed that we have documentation that they declined the vaccine and that we are asking them something again about a vaccine that they already declined. And I let them know that that is something that is going to continue to be a discussion because we feel like it is important.

Relatedly, Participant 524, a medical doctor, described the process of ceasing vaccine discussion when a parent rejects the vaccine:

I read each person, and if they are very out of it and it is very obvious, then I don't push. I just say, welp, you know, it is certainly something to think about, I give them a brochure, and I have them realize that I am always available for discussion, they can always come

back, or something like that, and I make sure I let them know, yeah, at the next visit, I still would like to bring this up, you know, don't feel offended, this is something, this is our duty, we do feel like this is something that is worthy of, of discussion, and bringing it up again.

Persuasion

Most participants reported the difficulty associated with convincing a parent to accept the HPV vaccine, or changing their perspective about the HPV vaccine. Thus, participants feel providers may benefit from learning persuasion skills (i.e., the ability to reason with parents and ultimately convince them to accept the vaccine). Participant 293, a medical doctor, described feeling as though providers have a lack of influence over parental decision to accept the HPV vaccine or not:

I also think there is a general feeling among providers that if a patient comes in with their mind made up, or if they decide during the visit that they don't want the vaccine, that you just can't change their mind. I know I feel that way. I don't know if that is true, but it is a general feeling and I am sure, well, I know that plays a role in how, or really if, I continue to discuss the vaccine with patients.

Participant 495, a nurse practitioner, expressed similar feelings associated with the perceived inability to change the mind of a parent:

Um, I kind of feel like it doesn't really matter what I say about the vaccine. I feel like they are either really for it, or really against it. And a lot of times, you just can't really change their mind no matter what you try and say. And then there are just some people that will kind of just do what you say, and they say, "if it is recommended, then we will do it." And they do it. But, if people are, are either way, there is not really much of a chance for me to change their mind. I think. From what I have experienced at least.

Refutation

Participants reported they are often challenged with parents who decide to reject the HPV vaccine after gathering information about unverified side effects from sources such as friends,

family, or the Internet. Consequently, participants believe it is essential providers acquire skills related to refuting false information about HPV vaccination. Participant 872, a physician assistant, called attention to the challenge of trying to invalidate false information and reeducate parents:

The biggest challenge with Gardasil, I think, is misinformation on the Internet. Um, or, I have a friend who told me, my daughter, you know, her daughter had a metal allergy and blah, blah, blah, it is all just misinformation. Um, people Google things and they get the wacky vaccine people who don't want to vaccinate, and there have been people who have died from Gardasil, and, you know, so that's the biggest challenge. It is trying to reeducate them, if they even give you the opportunity to do so, that what they read or what they heard is not correct and that there is no evidence to back up what they heard. I had a patient just recently, who actually their parent was in the medical field, but the parent did not want to give her child the vaccine because she heard from a friend that the vaccine had nickel in it and she thought her daughter would have an allergic reaction to the nickel and that if she had an allergic reaction she would have a debilitating consequence.

Participant 495, a nurse practitioner, provided another example of an interaction with a patient who believed HPV vaccination caused a side effect not confirmed by the Vaccine Adverse Event Reporting System:

I think another big one is misinformation that people pick up either from the Internet, or from family and friends. That is a huge one. People will read something, or hear something, and it doesn't matter where it came from, they will believe everything that is said. And it is scary because a lot of the information on the Internet is made to reflect credible research, but it isn't. And people don't recognize that. And it is hard to make them recognize that... I had someone recently, I don't remember what it was, it was something, bizarre, and they said "oh, I saw on Facebook that if you get this vaccine, and you have been exposed to, to Lyme disease, then it will make it flare up.

Cultural Competence

A number of participants described they regularly encounter parents who refuse the HPV vaccine as a result of the beliefs and values associated with their cultural identity. Accordingly, participants feel it is important that providers learn to be culturally aware when discussing HPV

vaccination with patients of diverse cultural groups. That is, participants believe providers may benefit from learning skills related to recognizing and understanding the values, beliefs, and perceptions of patients, and incorporating this into their recommendation process. Participant 686, a medical doctor, discussed the impact culture has on HPV vaccine discussion and acceptance:

I would also say culture plays a big role in HPV vaccination discussion and acceptance. I have some people, um, I can think of a situation right off the bat, where she flat out refused it, and told me in her culture girls do not have sexual activity until they are married, but what she did not know was that her daughter was already sexually active. So, you know, there are definitely those kind of barriers where the girl didn't feel comfortable talking to her mom about it because of their cultural beliefs, and, you know, then I have to figure out how to talk the parent into getting it, and go through it. So there are definitely, definitely cultural barriers.

Similarly, Participant 293, a medical doctor, described the need for providers to learn how to present information in a way that reflects their patients' cultural background:

... I think there are some cultures where sexual activity is just viewed as something that is not existent in a teenage population, and therefore something that does not need to be addressed in terms of a vaccine that is directed at sexual health...If we can learn how to incorporate our patients' culture into the way the vaccine is presented, I think we would see huge jumps in acceptance among the populations that typically reject the vaccine.

Environmental Constraints

Research question three asked what environmental constraints impact the relationship between a provider's intention to strongly recommend an HPV vaccine and the actual strong recommendation of an HPV vaccine. To evoke accounts related to this research question, participants were asked "what types of environmental constraints, do you encounter when discussing HPV vaccination with patients." The environmental constraints most frequently described by participants were as follows: (a) HPV vaccination is voluntary, (b) there is limited

time designated for each patient, (c) the HPV vaccine protects against a virus that takes time to manifest, and (d) multiple vaccines are given at the 11- to 12-year old visit.

HPV Vaccination is Voluntary

Most participants reported parents often reject the HPV vaccine because there is no requirement by law, or requirement for school entry in the state in which they practice.

Therefore, participants believe vaccine coverage may improve if a law or school entry policy regarding HPV vaccination was implemented. Participant 157, a Medical Doctor, described HPV vaccination as analogous to adults obtaining a voluntary, and recommended, Tetanus booster:

Well that is a tremendous one. Because, you know, certainly, having the government say you have to get a certain vaccine, it makes our job a lot easier in the sense that hey listen, it's the law, you need to get it. Would all of my children come in at age 11 to get a tetanus booster if they didn't have to have it by law? Probably not. They would mosey on in. The perfect example is, I mean, adults are supposed to get a tetanus and pertussis booster every ten years, but if you ask most adults, they can't remember the last time they had one. They wait until they step on a nail or something, and then they come in and get the vaccine.

Similarly, Participant 189, a Medical Doctor, expressed that a school entry policy would be the key to improving vaccine coverage:

And since it is not mandatory for them to get at school, well that mixed with the fact that their child is not sexually active, well then they just think that they don't need to get it. I would much rather it be mandatory at school, that would be the push we need to get vaccine rates up. If we could get the school to make it a mandatory vaccine, that would make life much easier for us.

Limited Time Designated for Each Patient

A number of participants described that the limited amount of time designated for each patient often makes it difficult to deliver a strong recommendation. That is, because providers must cover a number of matters during an office visit, oftentimes there is not a sufficient amount

of time to adequately discuss HPV vaccination. Participant 923, a Nurse Practitioner, detailed the topics providers must cover during each office visit:

The, um, middle school and adolescent visits are jammed pack with other things. You know, maybe if we had a little more time...we have started integrating some of the tools that have been put out recently like the CRAFFT tool which is used to assess alcohol and other drug use disorders, and the tool to assess for adolescent, um, the PHQ9 and there is a PHQ13 to, uh, to assess for anxiety and depression. Um, and then at the 16 year old visit, we also introduce some information about Meningitis B. Uh, we try to have an alone time between the provider and the teenager, as well as a group visit including the parent. During that alone time with the patient we like to discuss sexuality and sex education, review the PHQ9 and PHQ13 and to, um, discuss anything that may be on that patients mind. And that really, really varies based on demographics. So, you know, that is a jammed pack visit.

Correspondingly, Participant 597, a Physician Assistant, discussed how the amount of time allocated to each patient affects the recommendation process:

I, to be realistic, I mean to be real, when we, when we have a patient coming in, there are so many things to talk about that it is difficult to find the time to show them a media presentation, a PowerPoint presentation on here are all of the different diseases, and pictures of the things that could happen to you if you get HPV and don't get the vaccine. Unfortunately we can't take the time to do that. What we have time to say is limited.

Protecting Against a Virus that Takes Time to Manifest

Several participants explained that parents often lack the foresight needed to recognize how this vaccine can protect their daughter in her adult life. That is, parents often struggle with understanding the need for vaccination as the median age of diagnosis for the most common, life-threatening HPV-related consequence, cervical cancer, is 48 years (CDC, 2015a). Participant 686, a Medical Doctor, expressed that the distant protection of HPV vaccination often leads to parents rejecting the vaccine:

I think it is also hard because the protection, or what the immunization can protect for, is not immediate for Gardasil like it is for other vaccines. You know. If you don't get the meningitis vaccine when you are supposed to, it is easy to imagine your child picking up

meningitis. For parents with children that are 11 or 12 years old, or really for any parent, it is really hard to think about your child having cervical cancer. So instead of focusing on that aspect of the vaccine, it is really easy to focus on the issues you have with it.

Likewise, Participant 524, a Medical Doctor, explained parents frequently lack the forethought to recognize the importance of vaccinating their daughter:

I think it is mostly the parents who are worried about some unknown side effect, or, um, they just don't want anything that, that they would consider unnatural in their child's body. Um, without necessarily having, having the foresight to, you know, look 20, 30, 40 years down the line, realizing their child has just been diagnosed with cervical cancer, and then feeling guilty that there are three shots that could have prevented it.

Multiple Vaccines Given at the 11- to 12-Year Old Visit

The majority of participants expressed that parents often forgo the HPV vaccine at the 11- to 12-year old visit because their child does not want three vaccines at one time. That is, because their child receives the tDap and MenACWY vaccines at the 11- to 12-year old visit, they are hesitant to accept a third vaccine. Participant 293, a Medical Doctor expressed the challenge of administering multiple vaccines in one visit and explained how parents often react to potentially receiving multiple vaccines:

Well, I think at 11, one of the big challenges is that we already do two standard vaccines. And so it is the third vaccine of the visit, potentially the fourth if you are doing like a Hepatitis A, so, number of vaccines given to the child at that visit is definitely a challenge I come across. Most people will say, "okay, it is good to think about it, but I really don't want number three.

Similarly, Participant 741, a Physician Assistant, explained that parents often reject vaccination because their child expresses resistance to receiving multiple vaccines in one visit:

But then, but I have some parents that want their child to get it, and their child didn't want it because the child just didn't want another shot. They didn't care what it was for. They just didn't want another shot. So the parent doesn't push it, and they just don't get the shot.

Training Design

Research question four asked how training aimed at improving provider recommendation of HPV vaccination should be designed. To prompt preferences related to this research question, participants were asked, “how would the most valuable training on HPV vaccine recommendation look,” and were probed about preferences related to content, source, medium, length, and format. Training preferences most frequently described by participants were as follows: the training should (a) be available as an online Continuing Medical Education (CME) course, (b) involve a collaboration among specialties, (c) last approximately 30 minutes, (d) be delivered by an engaging presenter, (e) cover specific information related to the HPV vaccine recommendation process, and (f) contain a face-to-face component.

CME Course

The majority of participants expressed interest in training aimed at improving provider recommendation of HPV vaccination to be available as an online CME course. That is, participants believe training in the form of an online CME is more conducive to the schedule of providers, and providers may be more engaged with the training if they receive continuing medical education credit. Participant 394, a medical doctor, described CME requirements, and why it may be advantageous to create a CME course:

Well, we are expected to have 40 hours of CME to renew our licenses every two-year cycle. That’s the kind of thing, CME’s are sponsored and can cover anything that would be considered primary care. And this is definitely something that could fall into that realm. You know, improving the recommendation process. So we could, you know, physicians are more likely to put the time into something if they’re getting something out of it.

Additionally, Participant 872, a physician assistant, explained that providers might be more willing to complete training if it is available as an online CME:

I think the training would need to be online. I think that would be the most convenient because people don't want to go anywhere anymore. So if there was some sort of online course, or an online, even a CME. You know, providers need to get CME credit, and since it may be difficult to get them to do the training on their own will, they may be more willing to do it for CME credit. So maybe a CME course about discussing Gardasil to patients.

Collaboration Among Specialties

Several participants reported a preference for training aimed at improving provider recommendation of HPV vaccination to be a collaborative effort among various professionals. Specifically, participants frequently suggested an effective training would be best delivered by a combination of pediatricians, gynecologists, and communication scholars. Participant 157, a medical doctor, expressed a preference for medical professionals and communication professionals to deliver the training together:

I think it would need to be a collaboration between a medical person, so that could be either an MD, DO, PhD, and someone who specializes in communication, but not marketing and public relations, which are the people we are typically seeing.

Participant 321, a medical doctor, brought attention to the importance of including a pediatrician and a gynecologist in the training, and stated “I think it could be a collaborative effort among various different professionals, but I do think it should include a pediatrician, and, uh, maybe even a gynecologist.”

Approximately 30 Minutes

A number of participants prefer for training aimed at improving provider recommendation of HPV vaccination to last approximately 30 minutes. That is, participants

believe 30 minutes is the prime amount of time for keeping providers engaged, and accommodating providers' busy schedules. Participant 524, a medical doctor, expressed preferences related to the length of an effective training:

I would say around 30 minutes. I think it depends how comprehensive the training is, and what it includes. But I think 30 minutes is probably a substantial amount of time. I would say no longer than 60 minutes, though.

Similarly, Participant 872, a physician assistant, suggested that "based on a provider's schedule, I would not say any longer than about 30 minutes. I think it could be very quick, concise, and to the point, and I think it could be done in a 30 minute time period."

Engaging Presenter

Most participants believe an effective training aimed at improving provider recommendation of HPV vaccination needs to include an engaging presenter. That is, participants frequently reported that having a dynamic presenter is a key element for ensuring a memorable, and impactful training. When recalling the most notable training ever received, Participant 293, a medical doctor, described the power of an engaging presenter:

I would probably think back to medical school training, and not related to HPV vaccination because that was before. And, you know, I would probably say that it has to do with the people who actually presented and their style of presentation. And, when you have the right person doing a presentation, they can either draw an audience in, or they can be just up there doing a presentation. And, I can remember the specific presentation I am thinking of, there was a person who had that dynamic. They could connect with each person in the audience on an individual level, even though they weren't talking to us individually, you really felt like that. And that was probably the most impactful training experience I can recall, because the presenter was just very captivating.

Relatedly, Participant 231, a nurse practitioner, included an engaging speaker when defining the characteristics of an impactful training:

... Um, and I think definitely having a presenter or a speaker who is engaging and doesn't put the audience to sleep. And really someone who makes it feel like they are speaking to you, even in a group of many people, you feel like they are speaking to you and really understand your experience. Those would be the three main things I would say that make a really impactful training.

Cover Specific Information Related to the HPV Vaccine Recommendation Process

A number of participants identified specific information related to the HPV vaccine recommendation process that training aimed at improving provider recommendation should include. That is, participants suggested providing a brief overview of HPV and the HPV vaccine, offering examples of how to address common parental concerns and side effect myths, and showing “real-life examples” of providers interacting with standardized patients. Participant 686, a medical doctor, provides a concrete example of this:

I think the CME could include a review of the virus itself and what the virus protects for, information about the side effects as well as information disproving common side effect concerns, maybe videos of a mock patient and provider interaction. It could include ways of approaching different types of parents we see, and successful ways of addressing the common concerns we see.

Likewise, Participant 408, a physician assistant, listed the same specific information the training should cover:

... I think maybe a blurb containing five points, maybe, maybe a provider actually educating a patient. Like a role-play. Like what is the best way to present the vaccine. So we can see how to actually do it. It is one thing to hear “say this” or “say that”, but it is another to see firsthand how a situation plays out. I think it may also be helpful to review some basic information related to HPV and Gardasil, as well as strategies for addressing common parental concerns and misinformation that is going around.

Face-to-Face Component

Many participants prefer for training aimed at improving provider recommendation of HPV vaccination to include a face-to-face component. That is, participants described that while

it may not be the most convenient or primary medium for delivering the training, including an additional, face-to-face component may prove to be an impactful method for learning. Participant 686, a medical doctor, described their preference for face-to-face trainings and the need to incorporate a face-to-face component into training:

... I like to go to in person things, um, so whether it is a conference or a, um, like grand rounds at a hospital or something. I actually like to do things in person. So, yes, I do a lot of them on the computer, and they are easier for most people. But I actually like to be there in person and learn in that capacity. Not that that happens all the time, but, but it makes it a little more memorable when you are there in person... So maybe adding an additional piece, um, to an online training where a presenter comes to the practice and, you know, delivers a practical version of the online training, or materials are provided to practices so they can do exercises with each other.

Relatedly, Participant 417, a medical doctor, expressed that a face-to-face training is the ideal medium, and could potentially be included as an additional component to an online training:

Face-to-face is usually the best method of delivering a training. But that is hard because physicians are busy and schedules do not always allow for face-to-face trainings to occur. But maybe it is a second half, or follow up to the training where the practice or group of physicians are getting together to discuss it.

CHAPTER FIVE: DISCUSSION

The current study suggests healthcare providers intend to strongly recommend the HPV vaccine to their young female patients, but are not always successful in doing so. Interviews reveal there are practical impediments to these intended actions; many of these map directly on to theoretical constructs of interest. Findings from this work may help inform theory as well as provide concrete practical recommendations. Thus, this section proceeds by discussing theoretical implications, practical implications, limitations, and avenues for future research.

Theoretical Implications

The Integrative Model of Behavioral Prediction (IMBP) proposes behavioral intention is a function of attitude, subjective norm, and perceived behavioral control (Fishbein, 2000; Fishbein, 2008). Further, the model calls attention to the impact of skills and environmental constraints on the relationship between behavioral intention and behavior (Fishbein, 2000; Fishbein & Cappella, 2006). That is, the model predicts an individual is likely to act on their intention if they acquire necessary abilities related to performing the behavior, and remain free from contextual barriers that impede behavioral performance (Fishbein & Cappella, 2006; Fishbein, 2008). The current study offers support for applying IMBP constructs (i.e., skills, environmental constraints) to understanding the relationship between behavioral intention and behavioral performance. Participants in the present study reported high intentions of delivering a strong recommendation for the HPV vaccine, but explained that this intention does not always come to fruition due to a lack of skills needed to provide a strong recommendation, and the

presence of environmental constraints that do not promote a setting conducive to delivering a strong recommendation.

While a number of studies use the IMBP as a framework for assessing behavioral intention (see Frank et al., 2012; Richards, 2014; Robbins & Niederdeppe, 2015), limited studies utilize the IMBP to explore the impact of skills and environmental constraints on implementing an intention. This underutilization is important to note given the behavioral intention to behavioral performance consistency gap is substantial (Sheeran, 2002; Webb & Sheeran, 2006). The current study illuminates the importance of addressing skills and environmental constraints, and using the IMBP to explain the relationship between behavioral intention and carrying out the subsequent behavior. It is essential to continue explicating and operationalizing these post-intentional variables (i.e., skills, environmental constraints), as they may help researchers gain a better understanding of the behavioral intention to behavioral performance consistency gap in various contexts.

Practical Implications

Findings from the present study have diverse implications for improving provider recommendation about HPV vaccination. First, it may be beneficial to develop a skills training for healthcare providers that targets skills pertinent to communicating a strong HPV vaccine recommendation to parents. Second, it may be useful to develop tactics that assist providers with overcoming environmental constraints that hinder the delivery of a strong recommendation. Third, it may be valuable to construct training for healthcare providers that reflects their design preferences.

Skills

Developing critical skills via training may enable providers to consistently deliver the strong recommendation they intend to deliver, despite challenging circumstances. Further, this training may be most effective if it targets the skills (i.e., tact, persistence, persuasion, refutation, cultural competence) providers most frequently reported as necessary to implementing a strong recommendation.

Providers find they are not adequately prepared to recommend the HPV vaccine to parents who are resistant to accepting the idea that their child will one day engage in sexual activity. That is, when a parent adamantly rejects vaccine discussion because they are taken aback that a vaccine associated with sexual activity would be discussed, providers feel they cannot sensitively facilitate a discussion about the eventual sexuality of their child. As a result, the provider tends to cease vaccine discussion without communicating a strong recommendation to the parent. This is a critical issue, as participants reported parents most often reject the vaccine because they do not believe their child is sexually active, or will be in the near future. Therefore, while it may seem sensible to advise providers to approach the HPV vaccine in ways similar to other adolescent immunizations (i.e., tDap, MenACWY), the vaccine's association with sexual activity is a challenge that should be considered. Further, it is important to note that while providers may not ever carry out their intended recommendation, they reported a greater likelihood of doing so when a patient is 13 to 15 years old as opposed to 11 to 12 years old. This delay in recommendation is attributed to waiting until the parent shows signs of openness to the idea of their child becoming sexually active and at risk for contracting HPV, and indicates that the behavioral intention to behavior consistency gap may be most prevalent in the context of providers recommending the HPV vaccine to parents of adolescent females aged 11 to 12 years.

Thus, training providers how to be tactful when initiating a conversation with parents about the HPV vaccine, and the potential of their child becoming sexually active, may be beneficial and lead to stronger, more frequent and more on time recommendations from providers.

When providers offer an initial recommendation and are faced with a vaccine hesitant parent, oftentimes they are reluctant to continue pushing the recommendation during that visit because they are fearful of offending the parent and irreconcilably damaging their rapport. The strong, initial recommendation a provider intended to deliver is then postponed to a future visit; even then, it is not guaranteed the provider will deliver a strong recommendation, especially if the provider anticipates resistance from the parent. This may be a missed opportunity for vaccinating patients, as previous research shows 50% of parents who initially reject a childhood vaccine recommendation will ultimately accept it if the provider remains persistent with a strong recommendation (Opel et al., 2013). Therefore, it may be valuable to train providers how to continue the recommendation process in a respectable manner when a parent displays hesitance towards the vaccine.

Participants frequently reported a need to understand various cultural values, beliefs, and perceptions and incorporate this into the recommendation process. However, participants do not feel equipped to do so due to a lack of cultural competence training in medical school, and continuing medical education courses. As a result, cultural identity is either inadvertently disregarded and providers recommend vaccination in the same manner to each parent, or cultural identity is used as reasoning to not recommend the vaccine at all. That is, providers either deliver a recommendation that is not well-received by the parent because it does not reflect their fundamental values, beliefs, and perceptions, or providers do not deliver a recommendation at

all. Training providers on cultural competence, and how to incorporate an individuals' cultural identity into the HPV vaccine recommendation process may result in stronger and more frequent recommendations that are tailored to the values, beliefs, and perceptions of the parents.

Environmental Constraints

Developing strategies and implementing policies that assist providers in overcoming the environmental constraints that inhibit them from delivering a strong recommendation may be advantageous. A major barrier healthcare providers face that makes delivering a strong, efficacious recommendation difficult is the lack of HPV vaccine requirement by law, or requirement for school entry in the state in which they practice. Parents often deny the HPV vaccine immediately because the vaccine is optional, while several others (e.g., tDap, MenACWY) are required for school entry. That is, when a parent finds out the vaccine is not required, they will quickly reject the vaccine and vaccine discussion, even if they do not strongly oppose the vaccine, or know what the vaccine protects for. This makes delivering a recommendation difficult, as providers do not feel they are afforded the opportunity to enter into a meaningful discussion on the topic. Thus, while it may again seem prudent to encourage providers to follow similar recommendation procedures with the HPV vaccine as they do with tDap and MenACWY, this may not be an effective suggestion. It is also important to note that because of the voluntary nature of the vaccine, the majority of participants believe it is morally right to adopt a participatory communication style when recommending HPV vaccination to parents. While this may vary from practice to practice (i.e., other providers may utilize a more direct approach), there are ethical components on both sides (e.g., patients should not be given an

option because getting vaccinated is best for their health, patients should be given the autonomy to make decisions about their health) that should be considered.

Another major barrier that prevents providers from giving a strong recommendation is the limited amount of time allotted for each patient. That is, providers in this sample reported having approximately 15 minutes per patient, which they do not feel is sufficient time to recommend and discuss at length the HPV vaccine in addition to all other health matters (e.g., physical exam, disorder assessment, diet and exercise discussion) covered at the younger adolescent and adolescent visits (i.e., when the patient is 11 to 17 years old). While it may not be possible to extend the amount of time a provider spends with a patient, a solution to this barrier may be more strategic use of the time a patient spends alone in the waiting room or examination room, which participants reported typically ranges from 2 to 20 minutes. Perhaps this time could be used to show a brief video about HPV and the HPV vaccine that is tailored to the specific demographic of the family.

Training Design

Developing training aimed at improving provider recommendation using preferences actually reported by providers, instead of constructing training based on conceptions of what providers may desire could be particularly useful and effective. Participants reported certain information they would like to see incorporated into training on recommending the HPV vaccine. Most notably, providers would like to be given examples of how to address common parental concerns and misinformation about side effects, and then shown “real-life examples” of a provider interacting with a standardized patient. This is important because providers explained that medical trainings are often “lecture style,” where a presenter simply delivers information.

However, this method of training makes it difficult for providers to envision circumstances where they would utilize the learned information. Thus, incorporating parent-provider scenarios may increase the effectiveness of a training, as providers may be able to better comprehend the information they learn and become more prepared to implement the information in real-life encounters.

Providers in the present study reported that an engaging presenter is a key element to ensuring a memorable and effective training. However, participants explained that this necessary component is often missing from trainings in the medical field, particularly when the training is delivered online. This is noteworthy because if a provider is not attentive to the information being delivered, they may not retain the information or be able to translate what they learn during the training into their interactions with patients. Therefore, carefully choosing a presenter who can engage the audience may be an effective method for ensuring an impactful training.

In addition to an engaging presenter, participants from the present study believe the most effective training should come from a variety of professionals including pediatricians, gynecologists, and communication scholars. This is a notable finding because providers reported that individuals from the marketing/public relations department of the manufacturing company are typically the individuals providing information about the vaccine to the practice. However, training may be viewed as more credible if the medical aspects of the training came from pediatricians and gynecologists, and the communication portions of the training came from communication scholars who have experience and expertise in the medical field.

Limitations

There are three main factors (i.e., relatively homogenous sample, sampling procedures, limited lens) that may limit the findings from the present study. First, because all participants worked in private practice settings in the same state, the sample may not be representative of all pediatric providers that administer the HPV vaccine. That is, a more diverse sample of providers could have been useful given vaccine policies and laws vary across states, and providers working in diverse medical establishments (e.g., government clinics, community health centers, hospital-based outpatient clinics) provide care to a wide range of patient populations. For example, providers at a community health center may see more uninsured and under-served patient populations, and thus experience different challenges when recommending the HPV vaccine. Despite this limitation, internal validity of the findings was not jeopardized as the data from the two practices largely converged, despite serving different patient populations.

Second, a snowball sampling method was used to obtain study participants. While the researcher offered flexible and convenient interview times, this method of sampling was necessary due to difficulties with obtaining participants because of their busy schedules. As a result, participants came from two major networks, and it is possible that the participants share certain characteristics and traits. However, the validity of the findings was not compromised, as the themes that emerged from the data were consistent across both networks.

Third, there may be other factors not accounted for in the present study that play a role in whether or not a provider delivers their intended recommendation. For example, the current study explored skills providers view as necessary to providing a strong recommendation, but it did not examine the role perceived capability to perform a behavior (i.e., self-efficacy) has on the

intention to behavior relationship. Because participants made comments that reflect low self-efficacy (i.e., participants sometimes perceived themselves as incapable of providing a strong recommendation), it may be beneficial to understand the ways self-efficacy influences the intention to behavior relationship. However, findings from the present study still make a contribution to understanding the HPV vaccine recommendation process, and why a provider may not deliver a strong HPV vaccine recommendation to parents, despite a high intention to do so.

Future Research

Future research should address the limitations of the current study, progress to the next stage of the formative evaluation process, examine the influence of self-efficacy and affect on behavioral performance, and assess provider intention to recommend HPV vaccination to parents of adolescent males. First, future research in this area should address the limitations outlined above by including participants from diverse geographic regions (e.g., Northeast, Midwest) and medical facilities (e.g., government run clinics, hospital-based clinics). It may also be beneficial to utilize an alternative sampling method. For example, randomly selecting 20 providers in a designated area may lead to a more representative sample. Additionally, it may be useful to explore the impact of other variables (e.g., self-efficacy) on the intention to behavior relationship. Second, future research should build upon the current study, and move forward with the formative evaluation process. For the second phase, pretesting, training should be created and shown to providers in an attempt to evaluate training effectiveness. Qualitative methods of assessment (e.g., focus groups) and quantitative methods of assessment (e.g., surveys) can be used to gather preliminary reactions and strengths and weaknesses related to attention,

comprehension, personal relevance, and sensitive or controversial elements (Atkin & Freimuth, 2013).

Third, future research should explore the influence of self-efficacy and affect on the relationship between a provider's intention to strongly recommend an HPV vaccine and the actual strong recommendation of an HPV vaccine. Participants repeatedly made remarks that reflect low self-efficacy (i.e., participants sometimes perceived themselves as incapable of providing a strong recommendation), and recurrently associated HPV vaccine discussion with feelings of fear (e.g., fear of being perceived as authoritarian, fear of offending the parent), which suggests these factors may play a role in whether or not a provider delivers their intended recommendation.

Fourth, future research should assess provider intention to recommend HPV vaccination to adolescent male parents. While the present study focused on how providers recommend HPV vaccination to parents of adolescent females, HPV is also prevalent among males, and can lead to genital warts and HPV-related cancers (e.g., penile cancer, anal cancer: CDC, 2015a). Identifying methods for improving vaccine rates for adolescent males are needed, as vaccine coverage is currently much lower (i.e., approximately seven percent) for adolescent males 13 to 15 years of age (Office of Disease Prevention and Health Promotion, 2014).

Conclusion

Strong and effective provider recommendation is the most cited reason for HPV vaccine acceptance among parents of adolescent females (Brewer & Fazekas, 2007; Feemster et al., 2014; Rahman, Laz, McGrath & Berenson, 2015). However, recent findings show that while the large majority of providers have high intentions of delivering a strong recommendation to their

patient (Feemster et al., 2014; Ylitalo et al., 2013), a considerably lower number of providers actually do so (Allison et al., 2016; Gilkey et al., 2015a; Gilkey et al., 2015b). The present study offers insight into why this consistency gap exists, and provides evidence that developing a skills training and addressing environmental constraints may be effective methods for improving provider recommendation of the HPV vaccine.

APPENDIX A: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Erica S. Landis** and Co-PI: **Lindsay B. Neuberger**

Date: **November 20, 2015**

Dear Researcher:

On 11/20/2015, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Modification Type: Study title was changed from "Practitioner Communication About the HPV Vaccine" to "Provider Recommendation of HPV Vaccination: Bridging the Intention-Behavior Gap." An addition of a Survey to be administered after Interview has been uploaded. A revised protocol and Interview guide has been uploaded in iRIS and a revised Informed Consent document has been approved for use.

Project Title: Provider Recommendation of HPV Vaccination: Bridging the Intention-Behavior Gap

Investigator: Erica S. Landis
IRB Number: SBE-15-11376
Funding Agency:
Grant Title:
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. *When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.*

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

IRB Coordinator

APPENDIX B: IRB APPROVED INTERVIEW SCHEDULE

I. Introduction

Hi. My name is Erica Landis, and I will be the one interviewing you today. This discussion is expected to take approximately 45 to 60 minutes, and we will be talking about your experiences with HPV vaccine initiation, recommendation, and training.

We have a lot to discuss, so I might move our talk along at a slower or faster speed, depending on how much we are getting through. If we go on to talk about something else when you still have not said what is on your mind, please feel free to stop me at any time.

Whatever is said in this room will remain confidential, and will not be linked to you. So you don't need to worry about people knowing what you said in the interview. I will, however, be recording this discussion with an audio recorder so I don't forget what was said. Be sure to speak loudly and clearly so the recorder accurately picks up your voice. Even though your words are being tape recorded, nothing that you say will be connected with your name and no one else will know what you said. Okay?

TRANSITION: As previously mentioned, today's discussion will be focused on HPV vaccination. We will discuss your personal practices and experiences, as well as community practices, tools and trainings. My hope is that hearing your input and learning about your experiences will provide direction for improving, and making easier, provider-patient communication about HPV vaccination.

II. Questions

A. General Background

First, before we begin discussing your personal practices and experiences, I'd like to learn a little about your job.

1. What does a typical day look like for you?

TRANSITION: One aspect of your job that is of particular interest to me is HPV vaccination among adolescent females.

B. Personal Practices

1. So to start off, can you remember when you first started giving the HPV vaccine?

PROBES: Can you tell me a little more about how that process looked? How did it get initiated? Was there quick uptake? Was it difficult? Were most people doing it?

2. Thinking of the future, do you generally plan to recommend HPV vaccination to female patients?

PROBES: How do you plan to do so? How do you plan to bring up the vaccine? Who do you plan to speak to? At what age do you plan to recommend the vaccine? At what point in the appointment do you plan to discuss the vaccine? What type of visit would you plan to discuss HPV vaccination during (e.g., when a patient comes for an annual visit, when a patient comes for a sick visit)? What type of information do you intend to provide about the vaccine?

TRANSITION: It sounds like you have a pretty good plan already set up! But my guess is that this may not always occur. Even when we have a plan, it does not always play out how we expect. For example, I planned to wake up early and go to the gym today, and that did not happen.

3. So can you describe what the process generally looks like when you recommend HPV vaccination to female patients?

PROBES: How do you bring up the vaccine? Who are you generally speaking to? At what age are you routinely recommending the vaccine? At what point in the appointment do you discuss the vaccine? Is there a specific visit that HPV vaccination is discussed during (e.g., during sports/camp physicals, during the adolescent visit)? What type of information do you generally provide to them about the vaccine? What do you believe is the most effective thing to say to parents/patients to persuade them to get the HPV vaccine? Do you say those things?

Do you generally take an approach where vaccination is a collaborative decision among you and your patient or an approach where you are providing a direct statement to your patients about getting vaccinated? What types of frequently asked questions do you receive?

4. What types of challenges do you encounter when discussing HPV vaccination with patients? (If needed: For example, previous studies report healthcare professionals feel discomfort in having to talk about a sexually transmitted infection)

PROBES: Can you describe a specific time when this occurred?

Can you think of any specific skills that could assist you in addressing these challenges/barriers? (If needed: For example, being able to talk about difficult topics with clarity may assist in addressing the discomfort associated with talking about a sexually transmitted infection)

MODERATOR: (Take notes on the challenges/barriers the healthcare professional discusses. Be sure to address each of these when probing about the skills needed to address these challenges/barriers).

5. What types of environmental constraints, do you encounter when discussing HPV vaccination with patients?

PROBES: How does the amount of time spent with patients influence vaccine discussion? Can you give me an example of when this affected you?

How does the repetitive nature of the vaccination affect the strength of your recommendation?

How does a lack of school entry requirement or other policy influence vaccine discussion?

6. What is your perception of HPV vaccine acceptance among parents of your patients?

PROBES: What are the most common reasons for parents/patients rejecting the vaccine? How do you address these concerns?

When a patient rejects the vaccine, do you continue to discuss the vaccine? Do you bring it up during their next office visit?

TRANSITION: For the next part of the discussion we will focus on community practices, tools, and trainings.

C. Community Practices, Tools and Trainings

1. Do you happen to know of any tools or resources that are available for you to learn about the HPV vaccine?

PROBES: Are you using these tools or resources? Why not?

What types of tools or resources are available to specifically assist you in *discussing* the HPV vaccine with patients?

What specific tools or resources would be helpful? If time and resources were unlimited, what would these tools or resources look like?

2. Do you happen to know of any trainings about HPV vaccination that are available to you?

PROBE: How do these trainings address communicating with patients about the HPV vaccine?

3. How would the most valuable training on HPV vaccine recommendation look?

PROBES: What facts about the HPV vaccine should the training cover (e.g., common parent concerns, how well it protects, safety and side effects)?

What is your preferred medium?

What is your preferred length for the training?

What is your preference for a static vs. dynamic training?

What is your preferred format (narrative/fact/scholarly)?

Who would you find to be a credible source on the subject?

TRANSITION: I want you to think back to an impactful training you have received, whether it involved the HPV vaccine or not.

4. What was this training?

PROBE: Why was this training so memorable?

D. Closing

Is there anything else you'd like to share with me that might help us develop the best resources possible for health care professionals regarding HPV vaccination?

MODERATOR: Well that is all... Thank you so much for your time and participation. Please feel free to contact me if you have any questions, need to ask or provide clarification, or wish to withdraw your responses. I am also happy to share any results from this study when I complete the project if you are interested.

APPENDIX C: IRB APPROVED SURVEY

Demographics

Age: ____

I am: (a) Female; (b) Male; (c) Other (please specify)

Race/Ethnicity: (a) African American/Black; (b) Asian/Pacific Islander; (c) Caucasian/White; (d) Hispanic/Latino; (e) Native American/American Indian; (f) Other (please specify)

How many years have you been working in the medical field: _____

What is your certification? (a) Medical Doctor; (b) Physician Assistant; (c) Nurse Practitioner; (d) Other _____

Do you provide preventive care, including vaccinations, to adolescent females age 9-18? (a) Yes; (b) No

Behavioral Intention

1= Strongly Disagree, 2= Disagree, 3= Neither Agree nor Disagree, 4= Agree, 5= Strongly Agree

I intend to strongly recommend HPV vaccination to parents of adolescent females.

Thinking about the future, I plan to encourage parents of adolescent females to get their children vaccinated.

I am willing to recommend HPV vaccination to parents of adolescent female patients.

I will try to strongly recommend HPV vaccination to parents of adolescent female patients.

I expect to give adolescent female patients a strong recommendation for HPV vaccination.

Behavior

1= Never, 2= Rarely, 3= Sometimes, 4= Often, 5= Always

In the past, I have strongly recommended HPV vaccination to parents of adolescent female patients.

I strongly encourage parents of adolescent females to get their children vaccinated.

My patients would say they received a strong recommendation for HPV vaccination from me.

REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11- 39). Heidelberg, Germany: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179-211. doi:10.1016/0749-5978(91)90020-T
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*, 665-683.
doi:10.1111/j.1559-1816.2002.tb00236.x
- Albarracín, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin*, *127*, 142-161. doi:10.1037/0033-2909.127.1.142
- Allen, J. D., Othus, M. K., Shelton, R. C., Li, Y., Norman, N., Tom, L., & del Carmen, M. G. (2010). Parental decision making about the HPV vaccine. *Cancer Epidemiology Biomarkers & Prevention*, *19*(9), 2187-2198. doi: 10.1158/1055-9965.EPI-10-0217
- Allison, M. A., Hurley, L. P., Markowitz, L., Crane, L. A., Brtnikova, M., Beaty, B. L., & ... Kempe, A. (2016). Primary care physicians' perspectives about HPV vaccine. *Pediatrics*, *137*(2), 1-9. doi:10.1542/peds.2015-2488
- American Cancer Society (2015). HPV (Human Papilloma Virus). Retrieved September 2015, from
<http://www.cancer.org/cancer/cancercauses/othercarcinogens/infectiousagents/hpv/hpv-landing>

- Anderson, C. N., Noar, S. M., & Rogers, B. D. (2013). The persuasive power of oral health promotion messages: A theory of planned behavior approach to dental checkups among young adults. *Health Communication, 28*(3), 304-313.
doi:10.1080/10410236.2012.684275
- Andreasen, A. R. (1995). *Marketing social change: Changing behavior to promote health, social development, and the environment*. San Francisco, CA: Jossey-Bass
- Andrews, K. R., Silk, K. S., & Eneli, I. U. (2010). Parents as health promoters: A theory of planned behavior perspective on the prevention of childhood obesity. *Journal of Health Communication, 15*(1), 95-107. doi:10.1080/10810730903460567
- Askelson, N. M., Campo, S., Lowe, J. B., Smith, S., Dennis, L. K., & Andsager, J. (2010). Using the theory of planned behavior to predict mothers' intentions to vaccinate their daughters against HPV. *The Journal of School Nursing, 26*(3), 194-202.
doi:10.1177/1059840510366022
- Atkin, C., & Freimuth, V. (2013). Guidelines for formative evaluation research in campaign design. In R. E. Rice & C. Atkin (Eds.), *Public communication campaigns* (pp. 53–68). Thousand Oaks, CA: Sage.
- Bae, H. (2008). Entertainment-education and recruitment of cornea donors: The role of emotion and issue involvement. *Journal of Health Communication, 13*(1), 20-36.
doi:10.1080/10810730701806953
- Beaudoin, C. E., Thorson, E., & Hong, T. (2006). Promoting youth health by social empowerment: A media campaign targeting social capital. *Health Communication, 19*(2), 175-182. doi:10.1207/s15327027hc1902_9

- Bleakley, A., Hennessy, M., Fishbein, M., & Jordan, A. (2011). Using the integrative model to explain how exposure to sexual media content influences adolescent sexual behavior. *Health Education & Behavior, 38*(5), 530-540.
doi:10.1177/1090198110385775
- Boudewyns, V., & Paquin, R. S. (2011). Intentions and beliefs about getting tested for STDs: Implications for communication interventions. *Health Communication, 26*(8), 701-711.
doi:10.1080/10410236.2011.563353
- Brewer, N. T., & Fazekas, K. I. (2007). Predictors of HPV vaccine acceptability: A theory-informed, systematic review. *Preventive Medicine, 45*, 107–114.
doi:10.1016/j.ypmed.2007.05.013
- Brewer, N. T., Gottlieb, S. L., Reiter, P. L., McRee, A. L., Liddon, N., Markowitz, L., & Smith, J. S. (2011). Longitudinal predictors of HPV vaccine initiation among adolescent girls in a high-risk geographic area. *Sexually Transmitted Diseases, 38*(3), 197. doi:
10.1097/OLQ.0b013e3181f12dbf
- Britt, R. K., Collins, W. B., Wilson, K. M., Linnemeier, G., & Englebert, A. M. (2015). The role of eHealth literacy and HPV vaccination among young adults: Implications from a planned behavior approach. *Communication Research Reports, 32*(3), 208-215.
doi:10.1080/08824096.2015.1052963
- Centers for Disease Control and Prevention. (2015a). Human Papillomavirus (HPV). Retrieved September 2015, from <http://www.cdc.gov/hpv/index.html>

- Centers for Disease Control and Prevention. (2015b). Teen Vaccination Coverage. Retrieved September 2015, from <http://www.cdc.gov/vaccines/who/teens/vaccination-coverage.html#nis-tables>
- Cohen, E. L., & Head, K. J. (2013). Identifying knowledge-attitude-practice gaps to enhance HPV vaccine diffusion. *Journal of Health Communication, 18*(10), 1221-1234.
doi:10.1080/10810730.2013.778357
- Daley, M. F., Liddon, N., Crane, L. A., Beaty, B. L., Barrow, J., Babbel, C., Markowitz, L. E., Dunne, E. F., Stokley, S., Dickinson, L. M., Berman, S., & Kempe, A. (2006). A national survey of pediatrician knowledge and attitudes regarding human papillomavirus vaccination. *Pediatrics, 118*(6), 2290-2289. doi: 10.1542/peds.2006-1946
- Daley, M. F., Crane, L. A., Markowitz, L. E., Black, S. R., Beaty, B. L., Barrow, J., & Kempe, A. (2010). Human papillomavirus vaccination practices: A survey of US physicians 18 months after licensure. *Pediatrics, 126*(3), 425-433. doi:10.1542/peds.2009-3500
- De Brún, A., McCarthy, M., McKenzie, K., & McGloin, A. (2015). Examining the media portrayal of obesity through the lens of the common sense model of illness representations. *Health Communication, 30*(5), 430-440.
doi:10.1080/10410236.2013.866390
- Della, L. J., DeJoy, D. M., & Lance, C. E. (2009). Explaining fruit and vegetable intake using a consumer marketing tool. *Health Education & Behavior, 36*(5), 895-914.
doi:10.1177/1090198108322820
- Dempsey, A. F., Zimet, G. D., Davis, R. L., & Koutsky, L. (2006). Factors that are associated with parental acceptance of human papillomavirus vaccines: A randomized intervention

- study of written information about HPV. *Pediatrics*, 117(5), 1486-1493.
doi:10.1542/peds.2005-1381
- Fazekas, A., Senn, C. Y., & Ledgerwood, D. M. (2001). Predictors of intention to use condoms among university women: An application and extension of the theory of planned behavior. *Canadian Journal of Behavioural Science*, 33, 103-117. doi:10.1037/h0087133
- Feemster, K. A., Winters, S. E., Fiks, A. G., Kinsman, S., & Kahn, J. A. (2008). Pediatricians intention to recommend human papillomavirus (HPV) vaccines to 11- to 12-year-old girls postlicensing. *Journal of Adolescent Health*, 43(4), 408-411. doi: 10.1016/j.jadohealth.2008.06.012
- Feemster, K. A., Middleton, M., Fiks, A. G., Winters, S., Kinsman, S. B., & Kahn, J. A. (2014). Does intention to recommend HPV vaccines impact HPV vaccination rates?. *Human Vaccines & Immunotherapeutics*, 10(9), 2519-2526. doi: 10.4161/21645515.2014.969613
- Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, 12, 273–278.
doi:10.4135/9781446221129.n8
- Fishbein, M. (2008). A reasoned action approach to health promotion. *Medical Decision Making*, 28(6), 834-844. doi: 10.1177/0272989x08326092
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York: Psychology Press.

- Fishbein, M., & Cappella, J. N. (2006). The role of theory in developing effective health communications. *Journal of Communication, 56*, S1-S17. doi:10.1111/j.1460-2466.2006.00280.x
- Fishbein, M., & Yzer, M. C. (2003). Using theory to design effective health behavior interventions. *Communication Theory, 13*, 164–183. doi: 10.1093/ct/13.2.164
- Fisher, W. A., Kohut, T., Salisbury, C. A., & Salvadori, M. I. (2013). Understanding human papillomavirus vaccination intentions: Comparative utility of the theory of reasoned action and the theory of planned behavior in vaccine target age women and men. *Journal of Sexual Medicine, 10*(10), 2455-2464. doi:10.1111/jsm.12211
- Frank, L. B., Chatterjee, J. S., Chaudhuri, S. T., Lapsansky, C., Bhanot, A., & Murphy, S. T. (2012). Conversation and compliance: Role of interpersonal discussion and social norms in public communication campaigns. *Journal of Health Communication, 17*, 1050-1067. doi: 10.1080/10810730.2012.665426
- Freberg, K. (2013). Using the theory of planned behavior to predict intention to comply with a food recall message. *Health Communication, 28*(4), 359-365. doi:10.1080/10410236.2012.688657
- Gilkey, M. B., Malo, T. L., Shah, P. D., Hall, M. E., & Brewer, N. T. (2015a). Quality of physician communication about human papillomavirus vaccine: Findings from a national survey. *Cancer Epidemiology Biomarkers & Prevention, 24*(11), 1673-1679. doi: 10.1158/1055-9965.EPI-15-0326
- Gilkey, M. B., Moss, J. L., Coyne-Beasley, T., Hall, M. E., Shah, P. D., & Brewer, N. T. (2015b). Physician communication about adolescent vaccination: How is human

- papillomavirus vaccine different?. *Preventive Medicine*, 77, 181-185.
doi:10.1016/j.ypmed.2015.05.024
- Gray, J. B., & Harrington, N. G. (2011). Narrative and framing: A test of an integrated message strategy in the exercise context. *Journal of Health Communication*, 16, 264-281. doi: 10.1080/10810730.2010.529490
- Hevey, D., Pertl, M., Thomas, K., Maher, L., Chuinneagáin, S. N., & Craig, A. (2009). The relationship between prostate cancer knowledge and beliefs and intentions to attend PSA screening among at-risk men. *Patient Education & Counseling*, 74(2), 244-249.
doi:10.1016/j.pec.2008.08.013
- Hofman, R., Van Empelen, P., Vogel, I., Raat, H., Van Ballegooijen, M., & Korfage, I. J. (2013). Parental decisional strategies regarding HPV vaccination before media debates: A focus group study. *Journal of Health Communication*, 18(7), 866-880.
doi:10.1080/10810730.2012.757390
- Horner, J. R., Romer, D., Venable, P. A., Salazar, L. F., Carey, M. P., Juzang, I., & Valois, R. F. (2008). Using culture-centered qualitative formative research to design broadcast messages for HIV prevention for African American adolescents. *Journal of Health Communication*, 13(4), 309-325. doi:10.1080/10810730802063215
- Hovick, S. R., Liang, M., & Kahlor, L. (2014). Predicting cancer risk knowledge and information seeking: The role of social and cognitive factors. *Health Communication*, 29(7), 656-668.
doi:10.1080/10410236.2012.763204

- Kahn, J. A., Rosenthal, S. L., Tissot, A. M., Bernstein, D. I., Wetzel, C., & Zimet, G. D. (2007). Factors influencing pediatricians' intentions to recommend human papillomavirus vaccines. *Ambulatory Pediatrics, 5*, 367–373. doi:10.1016/j.ambp.2007.05.010
- Kahn, J. A., Ding, L., Huang, B., Zimet, G. D., Rosenthal, S. L., & Frazier, A. L. (2009). Mothers' intention for their daughters and themselves to receive the human papillomavirus vaccine: A national study of nurses. *Pediatrics, 123*(6), 1439-1445. doi:10.1542/peds.2008-1536
- Kennedy, A., Sapsis, K. F., Stokley, S., Curtis, C. R., & Gust, D. (2011). Parental attitudes toward human papillomavirus vaccination: Evaluation of an educational intervention, 2008. *Journal of Health Communication, 16*(3), 300-313. doi:10.1080/10810730.2010.532296
- Kim, J., & Nan, X. (2015). Consideration of future consequences and HPV vaccine uptake among young adults. *Journal of Health Communication, 20*(9), 1033-1040. doi:10.1080/10810730.2015.1018583
- Kim, H. K., & Niederdeppe, J. (2013). Exploring optimistic bias and the integrative model of behavioral prediction in the context of a campus influenza outbreak. *Journal of Health Communication, 18*(2), 206-222. doi:10.1080/10810730.2012.688247
- Krieger, J. L., & Sarge, M. A. (2013). A serial mediation model of message framing on intentions to receive the human papillomavirus (HPV) vaccine: Revisiting the role of threat and efficacy perceptions. *Health Communication, 28*(1), 5-19. doi:10.1080/10410236.2012.734914

- Krieger, J. L., Kam, J. A., Katz, M. L., & Roberto, A. J. (2011). Does mother know best? An actor-partner model of college-age women's human papillomavirus vaccination behavior. *Human Communication Research, 37*(1), 107-124. doi:10.1111/j.1468-2958.2010.01395.x
- Lau, M., Lin, H., & Flores, G. (2012) Factors associated with human papillomavirus vaccine-series initiation and healthcare provider recommendation in US adolescent females: 2007 National Survey of Children's Health. *Vaccine, 30*, 3112-3118. doi: 10.1016/j.vaccine.2012.02.034
- LeCompte, M. D., & Schensul, J. J. (1999). *Analyzing and interpreting ethnographic data*. (Ethnographer's toolkit, vol. 5). Walnut Creek, CA: AltaMira.
- Lederman, L. C., & Stewart, L. P. (2003). Using focus groups to formulate effective language for health communication messages: A media campaign to raise awareness of domestic violence on a college campus. *Qualitative Research Reports in Communication, 4*.
- Lee, H. R., Ebesu Hubbard, A. S., O'Riordan, C. K., & Kim, M. S. (2006). Incorporating culture into the theory of planned behavior: Predicting smoking cessation intentions among college students. *Asian Journal of Communication, 16*, 315-332. doi: 10.1080/01292980600857880
- Lin, C. A., Harris, J., & Lagoe, C. (2014). Formative research on identifying and promoting responsible party-hosting skills among college students. *Journal of Communication in Healthcare, 7*(4), 272-284. doi:10.1179/1753807614y.0000000062
- Lindlof, T.R. & Taylor, B.C. (2011). *Qualitative communication research methods* (3rd Edition). Thousand Oaks, CA: Sage

- Lindsey, L. M., Hamner, H. C., Prue, C. E., Flores, A. L., Valencia, D., Correa-Sierra, E., & Kopfman, J. E. (2007). Understanding optimal nutrition among women of childbearing age in the United States and Puerto Rico: Employing formative research to lay the foundation for national birth defects prevention campaigns. *Journal Of Health Communication, 12*(8), 733-757. doi:10.1080/10810730701672272
- Markowitz, L. E., Liu, G., Hariri, S., Steinau, M., Dunne, E. F., & Unger, E. R. (2016). Prevalence of HPV After Introduction of the Vaccination Program in the United States. *Pediatrics, 137*, doi: 10.1542/peds.2015-1968
- McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. *Health Psychology Review, 5*(2), 97-144. doi:10.1080/17437199.2010.521684
- Nan, X., Zhao, X., & Briones, R. (2014). Parental cancer beliefs and trust in health information from medical authorities as predictors of HPV vaccine acceptability. *Journal of Health Communication, 19*(1), 100-114. doi:10.1080/10810730.2013.811319
- Noar, S. M. (2006). A 10-year retrospective of research in health mass media campaigns: Where do we go from here?. *Journal of Health Communication, 11*(1), 21-42. doi:10.1080/10810730500461059
- Noland, C. M., & Carmack, H. J. (2015). "You never forget your first mistake": Nursing socialization, memorable messages, and communication about medical errors. *Health Communication, 30*(12), 1234-1244. doi:10.1080/10410236.2014.930397
- Norman, P., Conner, M., & Bell, R. (1999). The theory of planned behavior and smoking cessation. *Health Psychology, 18*(1), 89-94. doi: 10.1037/0278-6133.18.1.89

- Oetzel, J., Simpson, M., Berryman, K., Iti, T., & Reddy, R. (2015). Managing communication tensions and challenges during the end-of-life journey: Perspectives of Māori Kaumātua and their Whānau. *Health Communication, 30*(4), 350-360.
doi:10.1080/10410236.2013.861306
- Office of Disease Prevention and Health Promotion. (2014). Immunization and Infectious Diseases. Retrieved September 2015, from <http://www.healthypeople.gov/2020/data-search/Search-the-Data?nid=4657>
- Opel, D. J., Heritage, J., Taylor, J. A., Mangione-Smith, R., Salas, H. S., DeVere, V., & Robinson, J. D. (2013). The architecture of provider-parent vaccine discussions at health supervision visits. *Pediatrics, 132*(6), 1037-1046. doi:10.1542/peds.2013-2037d
- Owen, W. F. (1984). Interpretive themes in relational communication. *Quarterly Journal Of Speech, 70*, 274-287. doi:10.1080/00335638409383697
- Paek, H., Oh, H. J., & Hove, T. (2012). How media campaigns influence children's physical activity: Expanding the normative mechanisms of the theory of planned behavior. *Journal of Health Communication, 17*(8), 869-885. doi:10.1080/10810730.2011.650832
- Park, H. S., Klein, K. A., Smith, S., & Martell, D. (2009). Separating subjective norms, university descriptive and injunctive norms, and U.S. descriptive and injunctive norms for drinking behavior intentions. *Health Communication, 24*(8), 746-751.
doi:10.1080/10410230903265912
- Perkins, R. B., Clark, J. A., Apte, G., Vercruyse, J. L., Sumner, J. J., Wall-Haas, C. L., Rosenquist, A. W., & Pierre-Joseph, N. (2014). Missed opportunities for HPV

- vaccination in adolescent girls: A qualitative study. *Pediatrics*, 134(3), 666-674.
doi:10.1542/peds.2014-0442d
- Ports, K. A., Reddy, D. M., & Rameshbabu, A. (2013). Barriers and facilitators to HPV vaccination: Perspectives from Malawian women. *Women & Health*, 53(6), 630-645.
doi: 10.1080/03630242.2013.809046
- Rahman, M., Laz, T. H., McGrath, C. J., & Berenson, A. B. (2015). Provider recommendation mediates the relationship between parental human papillomavirus (HPV) vaccine awareness and HPV vaccine initiation and completion among 13- to 17-year-old US adolescent children. *Clinical Pediatrics*, 54(4), 371-375. doi:10.1177/0009922814551135
- Reiter, P. L., McRee, A. L., Kadis, J. A., & Brewer, N. T. (2011). HPV vaccine and adolescent males. *Vaccine*, 29(34), 5595-5602. doi: 10.1016/j.vaccine.2011.06.020
- Richards, A. S. (2014). Predicting attitude toward methamphetamine use: The role of antidrug campaign exposure and conversations about meth in montana. *Health Communication*, 29(2), 124-136. doi:10.1080/10410236.2012.728469
- Rixon, S., Braaf, S., Williams, A., Liew, D., & Manias, E. (2015). Pharmacists' interprofessional communication about medications in specialty hospital settings. *Health Communication*, 30(11), 1065-1075. doi:10.1080/10410236.2014.919697
- Robbins, R., & Niederdeppe, J. (2015). Using the integrative model of behavioral prediction to identify promising message strategies to promote healthy sleep behavior among college students. *Health Communication*, 30(1), 26-38. doi:10.1080/10410236.2013.835215
- Roberto, A. J., Krieger, J. L., Katz, M. L., Goei, R., & Jain, P. (2011). Predicting pediatricians' communication with parents about the human papillomavirus (HPV) vaccine: An

application of the theory of reasoned action. *Health Communication*, 26(4), 303–312.

<http://doi.org/10.1080/10410236.2010.550021>

Scott, A. M., Martin, S. C., Stone, A. M., & Brashers, D. E. (2011). Managing multiple goals in supportive interactions: Using a normative theoretical approach to explain social support as uncertainty management for organ transplant patients. *Health Communication*, 26(5), 393-403. doi:10.1080/10410236.2011.552479

Shafer, A., Cates, J. R., Diehl, S. J., & Hartmann, M. (2011). Asking mom: Formative research for an HPV vaccine campaign targeting mothers of adolescent girls. *Journal of Health Communication*, 16(9), 988-1005. doi:10.1080/10810730.2011.571343

Sheeran, P. (2002). Intention–behavior relations: A conceptual and empirical review. In W. Stroebe, & M. Hewstone (Eds.), *European review of social psychology*, Vol. 12. (pp. 1–36). Hove: Psychology Press.

Siegel, J. T., Alvaro, E. M., Lac, A., Crano, W. D., & Dominick, A. (2008). Intentions of becoming a living organ donor among hispanics: A theory-based approach exploring differences between living and nonliving organ donation. *Journal of Health Communication*, 13(1), 80-99. doi:10.1080/10810730701807142

Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention–behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, 20(2), 143-160. doi:10.1080/08870440512331317670

Stephenson, M. T., Morgan, S. E., Roberts-Perez, S. D., Harrison, T., Afifi, W., & Long, S. D. (2008). The role of religiosity, religious norms, subjective norms, and bodily integrity in

- signing an organ donor card. *Health Communication*, 23(5), 436-447.
doi:10.1080/10410230802342119
- Valdez, A., Stewart, S. L., Tanjasari, S. P., Levy, V., & Garza, A. (2015). Design and efficacy of a multilingual, multicultural HPV vaccine education intervention. *Journal of Communication in Healthcare*, 8(2), 106-118. doi:10.1179/1753807615Y.0000000015
- Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, 132(2), 249-268. doi:10.1037/0033-2909.132.2.249
- Wong, N. H. (2014). Predictors of information seeking about the HPV vaccine from parents and doctors among young college women. *Communication Quarterly*, 62(1), 75-96. doi: 10.1080/01463373.2013.860905
- Yang, Z. J. (2015). Predicting young adults' intentions to get the H1N1 vaccine: An integrated model. *Journal of Health Communication*, 20(1), 69-79.
doi:10.1080/10810730.2014.904023
- Ylitalo, K. R., Lee, H., & Mehta, N. K. (2013). Health care provider recommendation, human papillomavirus vaccination, and race/ethnicity in the US National Immunization Survey. *American Journal of Public Health*, 103(1), 164-169. doi: 10.2105/AJPH.2011.300600
- Yun, D., Silk, K. J., Bowman, N. D., Neuberger, L., & Atkin, C. K. (2009). Mothers' intentions to teach adolescent daughters about breast cancer risk reduction activities: The influence of self-efficacy, response efficacy, and personal responsibility. *Communication Research Reports*, 26(2), 134-145. doi:10.1080/08824090902861606

- Zimet, G. D. (2005). Improving adolescent health: Focus on HPV vaccine acceptance. *Journal of Adolescent Health, 37*, S17-S23. doi: 10.1016/j.jadohealth.2005.09.010
- Zimet, G. D., Mays, R. M., & Fortenberry, J. D. (2000). Vaccines against sexually transmitted infections: Promise and problems of the magic bullets for prevention and control. *Sexually Transmitted Diseases, 27*, 49-52. doi:10.1097/00007435-200001000-00010
- Zimet, G. D., Mays, R. M., Winston, Y., Kee, R., Dickes, J., & Su, L. (2000). Acceptability of human papillomavirus immunization. *Journal of Women's Health and Gender-Based Medicine, 9*, 47-50. doi:10.1089/152460900318957