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EXPLORING VISUAL PREVENTION: DEVELOPING INFOGRAPHICS AS EFFECTIVE  
CERVICAL CANCER PREVENTION FOR AFRICAN AMERICAN WOMEN

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of  
Philosophy at Virginia Commonwealth University

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## Acknowledgments

This dissertation is dedicated to my grandmother, the late Gladys F. Brown, and grandfather, David C. Brown, Sr. To my Grandma, you are the star that guided me and kept me warm in the foundations of my early life. Although you now shine from afar, I feel you near and dear to my heart daily. Your passing from vaginal cancer will not be in vein! Let this dissertation serve as the first mark in my journey to preventing other fatalities like yours. Granddaddy, I love you so much! Thank you for working tirelessly to give my brother, Dwight Parrish, and I a brighter future way before we were even in the family picture. Granddaddy, because of you I am strong and courageous. I will never forget all the summers Dwight and I spent with you both. In those moments we were completely spoiled, surrounded by nothing but love and encouragement! I thank you both for creating such a wonderful, loving and accomplished family. I thank you for serving as the perfect blueprint for love, marriage, generosity, intellectuality, and faithfulness to God. I thank you both for never giving up on me. Thank you. *This one is for you both!*

To my mother, **Joyce B. Parrish**: Thank you for all your hard work and sacrifice! We all know what the statistics project about children growing up in single-parent households. Because of your dedication, hard work, sacrifice, and awesome parenting, Dwight & I have excelled far beyond those projections. You are such a loving and caring person while also being strong leader! I would ask the Lord above for no other mother and example of a well-accomplished woman. Thank you for your support from birth to dissertation and beyond!

To my father, **Dwight D. Parrish, Sr.**: Thank you for all the love and support throughout life and my academic endeavors. I appreciate the many kind words and faith-led encouragement

you've given me, it has definitely helped see me through my studies. Love you! I would also like to thank Barbara for always being so kind and welcoming!

To my dissertation advisor, **Dr. Rowena Briones**: You have been an awesome advisor, mentor, friend and much more. Thank you for having my back and showing me what true passion and dedication looks like as an academic professor. Wishing you much success on future endeavors. I am beyond happy just knowing that you are happy and excited about your new beginnings. Congratulations on getting married!

To my committee members: **Dr. Candace Johnson**, I couldn't ask for a better mentor! You taught me a lot about the intersection of health in communication and even allowed me professional development through guest lecturing your courses. Thank you for all the motivational conversations and academic guidance!

**Dr. Marcus Messner**, thank you so much for your guidance during my time in the Media, Art & Text Doctoral Program! You were always very helpful and willing to answer any questions. I will always be super grateful!

**Dr. Ryan Patton**, thank you for coming to the rescue during the final moments of my doctoral career. I am greatly appreciative of your contribution and willingness to help me excel to the next phase of my academic career!

To my VCU Community mentors and supporters: **Dr. Yan Jin**, thank you for being the reason I was ever interested in becoming a professor! Your mentorship has helped shape me into the young academic I am today and I could not have gotten here without you! I hope I can be a kind, devoted and cool professor just like you! **Dr. Ernest Martin**, thank you so much for being the coolest professor ever!!! I am so happy to have had the opportunity to study and research

with you from master's to the doctoral level. You taught me how to make research incredibly interesting, thank you!

**Mrs. Frances**, thank you so much for your continued support from my undergraduate to doctoral programs. We had many awesome, motivational and funny conversations that really made my time here at VCU so great. **Mrs. Williams**, thank you kindly for always hearing me out during my time in the doctoral program! You, Mrs. Frances, and I certainly had much fun discussing life, health, food and generational issues—I cherish these memories! **Dr. Lynn Pelco**, you are an incredibly awesome mentor! I hope to be very much like you as I grow in academic and professional areas. Thank you for all your guidance and support as I obtained and managed my first collaborative teaching grant.

**Dr. Grace Park**, you are so awesome! Thank you for being my close friend during my doctoral studies. Congratulation on your new beginnings, I am really happy for you! **Kate McCord**, thank you for being extremely understanding and for offering much insight on sexual assault and discrimination. I absolutely loved doing cool and strategic things with the @RedFlagCampaign social media accounts. I completely appreciate the work you and co-workers do to advance our community—the Virginia Domestic Violence and Sexual Assault Action Alliance rocks! **Michelle McLees**, did you know you were the first person to ask if me I knew about infographics? Thank you for the introduction, I haven't been able to escape the infographics since! 😊 Also, I thank you and your co-workers for allowing me to create a fashion line for RVA Fashion Week—still one of the biggest highlights of my career! **Dr. Hong Cheng**, thank you for so graciously supporting me during my time as a student and teacher in the School of Media & Culture. During my time in the doctoral program you were always very kind and

willing to listen. Your contributions toward my professional development will never be forgotten!

To my Family: **Granddaddy, Uncle Jr., Uncle Greg,** and **Aunt Terri**, thank you so much for helping to raise Dwight and I into the successful people we are today. Not only that, but for the continued love and support over the years. **Uncle Jr.** and **Aunt Terri**, thanks for all the summers spent at the pool, my newly acquired surfing skills are owed to you both and Grandma. **Uncle Jr.**, thank you for supporting my fashion design—who knew all the failed sewing lessons would eventually lead to a dissertation featuring design methodologies?? **Uncle Greg**, thank you for making me a talk show host at age five. ☺ Also, all the soulful music you played stuck with me through the years! Love you guys! **Dr. Terri Brown**, where would I be without your academic advice? Thank you so much for the guidance and pep talks over the past three years!

**Aunt Nell, Uncle Anthony, Aunt Birtha, Aunt Delores**, thank you all for being so loving and generous! I couldn't ask for better nor more supportive family members. **Aunt Nell**, thanks for having me over for encouraging conversations and amazing food! **Uncle Anthony**, thank you (and your co-workers) for collaborating with me on my first grant! It was quite the learning experience but I have developed so much professionally! Love you both! **Dwight**, you “rascal” (as grandma would say, lol). Thank you for being such an awesome example of success. Thank you also for grooming my competitive edge! From Dr. to Doctor, I love you! To all of my **aunts, uncles and cousins**: Thank you so much for the love and support! I appreciate each and everyone one of you and can't wait to see you more often now that I am FREE! ☺

To my Friends: **Natasha Tucker, Stephanie Tucker, Ashley Smith, Albert Lawrence, Crystal Bellfield, Jamah Murphy** and **Brittany Glover**, where would my childhood and teenage years be without you? Thank you for helping shape the foundations of who I am today!

**Courtney Echols, Sierra Stafford, Adele McClure, Thomas Jacobs, Jill Jefferson, Dr. Janice Gassam, Vanessa Copeland, Briana Williams, Daniel Ajo, Samira Abbas, Christina Thornevell** and **William Arenas** (shout-out to *Wealthlyn Cinema*), thank you good folks for keeping me company during my second transition lol (from undergrad to PhD). Many laugh-therapy sessions occurred and I am so glad I spent them all with you guys! **William**, thank you for all the accompanied trips to the library—from master’s to doctorate. You’ve seen the struggle up close and you were always willing to offer encouragement and support! From Virginia Beach to London and back again, #BlessUp! **Dr. Janice Gassam**, my friend and awesome research partner, thank you so very much for your friendship along the way. I couldn’t ask for a better research/conference travel partner in crime! Do you remember when I asked you tons of questions about the cover letter for my Ph.D. application? (Ha!) P.S. We made it!!!

To all of my **dear, dear friends**, thank you so much for being there for me! Seriously, you all lent me an ear as I vented about my PhD struggles in some fashion or another. Where would I be without your genuine love, care and laughs! You all have seen my life transition on many levels, some triumphant and some embarrassing (ha). The memories I share with you all are ones I will never forget! **Demetrius** (a.k.a Mr. T.O.P.), thank you for encouraging me through my process of wrapping this thing up. I am looking forward to witnessing your future successes as you continue to build your brand, *Triumph Over Poverty*. “*You know we came here to triumph!*”



To my VCU peer-friends: **Ashley Jones** and **Jason Fuller**, the tripartite! Having you guys in my life for two years makes me remember how bleak my first year was without you both! So proud of you for graduating, and cheers to you both perusing doctoral programs! ☺

**Osita Iroegbu** I am so glad you chose to be a part of MATX, I am truly blessed to have such an awesome program-mate because of your decision. You were always willing to listen and offering support. Best wishes on the rest of your doctoral journey. **Tennisha Riley**, thank you for being a great Black Graduate Student Association (BGSA) president and friend! I enjoyed our many conversations about love, life and studies. Best wishes to you as well during your doctoral studies. Special shout-out to BGSA at VCU, keep hope alive!

To my VCU MATX Cohort: **Michael, Mary, and Ivy**, I love you all so much! I couldn't honestly ask for better cohort-mates. When we first started, I was super impressed by how talented and successful you all were—today that remains the same. Thank you for the camaraderie offered during my period of growth in this program. I am very happy about all of your successes and look forward to keeping in touch in the future!

To the **MATX Department** and **School of Media & Culture**: I would like to send a very sincere “thank you” to all the faculty and staff in both the Media, Art & Text and Media & Culture programs. Thank you for all of your hard and continuous work! Without all of your contributions to making both programs great, I would not have been able to succeed in my studies.

To **Social Driver**: **Anthony** and **Thomas**, wow, you guys are awesome! Social Driver (SD) was the first agency to put faith in hiring me in a PR role and the first agency to allow me to conduct PR research—double yay! I am glad I had the opportunity to learn so much from the team at SD. I totally wear my SD shirt on a weekly basis and wherever I travel around the world!

To **Nina Simone**: Thank you Nina! For your artistry and impactful contribution to our society. For every one of your songs that I looped continuously throughout my writing for this body of work. For providing this dissertation's theme song: "Since I Fell for You." For bravely confronting your depression and mental illness through your passions. For sharing your story through your music about the trials, tribulations and successes of being a black female artist of your era. Here's to being "Young, Gifted and Black!" #ThankYouNinaSimone

To my guinea pigs: Mommy loves you!!! **Minnie**, you were my first introduction to raising and loving piggies, I will never forget how bright you made my childhood. **Fa'Shawn (Fashion) Edvon**, you were my first piggy in a while and I am so happy to know you are still by my side. When I finish, we'll share kale and celery like we usually do! **Rosa Panda**, you are the most precious new addition to my piggy family, I love you! Looking forward to embracing your outgoing personality and natural cuteness. **Fiasco** and **Dolce**, I miss you both dearly and am so sad to have lost you along my academic journey. You both were so sweet and kind and I hold your loving spirits with me daily!

To those preceded this dissertation: I would like to acknowledge the lives of two special people I grew up with that have transcended: **Eric Claud** and **DeSean Spell**. **Eric**, I still can't believe you passed away but your presence was felt and appreciated all throughout my dissertation process. Do you remember all the fun we had at VCU? I do, and hold that dearly in my heart. **DeSean**, I'll never forget all of our teenage memories and trips to 7-Eleven 😊. Although I understand that you both can no longer be here, the impact you both had in my life keeps you always in my heart. Rest well!

Lastly, to **all the women who passed away from Cervical Cancer**, let this dissertation be a continued celebration of your life and legacy!

Cheers to Vegan life!

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## ABSTRACT

### EXPLORING VISUAL PREVENTION: DEVELOPING INFOGRAPHICS AS EFFECTIVE CERVICAL CANCER PREVENTION FOR AFRICAN AMERICAN WOMEN

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of  
Philosophy at Virginia Commonwealth University

Virginia Commonwealth University, 2016

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The purpose of this dissertation is to explore the creation of a cervical cancer health prevention infographic, geared toward African American women ages 30 to 65, to be potentially used to raise health literacy and influence positive behaviors towards practicing prevention measures—ultimately preventing unnecessary deaths. This dissertation also produced a cervical cancer health prevention infographic prototype for African American Women ages 30 to 65 to be further tested and implemented within future health communication campaigns.

Cervical Cancer is both preventable and treatable (if diagnosed during early stages); therefore the amount of individuals dying from the cancer should be minimal. Still, African American Women in this study's target health population are dying from Cervical Cancer the most. Existing research highlights that social determinants of health (like income, education and literacy) play varying roles as barriers to prevention (Baldwin, 1996; J. L. Davis et al., 2013;

Egbert & Parrott, 2001; Ford et al., 2013; McKinnon, Harper, & Moore, 2011; Sung, Alema-Mensah, & Blumenthal, 2002; Williams & Templin, 2013).

. This dissertation specifically focuses on targeting the potential to increase health literacy on Cervical Cancer to potentially positively influence prevention uptake.

Drawing upon fields like health communication, visual communication and social science research, this research endeavor presents an interdisciplinary approach to potentially solving health communication issue within an at-risk population. The theoretical framework in guiding infographic production for this dissertation was the Health Belief Model, which is widely used in health communication research to assess failure of prevention uptake (du Pré, 2014; Glanz et al., 2005; Maibach & Parrott, 1995; Rosenstock, 2000).

The Health Belief Model in conjunction with existing literature regarding health literacy, cultural stigma and relevance in communication campaigns geared toward African American Women ages 30 to 65, infographic content was created and presented to study participants via six interactive focus groups. The focus group methodology of qualitative research allowed for 17 study participants to confidentially engage in dialogue with peers concerning the issue at hand while also helping to create the content hierarchy, enhance and suggest visuals, colors and themes of the proposed infographic.

Iterative data analysis approaches allow for constant assessment of study outcomes and themes. This study produces theoretical, practical and methodological implications for future research on the lacking area of scholarly literature. Findings from this dissertation suggest a need to (1) test the proposed infographic for potential national health campaign usage, (2) a need for more long-term collaborative community efforts for continual population access in research on

Cervical Cancer prevention, and (3) future assessment of a newer form of focus group research that focuses on incorporation smaller participant groups for increased hands-on interactivity.

## CHAPTER 1: INTRODUCTION

Visuals exist everywhere—from our memories to our social media platforms. Humans are naturally accustomed to creating and using visuals. Confirmation can be found in the fact that the first forms of human communication were drawings carved in cave dwellings with sticks and stones (Krum, 2014; Lauren, 2013; Smiciklas, 2012). Caveman drawings have been stated to portray a number of real-life circumstances during that time, including: the beginning of life, the end of life and other joyful and/or traumatic occurrences (Lauren, 2013). Over the past century, we have created entirely new sets of textual and oral communication that vary around the world. Yet, we still use visuals to depict various aspects of our lives. Conceptually, humans have drastically evolved in regards to the extent that visuals influence our perceptions of entertainment. Whether playing a video game or attending a *Paint and Wine Night*<sup>1</sup>, we are very enthralled with visuals as entertainment. However, visuals serve not only as highly intriguing and captivating tools, they also have the ability to help us function to our maximum extent. Just as inventions are sketched out before they are actually created, when we don't know the way visuals help us see the way.

With our innate attraction to visual culture, it makes sense that new interdisciplinary approaches to education and practical communication are emerging. In science, researchers are looking into ways to incorporate graphic design theories in their visual approaches (Rodriguez Estrada & Davis, 2014). In the field of communication, sectors like Public Relations are improving typical communication tactics (e.g. press releases) to become more visually inclusive for goals toward creating more viral-like outcomes in message dissemination (Parrish, Jones, & Fuller, 2015). Across these and many disciplines, visuals classified under the category of

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<sup>1</sup> A national popular culture form of entertainment that involves enjoying an expert-guided painting session and a glass of wine.

information graphics (infographics)—combinations of visuals and text—are becoming largely used. Although infographics are more recently being used in innovative, interdisciplinary ways, they are certainly not a *new* method of multimodal communication (Krum, 2014; Lankow, Ritchie, & Crooks, 2012; Smiciklas, 2012). In fact, infographics have a long history of success in many educational and practical disciplines. In communication specifically, infographics have been used to complement editorial publications (such as a map with textual locations: (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). In health, infographics have been used as diagrams and visual explanations of various bodily function or diseases. Given that our methods for communication continually advance, so should our uses of visual stimuli and infographics.

Looking specifically at health, infographics have and continue to play a unique and pivotal role in bridging communication gaps between doctors, nurses, practitioners and patients. Visuals and infographics are most commonly used to supplement various health campaign materials—from inserts in brochures to labels on medicine bottles. As a result, however, infographics and visuals are typically an afterthought to communication campaigns in health (Rodriguez Estrada & Davis, 2014). Much time is spent on crafting theoretically driven textual messages (E. Maibach & R. L. Parrott, 1995), while less effort is placed into the visuals that accompany the materials (Rodriguez Estrada & Davis, 2014). This in itself can be a significant disadvantage to the potential of these health materials, as extant visual communication research relays that multiple modalities can equally enrich each other far better than one modality alone (Giese & Baden, 2015). The evolution of multimodal methods of communication in health, such as infographics toward maximum effectiveness is an area severely under researched. Increasing research on intersections of health and infographics could potentially prove to be a pivotal form of communication used to combat various health communication barriers.

## **Evolving Role of Communication in Public Health**

The role of communication in public health continues to advance to best accommodate a wide spectrum of health-related needs, as health undeniably impacts everyone to a certain extent. Over time, advancements in health and health communication research have highlighted that it is just as important to communicate new and effective forms of health prevention, intervention and treatment as it is to actually create a medical solution (Rimal & Lapinski, 2015). As the health field has progressed research has highlighted gaps in terms of the consistency of communication to certain populations (Schiavo, 2014). Those populations in current times are often labeled under-served or under-represented populations. Modern health practice and academic discourse has even made categories of research and curriculum such as health disparities, which represents the differences in health access that different populations or groups of people have or do not have (Schiavo, 2014).

Issues with communicating to populations that are categorized under health disparities include health literacy, financial status and geographical location (Davis, Buchanan, & Green, 2013; Strohl et al., 2015; Sung, Alema-Mensah, & Blumenthal, 2002). Of these barriers this dissertation focused on health literacy as it is a crucial area of scholarly and practical attention (Benyon, 2014; Hay, 2010; Hernandez, Landi, & Literacy, 2011; Stacy T. Lindau et al., 2002; Paina, Taskaya, & Sahin, 2014; Sykes, Willis, Rowlands, & Popple, 2013; Torpy, Burke, & Golub, 2011). In particular, health literacy can be seen as a huge factor in prevention of education and treatment in health (Benyon, 2014; Bynum et al., 2013; Hernandez et al., 2011; Koh & Rudd, 2015; S. Lindau, Basu, & Leitsch, 2006; Lindau et al., 2002; Lindau, Tomori, Mccarville, & Bennett, 2001; Mentis, Perez, Flores, & Acton, 2013; Sykes et al., 2013; Williams & Templin, 2013; Zahnd, Scaife, & Francis, 2009). Health literacy not only pertains to the extent

that an individual can comprehend health literature, but also the extent to which an individual can actually complete prevention, intervention and/or treatment requirements in health (Hay, 2010; Lindau et al., 2006; Torpy et al., 2011). Thus, it becomes important for health workers, researchers and providers to create innovative methods of communication for specific and attainable health information and actions to populations at risk or in need of increased attention (Schiavo, 2014).

### **Visual Effects on Health Literacy**

Literacy plays a pivotal role in understanding various positive health behaviors. Only 12% of the US population is considered health literate, meaning many are unaware or not concretely certain of various topics surround health and preventive measures (Koh & Rudd, 2015). As previously mentioned, literacy in health involves more than being able to understand textual literature on a specific health behavior, topic or disease (Lindau et al., 2001; Strohl et al., 2015; Williams & Templin, 2013). Yet, literacy in health also involves being able to understand health behaviors, methods of prevention and being able to actually complete each task or measure (Benyon, 2014; Hay, 2010; Koh & Rudd, 2015; Nutbeam, 2000; Osborne, 2006; Paina et al., 2014). For example, one might receive literature on a stress relief guideline that relays completion of regular meditation exercise routines, like yoga, to help relieve stress. In this scenario, the person reading the literature may fully comprehend that yoga can help relieve stress, however, they might not know how to implement the exercise routine into their busy schedule. This represents a literacy barrier in health.

In certain circumstances, visuals have been used to assist with textual content to combat literacy barriers. Keeping with the above scenario, consider that there were visualizations of how one could practice yoga for 15 to 20 minutes in their work office or get their children involved in

yoga during periods of family time. The reader might have a better idea of how they can incorporate this specific meditation exercise into their lifestyle. Thus, the explanatory and descriptive text accompanied by visuals likely increased the health literacy of the individual reading the literature. This further illustrates how multimodal methods of communication like infographics—including the modalities of text and visuals—are specifically capable of providing maximized understanding of many circumstances.

### **Statement of the Problem: Cancer in Health Communication**

In 2015 alone, an estimated 1,658,370 new cancer cases were medically confirmed and approximately 589,430 will die from the disease (National Cancer Institute (NCI), 2015a), confirming that research on various forms of cancer is extremely relevant and important. With that said, however, mortality has significantly declined over past decades (specifically for women) as procedures such as breast and vaginal screenings can detect cancer in its earliest of stages. NCI (2015c) stated that cancer among women decreased by 1.4 percent from 2002 to 2011. These medical advances have best helped cancers like cervical cancer (CC), a form of uterine cancer, which was once the leading cancer among women (Shepard, 2011).

Unfortunately, despite CC being both preventable and treatable if acquired, the death toll among certain populations has not reduced as rapidly as other populations. Extant research highlights that there are a number of populations with higher rates of mortality from CC—such as African American, Hispanic and Asian women (Bellinger, Millegan, & Abdalla, 2015; Ford et al., 2013; Strohl et al., 2015). Thus, it is no coincidence that in the U.S. there is a long-standing history of medical distrust between various minority populations, including African Americans. Historical evidence of mistreatment of minorities in the national history also contributes to the lack of willingness to seek medical evaluation by minority individuals (Brandon, Isaac, &



LaVeist, 2005; Branson, Davis, & Butler, 2007; Brown, Fouad, Basen-Engquist, & Tortolero-Luna, 2000; Chandra & Paul, 2003; Cohen, 2003; Frank, 2004; Jones et al., 2006; Kelch, 2002; Quinn et al., 2007; Seto, 2001; Shavers, Lynch, & Burmeister, 2002). This information further sets the stage for innovative visual health prevention practices that can potentially decrease health literacy issues—by being more comprehensible—and potentially increase medical trust and transparency—by visualizing what prevention and medical interactions look like.

### **Cervical Cancer Impact on African American Women**

The health population with the highest mortality rate from CC is African American Women (AAW) (Davis et al., 2013; Glick, 2012; Rauh-hain et al., 2013). As a result, extant research pertaining to CC prevention for AAW's has been conducted surrounding potential factors and barriers from cultural influences to health literacy barriers (Lindau et al., 2001; Strohl et al., 2015; Williams & Templin, 2013). Along these lines, empirical research has highlighted the need for more effective presentation forms of health-related information to better assist women with low health literacy levels regarding CC (Bynum et al., 2013; Sabrina T. Wong et al., 2011). There are many health campaigns and initiatives that are strategically focused on reaching and impacting minority women to engage in better CC prevention measures (Ansell, Lacey, Whitman, Chen, & Phillips, 1994; Baldwin, 1996; Bellinger et al., 2015; Corbie-Smith, Thomas, Williams, & Moody-Ayers, 1999; Dale, Polivka, Chaudry, & Simmonds, 2010; Dignan et al., 1990; Ford et al., 2013; Glick, 2012; Hoyo et al., 2005; Price, Desmond, Slenker, Smilth, & Stewart, 1992; Sung et al., 2002; Tanner, Kim, Friedman, Foster, & Bergeron, 2015). However, CC mortality rates in AAW have not significantly lowered as a result of these efforts (Bellinger et al., 2015). Further, this body of work qualitatively examined infographics, a visual-text combination, created with health communication as an effective visual communication aid to

better explain CC prevention measures and positively influence AAW to take action in protecting their lives against CC—potentially boosting literacy and lowering incidences of mortality. Although the impacting factor of health literacy was the main focus of this study, medical distrust and cultural stigma were also considered, as they are historical barriers for the African American health population.

### **Purpose of Study**

This dissertation study advances both scholarly and practical efforts through creation of visual CC prevention that can potentially lower health literacy barriers and positively influence AAW to engage in CC prevention measures—ultimately decreasing the rate of mortality among the health population. This was done by the creation of a theory-driven CC prevention infographic for AAW between the ages of 30 to 65 by (1) using Health Belief Model (HBM) constructs and relevant extant literature which guided creation of infographic textual and visual content and (2) conducting focus groups that allowed participants to help construct an infographic (using the prior created theory-driven textual and visual content) in a way they feel would best communicate CC prevention methods to their health population.

This dissertation specifically developed an infographic because of the tool's potential to be visually dynamic. Visuals can be more easily digestible and comprehensible than plain text (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012), thus, research involving visuals as innovative methods of relaying health-related information to patients and publics has surfaced. From cartoons to photograph, the use of visuals for patient and public communication in health has been positively effective for increasing comprehension, attention, recall, and adherence (Houts, Doak, Doak, & Loscalzo, 2006a; Osborne, 2006; Peregrin, 2010). Further, it has been found that the combination of visuals and text is ultimately a more successful method of relaying

information and messages relating to health. One potentially effective tactic within the strategy to increase literacy and comprehension to health-related messages is the use of infographics—a larger graphic design that combines data visualizations, illustrations, text, and images to convey complex information to an audience in a manner that can be quickly consumed and easily understood (Krum, 2014; Smiciklas, 2012).

**Infusion of theory.** Scholars have argued that message and visual design in health related endeavors can be maximized as a communication tool by using health communication theory in the creation process (du Pre, 2014). Infusing health communication theory, the HBM, in the construction of the textual and visual infographic content can potentially make the aims of this scope of work more impactful. The HBM is one of the oldest and most widely used health communication theories (Janz & Becker, 1984; Maibach & Parrott, 1995; Rosenstock, 2000). The aims of HBM are to better assist in pinpointing reasoning behind intentions various populations harbor in terms of engaging in prevention behaviors (Janz & Becker, 1984; Maibach & Parrott, 1995; Rosenstock, 2000). Utilizing the constructs of HBM—perceived susceptibility, severity, barriers, benefits along with cues to action and self-efficacy—in addition to extant literature in health and visual communication, an applied outcome of this dissertation is a CC prevention infographic for AAW comprised of better guided message framing that is specific to the barriers, benefits and self-efficacy of the specified demographic.

As infographics are a strategy for effective communication across many topic areas and disciplines, they are specifically under researched both academically and in the health and medical disciplines. With this said, this dissertation explored infographics as an effective health communication tool for CC prevention messaging geared for AAW's to possibly combat literacy barriers in health, and potentially high mortality rates among the at-risk population. For

increased effectiveness the infographic design and messaging was led by use of the HBM. As HBM was created to gauge behaviors in terms of preventive measures (Glanz, Rimer, & Institute 2005; Maibach & Parrott, 1995), the theoretical framework guided infographic messaging in order to target and address literacy barriers, as well as explore the motivations and positive behaviors toward preventing CC.

### **Summary of Proposed Methodology**

The proposed study utilized a qualitative methodological approach by use of focus groups to inform both the CC prevention infographic for visual use in health communication. Focus groups have been effective methods for studying CC related topics involving AAW, as women are allotted the ability to express their ideas and concerns toward interventions geared toward their population (Dignan et al., 1990; Hoyo et al., 2005; Mcrae, Martin, O’leary, & Sharp, 2014).

Upon receiving research permissions from Virginia Commonwealth University’s (VCU) IRB, six focus groups of 2-3 AAW between 30 and 65 years of age were conducted in the Richmond, Virginia area. Prior to the focus groups, theory-driven CC prevention textual messaging and visuals were created to present to the focus group participants. The focus groups were used to gain perspectives and criteria participants feel are important for inclusion in the final infographic. These focus groups followed the flow of (1) introduction of CC (and current issues) and potential infographic content to participants, (2) relevant questions were asked and answered to generating and stimulating discussion, and (3) examining of potential infographic protocol conclusions; *see Appendix B* (Davies & Laing, 2002).

The data from the six focus groups were then analyzed iteratively to further define and re-develop a CC prevention infographics for future campaign use. Ultimately, this research

augments and diversifies a lacking body of literature that explores non-traditional forms of health communication that are tailored to specific needs of at risk or underserved populations.

### **Implications of Study**

Extant literature communicates that acts of educating various health populations about medical information has the potential to help individuals steer clear of misguided decisions and health care misunderstandings—further reducing healthcare costs nationally (Leroy & Miller, 2010). Efforts like these could be extremely impactful as the national impact of healthcare costs associated with cancer are estimated to reach \$156 billion by 2020 (National Cancer Institute, 2015a).

From this proposed study design and analysis, it is suggested that infographics as a health communication tactic may be successful when culturally tailored and implemented in community-based health communication programs. Given the success of prior conducted cultural specific initiatives and interventions, the CC infographics created for this study incorporated aspects of those successes and applied them to a new form of visual exploration for potential increased success among the health population. As the focus group research method can allow for a rich and vast arrangement of data, analysis methods assisted in ensuring that important themes relevant to the population are applied to the revised version of the infographic.

Not only will AAW in the target health population potentially interact with the culturally tailored visuals well, they will also be easily accessible and sharable, as the digital nature of infographics makes the tool great for digital and social media campaigns. Yet, this health communication tool can also be implemented within print health communication campaigns as the infographic can be printed in the form of a bookmark, placed in a brochure and/or printed on a larger scale as a standalone poster for events. Considering existing literature on literacy levels,

the culturally tailored visuals and text to be featured in the infographic could potentially increase low levels among the demographic. At the same time, using the HBM model as a guiding theory can address key attitudes and behaviors surrounding self-efficacy and barriers to screening to generate an increase in positive thinking and action toward CC screening recommendations.

## **Reflexivity**

This research endeavor is a specific motivation of mine due to an external cue to action in vaginal cancers—my grandmother passed of endometrial cancer in 2006. I was just 18 when she passed and had no clue how I could give back to the cause, yet I knew I would. Years later, upon entering the Media, Art & Text program at Virginia Commonwealth University for health communication, I began my journey. The journey is one that is more complicated than it seems. I began college as a fine arts student and eventually transferred into the communication discipline of public relations. Post-undergraduate studies I interned for two national health non-profits—the American Heart Association (AHA) and American Diabetes Association (ADA). In both opportunities I gained hands on experience with created and redrafting health materials for many demographics including minorities. At the ADA I created a month-long initiative that targeted AAs whereby a local ethnic restaurant featured a health conscious menu for National Diabetes Awareness Month. I was not only able to gain experience graphically designing the menu but I also gained experience in creating culturally relevant and impactful campaigns. While at the AHA, I was able to experiment with many elements of mixing design with communication of serious health issues. One specific endeavor was the designing and sewing of an all red line of garments called “Couer du Rouge” on behalf of AHA and all women fighting heart disease. The fashion line premiered in Richmond Fashion Week 2013. Just before I left my AHA internship one of my mentors asked me a question: “Have you heard of infographics?”

After learning exactly what an (modern day) infographic was I knew I had to somehow incorporate that specific form of visual into my research. When I began my doctoral studies I was met with challenge in studying endometrial cancer and infographic effects because there is little empirical research on the disease. After much contemplation and several talks with mentors I was directed to study another form of vaginal cancer, that had exponentially more information published—CC. My current strategy in studying CC is to find effective ways to visually communicate risks, once proven to go back and apply these same principles to vaginal cancers of less popularity—endometrial and ovarian cancers. After a couple of years of infographic and CC exploration, I found that AAW have the highest mortality rate among other races studied. I found this truly unfortunate as CC is both preventable and treatable and realized that there is potentially a communication issue that could be resolved. Being an AAW myself, I am extremely proud to be able to give back to the legacy of my grandmother and other AAW who passed from vaginal cancers. I am also grateful for the opportunity to potentially save lives through providing meaningful visual forms of communication on preventing CC among AAW.

During my time as a doctoral student, I have had the opportunity of co-authoring an awarding winning paper on infographics in media relations use in public relations strategy. I have also been awarded the Inez Kaiser Graduate Students of Color Award from the Public Relations Division of the Association of Education for Journalism and Mass Communication. Both of these opportunities have reinforced my interest in (1) using design in communication research to allow for maximum effectiveness among many publics and (2) striving for diversity inclusion in scholarly research and communication practice.

## **Organization of Dissertation**

In total, this dissertation represents a claim toward using infographics for CC prevention within the AAW population in health communication. The next chapter, the literature review, will serve as the foundation for this dissertation's argument. By providing historical context and current scholarly and practical endeavors, the literature review embodied seven major components: Cervical Cancer, African American Women and Cervical Cancer, Health Communication, Visual Communication, Visuals in Social Science Research, Infographics and the Health Belief Model. The following chapter, the methodology, offered deeper insights into the research procedures applied to this study and understanding of the CC prevention infographic creation process. Further, the methodology included how the data was both collected and analyzed. Background information and opportunities pertaining to reliability, validity and reflexivity were elaborated.

The fourth chapter of this dissertation communicated the results of this qualitative exploration. After focus group outcomes and findings were analyzed, they were reported according to corresponding research questions. This study's results also provided insight for revisions made to the final infographic presented (see Appendix G). After the reported results, critical and in-depth discussion, on the state of infographic use for prevention communication to AAW ages 30 to 65, built the foundation of chapter 5. In addition to the discussion of new themes and impactful findings, connections were made with pre-existing literature to highlight the relevance of this body of work. Chapter 5 provided cohesive closure to this dissertation by discussing the theoretical, practical and qualitative research implications. The discussion also highlighted the limitations encountered during this endeavor and future directions in terms of the longevity of this scholarly and practical research venture.



The last components of this dissertation include a list of references, supporting tables, the appendices, and a vita. As there are many pending definitions for “infographics,” Table 1 serves as a definition map. Table 2 provides an outline for the posed research question in this exploration while Table 3 presents the textual content utilized within the final infographic—both of which show direct correlations to scholarly literature, theoretical frameworks and important areas of discussion within this research (i.e. health literacy). Table 3 shows the characteristic background of the participants involved in the study.

The appendices included several components that include Appendix A which is the recruitment email sent to members of the target health population for participation in the study and Appendix B which is the guide and script for the focus groups to be conducted. The research participant’s exempt information sheet represents Appendix C, while the study’s promotional flyer represents Appendix D. Appendix E is a focus group information sheet on CC prevention for women to be further educated at home after study participation. The outcome of the infographic represents Appendix F. The vita provides a brief overview of the researcher whom completed this dissertation research.

## **Chapter 2: Literature Review**

The second chapter of this dissertation provides an extensive review of key components, topic areas and theoretical frameworks that support the research aims of creating theory-driven infographics for CC prevention in AAW. As an introduction into the scholarly and practical need for this research, the literature review opens by providing a representation of current CC literature. Including historical origins and areas of opportunity, the literature review flows from solely focusing on CC and prevention to a comprehensive overview of the target health population for this research. By including health insights on AAW, this section of the literature review also highlighted and examines cultural stigma and medical distrust among the demographic. This section included evidence of effective forms of intervention and communication with AAW as well. This particular section of the literature review explains several impactful factors to creating infographics for health prevention purposes, such as health literacy and prior use of visuals in health communication. This supporting content lead into an overview of effective approaches for visual use in social science research that, due to the lack of empirical research about this innovative visual exploration, also helped guide the creation of the infographic. A glimpse into visual communication research followed, as it affirms this dissertation's argument that multimodal forms of communication can ultimately enhance a message. Further delineating uses of visuals, a section on the history and practice of infographics ensued. In doing so, health prevention infographics are defined for the specific context of this research. Lastly, this section provides an overview of the theoretical model, HBM, which was used to guide construction of the infographics for this qualitative exploration. HBM constructs further explained, as well as, its relationship and purpose in this dissertation. Twelve research

questions, which evolved from the above review of literature for this exploratory study, are embedded in the body of this chapter to refer to its supporting context.

### **Cervical Cancer**

CC is a type of cancer that only occurs in women, as it forms within the cells that line the cervix, located at the lowest area of the uterus (NCI, 2015e; American Cancer Society (ACS), 2015c). Types of cells that can eventually evolve into CC are medically noted as pre-cancerous cells. After the formation of pre-cancerous cells in the cervical lining, it could take anywhere from less than one year to several years for the cells to progress into cancer of the cervix (Society, 2015c). Risk factors for CC include: smoking, former childbirth, engaging in sexual intercourse at a young age and having many sexual partners (NCI, 2015d). However, the greatest risk for developing CC is acquiring the Human Papilloma Virus (HPV) (NCI, 2015d).

HPV is a sexually transmitted virus and is the first known virus to be directly linked to causing CC (NCI, 2015c; Centers for Disease Control and Prevention (CDC), 2015c). There are many different strains of this virus, however, strains 16 and 18 have been linked with the cervical changes that often lead to CC (NCI, 2015c). The prevalence of HPV is that most women, by the age of 50, will have acquired HPV (CDC, 2015c). Though the immune system may rid the body of the virus in most women, it should still be monitored by a health professional if detected to further help decrease chances of CC going undetected. A huge effort to prevent HPV among women from ages 13-26 is the Gardasil vaccine, which helps prevent acquiring strains 16 and 18 (CDC, 2015d). Although the vaccine can be taken by women older than 26, they are often not the target of that prevention campaign. For all women, the most common way of detecting pre-cancerous cells and HPV is through a routine vaginal exam, called a pap smear (National Institutes of Health (NIH), 2013). In recent years, pap smears have been noted to significantly

decrease chances of mortality from CC, as the examination can detect early warning signs of the cancer.

There have been many misconceptions and myths about CC, including the ideas that CC cannot be prevented, young women do not acquire CC and that abnormal exams equate to CC diagnosis (Comprehensive Cancer Center (CCC), 2013). Given that the creation of pap smears has been noted to significantly decrease chances of CC diagnosis and death incidences, it makes sense that the CC is no longer in the top ten most common cancers (NCI, 2015b). Being that it is not a common cancer, less national attention and effort may be given toward clarifying misconceptions around the cancer and debunking myths. This type of ambiguity surrounding CC, combined with mass perceptions of medical distrust could provide an even greater gap of understanding of preventive measures against CC among underserved populations who have high rates of mortality for the preventable and treatable disease. One way to counteract issues with distrust and ambiguity among populations' experiences of CC disparities is to visually educate them on prevention measures and procedures. The limited amount of extent research in this area shows that visual representations of cancer-related information were more successfully comprehensible than textual content alone (Wong et. al., 2012). Thus, visual forms of CC explanations can not only increase literacy, but also help encourage trust between medical entities and underserved patients—as they serve as both data visualizations and visual explanations (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012).

### **History of Cervical Cancer**

In the 1940s, CC was the leading cause in mortality of women in the United States (Shepard, 2011). Over the past several decades the rate of mortality in American women related to CC has significantly decreased (American Cancer Society (ACS), 2015b), largely in part to

the invention of the Papanicolaou test, named after leading cytology researcher George Papanicolaou (Shepard, 2011). In the 1930's Papanicolaou perfected the method of collecting vaginal smears from women to use for various purposes, including detection of cancerous cells (Shepard, 2011). As Papanicolaou was often referred to as "Dr. Pap," the test was later shortened to "Pap smear" (Shepard, 2011). The pap smear is perhaps the most pivotal invention to CC history and was introduced to routine well-woman health exams in the 1950s (NIH, 2013; Shepard, 2011; Teoh et al., 2015). Since the widespread use of the pap smear, early detection has contributed to a 70% decrease in mortality among American women (Teoh et al., 2015).

Concerning recommendations for routine pap smears, it was standard for women to visit their doctors annually to increase chances of detecting precancerous lesions (Teoh et al., 2015). In recent years, changes have been made to those guidelines as research has provided insight on why annual testing could be detrimental to the patient—physically, emotionally and financially. Researchers found that annual testing could result in testing procedures, like colposcopy evaluations and/or biopsies, on cervical lesions that the body may heal without medical attention. This, in turn, could cause emotional stress in the patient and further, access testing procedures have been found to a distorted cervix and/or preterm birth increase (Teoh et al., 2015). Not to mention, healthcare costs for women have been noted as a barrier to adhering to CC screening guidelines (Sung et al., 2002).

### **Relationship to HPV**

In the 1990's it was confirmed that viruses called the Human Papillomaviruses (HPV) were directly linked to CC incidences in women, although it had been studied as far back as a decade prior (CDC, 2015b). Although there are over 120 HPVs, only 4 strands were relatively linked to CC—strands 6, 11, 16 and 18 (CDC, 2015b). HPV strands 6 and 11 are considered to

be low-risk strand that cause minor cervical cell abnormalities (CDC, 2015b). HPV strands 16 and 18, however, are considered to be high-risk as the strands cause for 70% of CC together (CDC, 2015b). After the creation and licensing of the Gardasil HPV vaccine in 2006, it was recommended that girls and women ages 11-26 receive the vaccine. The vaccine was promoted as effective for preventing precancerous lesions.

### **Prevention**

In 2009, it was recommended by the American Congress of Obstetricians and Gynecologists (ACOG) that women begin receiving pap smears at age 21 and continued with biennial screenings until age 29 (Perkins, Anderson, Sheinfeld Gorin, & Schulkin, 2013). These guidelines also included recommendations for women age 30 and above (with normal pap smears) to receive triennial pap smears with HPV co-testing until age 70, when screening could be discontinued (Perkins et al., 2013). In 2012, the American Cancer Society (ACS), the American Society for Colposcopy and Cervical Pathology, and the American Society for Clinical Pathology and by the US Preventive Service Task Force contributed to updating national CC screening guidelines (Perkins et al., 2013; Teoh et al., 2015). Suggestions included that women aged 21-29 received triennial pap smear testing, and women aged 30 to 65 receive pap smears in 5 year intervals with HPV co-testing (Perkins et al., 2013).

### **Barriers to prevention**

As noted, national screening guidelines can change or be updated every few years as new and improved research is released with positive justifications of the change. Adjusting practical methods and patient recommendations to the changing guidelines has proven difficult for many physicians (Perkins et al., 2013; Teoh et al., 2015). In several studies gynecologists say the biggest reason for not following national recommendations when changed were due to patient

concerns over going longer periods without a screening. In a national survey of gynecologists registered as members of ACOG, Perkins et al. (2013) found that only 16 physicians reported adherence to the 2009 screening recommendations. Further it was reported that a huge barrier was the doctor-patient relationship (Perkins et al., 2013). Teoh et al. (2015) found that patients who understood that these recommendations were evidence-based were more likely to adhere to the longer intervals, as opposed to patients who believed the updated guidelines were a result of cost concerns.

Beyond doctor-patient barriers, there are disparities in screening rates among various ethnic groups and underserved populations. This barrier contributes to the divide of screening adherence between White women and Black, Latino, Asian and Arab women in the US. To help clarify misconceptions and further educate underserved women on the benefits to adhering to CC guidelines, numerous efforts of community-based approaches have been implemented nationally (Hiatt et al., 2001).

### **African American Women and Cervical Cancer**

The AAW population has experienced lower positive health outcomes than many races and ethnicities in the US. From poor birth outcomes to cardiovascular disease, diabetes and cancer, this health population has been linked to high rates of many diseases and conditions to widespread environmental, financial and social issues (Dale et al., 2010). As one of the leading populations experiencing disparities in health, it is important that strategic, yet cautious measures be taken in both research and intervention initiatives. In US history, this is a minority population that has often been mistreated and involuntarily experimented with. As a result statistics on engagement with medical trials and research are low, even though this population could truly benefit from more positive, culture-specific and effective health measures (Corbie-Smith et al.,

1999; Tanner et al., 2015). In regards to CC, these same patterns are present as AAW are more likely to die from a cancer that is one of the most preventable and treatable forms.

Given the troubled medical history of AAW in the US, this study explored use of CC prevention infographics as health communication campaign tools. This was accomplished by discussing and collaborating with AAW on CC prevention methods via focus groups that created a visual tactic—the infographic—to potentially decrease health literacy barriers (such as medical distrust), and increase influence to act on prevention measures. The former was completed by (1) using Health Belief Model (HBM) constructs and relevant extant literature which guided creation of infographic textual and visual content with the use of (2) focus groups that allowed participants to help construct an infographic (using the prior created theory-driven textual and visual content) to best communicate CC prevention methods to their health population.

### **Health Population Overview**

Although CC is both preventable and treatable, research shows that AAW from ages 45-65 are greatly impacted by CC (Davis et al., 2013; Glick et. al., 2012; Hoyo et al., 2005; Rauhain et al., 2013), as they are 2.5 times more likely to die from CC than white women (Sung et al., 2002). Thus it becomes crucially important to target women between the ages of 30 and 65 to educate and prepare them to adhere to pap smear (and other health routines) that could significantly reduce their chances of acquiring CC and/or dying from the cancer later in life (Hoyo et al., 2005; Sung et al., 2002). This knowledge, paired with the research that highlights AAW as having the highest CC mortality rate, has directed me to target this health population for this visual communication health intervention—AAW ages of 30 to 65. Based upon literature concerning the higher mortality rates from CC for AAW, the following research question was created:



**RQ1:** How do AAW ages 30 to 65 perceive the severity of CC?

Extant research pertaining to CC prevention for AAWs further highlights that factors like barriers from cultural influences to health literacy can hinder adherence to recommended guidelines (Lindau et al., 2001; Strohl et al., 2015; Williams & Templin, 2013). Health literacy not only includes an individual's capability to comprehend health-related information, but also an individual's capability to make informed decisions regarding their health (Hay, 2010; Torpy et al., 2011). Along these lines, empirical research has highlighted the need for more effective presentation forms of health-related information to better assist women with low health literacy levels regarding CC (Bynum et al., 2013; Wong et al., 2011).

### **Medical Distrust among African Americans**

As briefly noted above, there is a longstanding perception of distrust between medical entities and minority patients, namely African American (AA) populations (Brandon et al., 2005; Branson et al., 2007; Chandra & Paul, 2003; Corbie-Smith et al., 1999; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002; Tanner et al., 2015). For many reasons AAs are not as highly involved in research studies dealing with medical issues, such as clinical trials, due to ambiguity around these health topics. In the US, AAs have been historically deceived and mistreated in the health arena (Brandon et al., 2005; Branson et al., 2007; Chandra & Paul, 2003; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002). Because of this unfortunate history, perceptions of distrust in medical industries have been passed down from generation to generation. From opposing vaccination to in-hospital cancer treatment, the AA health population has been noted to be less involved in research and treatment than many other races/ethnicities in the US (Corbie-Smith et al., 1999; Price et al., 1992; Tanner et al., 2015). There are many scholarly studies that examine barriers and resistance to treatment among this population (Corbie-Smith et al., 1999;

Tanner et al., 2015; Truog, Kesselheim, & Joffe, 2012). In doing so, it has been re-affirmed that many persons belonging to this population do not engage in various medical opportunities (research and/or treatment) because of factors such as interference with schedules and personal time, fear of mistreatment and/or being injected with harmful viruses and fear of participating in the study while other AA's will not actually benefit from the potential positive results and/or treatments (Brandon et al., 2005; Branson et al., 2007; Brown et al., 2000; Chandra & Paul, 2003; Cohen, 2003; Corbie-Smith et al., 1999; Frank, 2004; Jones et al., 2006; Kelch, 2002; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002; Tanner et al., 2015).

Another barrier to AA involvement in treatment and research that could potentially be beneficial to this population is that sometimes the population is overlooked altogether because of ambiguity surrounding communication with the health population from the provider or clinical trial investigator (Tanner et al., 2015). Research investigators may be unfamiliar with communication and recruitment of certain populations and furthermore may not be trained in tailoring recruitment information for minority populations who often harbor fear and distrust (Tanner et al., 2015). This type of passive discrimination is also a factor that contributes to reluctance to collaborate and accept various forms of treatment among the health population. Personal and cultural stories have been shared throughout people in this demographic, which increases un-ease with engagement in such health-based endeavors.

**Tuskegee syphilis study.** The Tuskegee Syphilis Study is an internationally recognized example of medical mistreatment of AA persons for unethical advancements of health (University of Tuskegee, 2015). This specific case is one so unfortunate that it remains a contributing factor to lack of AA involvement in health-based initiatives, even after almost 70 years since the incident was publicized. From 1934 to 1972 researchers at the Tuskegee Institute

conducted a study called “Tuskegee Study of Untreated Syphilis in the Negro Male.” With an intention of following longitudinal incidences of syphilis in AA males, researchers recruited the study’s target health population from Macon County, Alabama—then known as the “Black Belt” due to the large concentration of AA sharecroppers in the area (University of Tuskegee, 2015). To encourage participation in the study, AA males from the Black Belt were bribed with free medical attention to current minor injuries, free meals during study participation and incentives for the benefit of their families if and when they passed on (University of Tuskegee, 2015). In the duration of the study, which was an experiment, approximately 600 men participated—399 had syphilis and roughly 201 were designated as control subjects. At the time the almost 40 year-long study began, there was no treatment for syphilis. However, in 1947 penicillin was medically proven to be a standardized treatment for syphilis. Despite knowing this treatment, researchers involved did not offer treatment to the (mostly) illiterate and uninformed men (University of Tuskegee, 2015). The conductance of this study had a fatal and tragic ending for many involved, as a large number of the participants died while some of their partners and children were also infected.

The story broke to mass media in 1972 when the Associated Press released a story that relayed the horrific actions implemented against the marginalized demographic. A class-action lawsuit was filed in 1973 that awarded 9 million to the study’s participants and participant survivors (University of Tuskegee, 2015). However, it wasn’t until May 16, 1997 that a national apology from President Bill Clinton at the White House, was given to the survivors and families of those who passed during the study (Prevention, 2013). In focus groups conducted by Corbie-Smith et al. (1999) pertaining to the discovery of why AAs do not participate in clinical trials, respondents actually mentioned the Tuskegee Syphilis study several times in reference to their

fears of being medically mistreated. There were several misunderstandings being shared throughout the discussion, such as when the moderator shared the full story, participants still had trouble agreeing with her explanation. Further, one participant said “I’m not saying you are lying or anything, but just like you are telling me one side, there could be a lot of different sides. You may have been misled as to the facts” (Corbie-Smith et al., 1999, p. 5). Participants in this same study also believed that epidemics such as AIDS and crack distribution in low-income inner-city areas evidenced their fears of what happened during the Tuskegee Syphilis study (Corbie-Smith et al., 1999).

**Henrietta Lacks.** Another unfortunate story that remains a hallmark of medical mistreatment in AA and American culture is that of Henrietta Lacks, an African American woman who passed of CC at John’s Hopkins University in the 1951 (Skloot, 2010). Lacks was being treated at John’s Hopkins for a “vicious” form of CC when doctors sampled cells from her tumor and realized that they did something never discovered before, they reproduced new generations of cells every 24 hours (Skloot, 2010). As Lacks suffered and eventually passed away, her cells were revered for their reproductive properties and sent to many different parts of the world (like India) to be used in various types of medical research. An unethical challenge to this story is that Lacks, nor her family, had consented to having her cells being used in such a way. Her cells, shortened to HeLa in laboratory discussion, have been used in the creation of Polio vaccines and cornea replications to help people see—HeLa cells were even sent to the moon for research (Skloot, 2010). Making matters worse, Lacks’ survivors never received any portion of the funding that was made from the business of HeLa cells over the past decade. In fact, many of her relatives lived in extreme poverty (Skloot, 2010; Truog et al., 2012; Zimmer, 2013) and often received visits from John’s Hopkins researchers who found ways of gaining

signed consent from them as they were not even well educated on what the cells were being used for, and they could even be used years later (Skloot, 2010).

Unfortunately, it wasn't until the 2000s when Lack's story began to gain more exposure and her family gained more education and inclusion regarding her story. In 2010, Rebecca Skloot (2010) published a book titled "*The Immortal Life of Henrietta Lacks*," which provided a very in-depth story behind what happened to Lacks, her cells and her family over the years. In 2013, the National Institutes of Health granted Lacks' survivors permits of control over the usage of Henrietta Lacks' genome (Zimmer, 2013). Although this agreement didn't offer financial repayment or buy-in from all the money HeLa cells generated (and continue to generate), it was a major positive advancement in national medical history (Zimmer, 2013).

**Mississippi appendectomy.** The above type of medical mistreatment in AA's (in general) and AAW's are not circumstances that rarely happened in that time period. In fact, there are many cases and incidences when AA's and AAW were experimented on at the hands of those medical providers who harbored negative intentions. One specific to AAW is the incidences of Mississippi Appendectomies that involved the involuntary sterilization of AAW nationally, but namely in southern US states in the earlier half of the 1900's (Sebring, 2007b). Civil Right activist Fannie Lou Hamer coined the term "Mississippi Appendectomy" (Sebring, 2007a, n.p.), which occurred frequently during a time period where "population control" (Serbing, 2007b, n.p.) in various forms was being practiced to limit black opportunities, such as voting power (Volscho, 2010). During the same period as AAW were being coerced into sterilization or being given the procedure involuntarily, it became increasingly hard for white women to gain access to birth control and sterilization (First Year Book Program, 2011; Sebring, 2007b), which further exemplifies the extent to which political and medical industries worked to manipulate the US

population. Validating this notion, evidence of reproductive manipulation can be traced back to slavery, when AAW were forced give birth to children to contribute to the growing slave workforce (Volscho, 2010).

All three of these staple incidences, to mention a few, have greatly impacted perceptions and beliefs of AA's in regards the medical industries (Corbie-Smith et al., 1999; Tanner et al., 2015; Truog, Kesselheim, & Joffe, 2012). Generational medical-horror story experiences of AA's through the history of time contributes to present-day ideas of mistreatment due to race and/or ethnicity in health. Thus, in modern campaigns for health interventions these histories and barriers cannot be ignored if success is truly desired. Furthermore, lack of education surrounding the details of medical treatments, procedures, prevention measures and/or clinical trials is a main source of the continuing distrust of AA's. Cognitive understandings of health and health literacy levels among AA individuals greatly impact the ways in which they receive prevention and/or recruitment and/or information. This specific population both comprehends and engages with health information better when community relationships are formed and culture-specific education initiatives are implemented before recruitment for treatments or clinical trials are conducted.

### **Overview of Relevant Interventions**

Extant research has revealed that middle aged (45-65 years of age) AAW have the highest mortality rate from CC (J. L. Davis et al., 2013; Glick, 2012; Hoyo et al., 2005; Rauhain et al., 2013). As a result, unique and tailored interventions are needed to help combat the high incidence mortality among this health population. CC is both preventable and treatable if detected early (CDC, 2015a; ACS, 2015a), therefore minimal mortality should occur as a result of the cancer. Potential social and behavioral determinants that contribute to this high rate of

mortality from CC in AAW have been researched to include: education, health literacy, income, health insurance and geographic location (Baldwin, 1996; Davis et al., 2013; Egbert & Parrott, 2001; Ford et al., 2013; McKinnon, Harper, & Moore, 2011; Sung et al., 2002; Williams & Templin, 2013). Further, studies have revealed that low health literacy levels are a common complication in understanding and adhering to CC screening recommendations among AAW (Sharp, Zurawski, Roland, O'toole, & Hines, 2002; Williams & Templin, 2013). Thus, tailored interventions that seek to educate and combat health literacy communication barriers between health providers and AAW are all the more desirable (Strohl et al., 2015; Williams & Templin, 2013).

### **Successful Interventions**

In terms of prevention initiatives for this study's target health population (AAW between the ages of 30 to 65), there have been many forms of interventions conducted and academically published over past decades. From in-home visits by community health workers to the utilization of nurses trained on cultural sensitivity for routine check-up recruitment, culturally sensitive interventions and campaigns have boasted success in improving education and engagement in AAW (Baldwin, 1996; Eng, 1993; Ford et al., 2013; Sung et al., 2002; K. P. Williams & Templin, 2013). In the 1990s, health researchers increasingly found success in ethnically tailored interventions to the African American culture (Ansell et al., 1994; Price et al., 1992). Ansell et al. (1994) highlighted that the training of nurses to become more aware and accommodating to cultural needs reduced barriers to breast and CC screenings in inner city Chicago. Pertaining to breast cancer, Eng (1993) created *The Save Our Sisters Project* that recruited 64 "sisters" from a North Carolina community that were trained to be health advisors for their friends and family—encouraging AAW to obtain mammography exams.

In more recent approaches, one study was conducted using a community-based model in which community health workers were trained to form relationships with the “Kin-Keeper” (female head-of-household). During the study, community health workers visited the Kin-Keepers in their home to further educate them on CC and assess their literacy levels through a survey called *Cervical Cancer Literacy Assessment Tool (C-CLAT)* (Williams & Templin, 2013). It was noted that reaching and engaging women with less access or awareness of health systems would have been less successful without a community-based structure (Williams & Templin, 2013). Further assessing the Kin-Keeper program, Ford et al. (2013) found that interactions between community health workers and Black, Latino and Arab women surveyed were expressed as positive and mutually rewarding for all parties involved. This study also suggested that the “Kin-Keeper” program could be potentially successful among minorities for a variety of health disparities (Ford et al., 2013).

**Visual interventions.** In terms of visual materials used in interventions and campaigns, there are a few studies pertaining to minorities and general health-related information and also minorities and CC information (Springston & Champion, 2004; Wong et al., 2012). Springston & Champion (2004) found that AAW would rather see culturally relevant depictions and photography of African Americans in both the roles of caregivers and patients. In addition to literacy and culturally specific concerns, Wong et al. (2012) found that care in the representation of numeracy in breast, colorectal and CC visuals for minority women should be applied in the creation of visual intervention materials. In another visual intervention instance pertaining to invasive cervical cancer (Micciche, Pryor, & Buttler, 2000), a community advisory group was established to review and create content for inclusion in a clinical trials recruitment video, which included testimonials of AAW who have experienced clinical trials (Banda, Libin, Wang, &



Swain, 2012). It was reported that the likelihood to enroll in ICC clinical trials significantly increased the AAW involved after viewing the visual intervention (Banda et al., 2012).

Based on current literature that elaborates on visual efforts to get AAW involved in CC prevention and health prevention in general, the following research question was created:

**RQ2:** How, if at all, do AAW between the ages of 30 to 65 perceive infographic use for Cervical Cancer prevention as potentially effective for communicating to their health population?

**Effective approaches.** When assessing health communication improvement with minority women, conducting culturally appropriate and sensitive interventions have been overall successful in past and present interventions and campaigns (Baldwin, 1996; Davis et al., 2013; Springston & Champion, 2004). Those interventions that were targeted toward a more general population of women nationally often had less success than those more culturally specific (Baldwin, 1996). Whether it's the inclusion faith-related content or the application of a unique intervention tactic, health-related information pertaining to CC that is specifically tailored to AAW is preferred among the health population (Baldwin, 1996; Davis et al., 2013; Price et al., 1992; Springston & Champion, 2004).

Having identified that it is important to tailor information and experiences to the African American culture, it has also be proven that community-based intervention efforts are also important (Ansell et al., 1994; Baldwin, 1996; Banda et al., 2012; Eng, 1993; Williams & Templin, 2013). Interventions that involved inclusions of community workers, community faith leaders, and social network frameworks found success in AAW as this particular minority group has a strong sense of community. Community-based efforts not only increase self-efficacy and comfort in AAW involved in health-related interventions, yet, these interventions also help to

combat cultural stigmas or concerns of fear and/or distrust in the health system (Banda et al., 2012).

***Faith as a health positive influencer.*** Considering the importance of religion and faith in the African American community, faith as an influence to engaging in CC prevention measures will be explored with AAW in this study. There have been a number of faith-based interventions and clinical trials that have found success through use of religion specific tactics (Davis, Boustamante, Brown, Wolde-Tsadick, Savage, Cheng, & Howland, 1994; Haynes, Escoffery, Wilkerson, Bell, & Flowers, 2012). In Atlanta, Georgia, two churches joined together to adapt and pilot test a CC prevention program, *With Love We Learn*, and found that inclusion of relevant dialogue, visuals and faith-based discourse (i.e. scriptures) greatly contributed to the success of educating families on CC during the program's trial (Haynes et al., 2012).

A study with 24 participating churches in southern Los Angeles was conducted by Davis et al. (1994) to discover the influence urban churches have on minority women in terms of CC prevention, with participating church pastors and designated lay health leaders informing congregations through presentations and handouts (Davis et al., 1994). Survey assessment of prior CC knowledge and actual screening participation was administered as part of the study (Davis et al., 1994). Those participating women who didn't have a pap smear within the last two years were recruited to have on-site screenings following one designated service for each church (Davis et al., 1994). Study outcomes highlighted that implementing a church-based model of influence where prominent religious figures disseminate CC prevention messaging was effective in persuading minority women to get involved in cancer control (Davis et al., 1994). This particular faith-based approach was maximized because of both the faith-based approach and the

immediate offering of screenings on site. Although the provided screenings were free, it was suggested that this part of the model may not be sustainable long-term (Davis et al., 1994).

Another study exploring ICC prevention utilized lay health advisors (LHA) in Appalachian, Kentucky to visit women (in-home) recruited from local churches (Studts et al., 2012). The intervention, which was a four-year controlled trial, was called Faith Moves Mountains (FMM) and included specialized training for LHA home visits. When LHAs visited the homes of women they provided newsletters that had information addressing the barriers to women ages 40-64 getting screening (Studts et al., 2012). Study findings concluded that the FMM intervention positively impacted participating women's behaviors in the form of increased screening adherence (Studts et al., 2012).

After summation of the above literature on effectiveness of culturally tailored and community specific interventions, the following research question arose:

**RQ3:** How do AAW between the ages of 30 to 65 feel that CC prevention infographics can be used in community or faith-based programs and community environments?

### **Health Literacy**

Health literacy definitions have evolved over the years, however, the term largely remains being classified as the “ability to understand your health, medical care and overall wellness” (Torpy et al., 2011, p. 1158). Individuals with low health literacy levels are more likely to experience higher rates of “hospital admissions, emergency department attendances and reduced up-take of screening and vaccinations” (Benyon, 2014, p. 437). Therefore, individuals with low health literacy levels are less likely to positively manage health ailments and more likely to be hospitalized and/or die from these ailments (Benyon, 2014). Despite current advancements in technology (the internet and social media) that allow for more rapid and

enhanced forms of communication between medical entities and patients and/or consumers, national literacy levels in regard to health are low (Hay, 2010; Koh & Rudd, 2015; Torpy et al., 2011). Currently, health information can be very cognitively demanding as explanations and descriptions of medical information often include complex procedures and vocabulary (Benyon, 2014). Thus, prominent researchers in health literacy have not only highlighted the need to raise literacy levels, but they have also defined categories of literacy in health for more effective intervention outcomes.

### **Categories of Health Literacy**

Taking an in-depth glance into the issue, there are three types of literacy categories when it comes to health: functional health literacy, interactive health literacy, and critical health literacy (Nutbeam, 2000; Paina et al., 2014; Sykes et al., 2013). These categories, created by Nutbeam (2000) as a conceptual model, allow for focused and strategic assessments of health literacy among various health populations to better create outcomes specific to their health literacy needs.

**Functional health literacy.** This type of literacy in health particularly involves an individual's ability to obtain, read and write health-focused information for self-care (Nutbeam, 2000; Paina et al., 2014). Information that typically calls for functional health literacy does not require any level of interactive or critical thinking from the reader/viewer.

**Interactive health literacy.** Interactivity in terms of health literacy involves the extent to which an individual confidently interacts with medical professionals or health providers (Nutbeam, 2000; Paina et al., 2014). Interactive health literacy also pertains to the potential of an individual to extract meaning from varying forms of health materials and apply that information to new, emerging health materials (Nutbeam, 2000; Smith, Nutbeam, & McCaffery, 2013).

**Critical health literacy.** An individual with advanced social, cognitive and critical thinking abilities can better understand and interact with complex textual and numerical health content (Nutbeam, 2000; Paina et al., 2014; Smith et al., 2013). At this stage of health literacy, one has the cognitive capacity to critically assess health information. This height of health literacy is gained through education and training on matters within health and medical fields (Nutbeam, 2000; Sykes et al., 2013). Critical health literacy is not only relevant on an individual level; communities with higher levels of critical health literacy can challenge and influence change of social and economic determinants of health (Sykes et al., 2013).

The goal for this dissertation is to use infographics to educate, empower and advance AAW participants to a more collective level of critical health literacy. On functional and interactive levels, this research endeavor has the potential to educate AAW about general best practices and guidelines for CC prevention. On a critical health literacy level, the infographics to be qualitatively examined featured content that informs the demographic on how to keep up with the latest guideline changes. Featured content like this, directed by health communication theory, can empower AAW beyond being totally reliant on health providers for updates and health information involving CC. Further it may allow AAW to begin thinking about CC from a larger scope that is beyond individual prevention, such as political and systemic viewpoints.

Considering the current state of health literacy in the US, the superseding research questions were proposed:

**RQ4:** How, if at all, do AAW between the ages of 30 to 65 perceive CC prevention infographics as a method of increasing health literacy among members of the population with low literacy levels?

At the root of issues with literacy in health are foundational communication issues. The method to which content is communicated can greatly impact and influence how the message will be comprehended. Messages containing jargon or complex information could be hard to break down by those who even have at least an interactive level of health literacy, let alone those with functional (or below functional) levels of health literacy. Visual research within health literacy and communication has been gaining traction over the past decade as a result of the ongoing search for effective communication methods that combat literacy levels and empower patients.

### **Health Communication**

As defined by the CDC (2011), health communication is used to raise awareness and influence decisions of individuals ultimately leading to better qualities of health. More precisely, Gary Kreps and Barbara Thornton (Kreps, 1984) have defined health communication as “the way we seek, process and share health information (du Pré, 2011). This includes everything from patient-doctor conversations to water-cooler conversations about various healthcare topics. Considering its largely inclusive capabilities, it can be gathered that the importance of honing health communication messages is extremely important to the future health of humanity.

### **Health Message Design**

One of the most powerful variables crucial to the success of a health campaign is the way a key message is designed (Edward Maibach & Roxanne Louiselle Parrott, 1995; Witte, Meyer, & Martell, 2001). The message holds the ability to inform, influence, and persuade (Dillard & Pfau, 2002). Good and persuasive health messages are known to inform the reader that they are indeed susceptible to the illness and that manageable steps can be taken to prevent severe ramifications of non-compliance with prevention (Maibach & Parrot, 1995). In addition, the

design of health messages is heavily driven by the (intended) receiving audience so it is key that messages are well crafted and unique to the circumstance of the target audience. Especially for a health campaign that seeks to reach an area where education levels are low, message components should be simplistic and relative to circumstances (Witte et al., 2001). Likewise, if an infographic is created to reach an audience in which low levels of education and literacy are noted, then it should embody the same components of easily digestible information and relatable illustrations.

Given the importance of well-designed health messages and the prior literary acknowledgment of AAW health intervention success with community and faith frames, the following research questions was created:

**RQ5:** How, if at all, do AAW between the ages of 30 to 65 believe that messages in CC prevention infographics should be designed?

Over the past several decades, more efforts to increase patient awareness, comprehension and retention of medical procedures, diagnosis, and prevention measures have been initiated (Franson, Dubois, van Gerven, & Cohen, 2007; Houts et al., 2006a; McWhirter & Hoffman-Goetz, 2013; Osborne, 2006). This increase of knowledge and awareness falls under a medical movement—patient empowerment—which operates under the basis of fully informing receivers of the health industry of their stake in improving the field and opportunities of better health (Charter, 1986; du Pré, 2011). Successful steps toward patient empowerment involve understanding, communication, and participation from physicians and patients alike (Garcia-Retamero & Cokely, 2013). Although there are many practitioners, nurses and health professionals aware of the issues patients may face with comprehension and retention of health related information, there is still a need for improvement. Currently, there are a variety of

reasons why patients may not fully understand information about health from a provider, including literacy levels, culture, age, and emotion (Houts et al., 2006a; Osborne, 2006; Peregrin, 2010). Any one of these categories (alone or in combination) can have a negative influence on a patient's decision to take preventive or treatment measures. This is indeed where research of using visual aids like cartoons or photographs along with (understandable) descriptive text becomes a possible effective health communication solution.

**Patient Empowerment.** As far back as the late 1980s various health organizations have been advocating for the increased power of the individual and/or patient in their access to health related information and input on medical regulations (Charter, 1986). Defined as “the individual's feelings of being able to manage the challenges of the cancer experience and of having a sense of control over one's life” (Lauzier, Campbell, Livingston, & Maunsell, 2014, p. 3220), patient empowerment is believed to enhance a person's ability to more active in their personal health experiences (Bruggers et al., 2012; Yin, Ring, & Bickmore, 2012). Thus, many believe that patients of the healthcare system should have the ability to become more engaged by providing key feedback in health-based decision making (Charter, 1986; du Pré, 2011). Although research has shown that high levels of patient empowerment do not automatically equate to high levels of health literacy in patients, a good balance of the two could potentially lead to a healthier human population—empowered enough to make the right choices and literate in health enough to know how to seek proper information (Schulz & Nakamoto, 2012).

However, patient empowerment has been studied in relation to self-efficacy and how various forms of empowerment can boost a patient's level of belief they can contribute and control their health circumstances (Aujoulat, d'Hoore, & Deccache, 2007; Yin et al., 2012). According a vast body of health-based research, self-efficacy pertains to the extent in which an



individual believes they can assess and manage a desired outcome (Bandura, 1977; K. Glanz et al., 2005; Boston University School of Public Health (BUSPH), 2013; Janz & Becker, 1984; Rosenstock, 2000; Yin et al., 2012). A patient with low self-efficacy may become overwhelmed with the idea of completing a task they cannot fully conceptualized a process for and may decrease efforts to complete a challenging situation (Yin et al., 2012). This mindset could certainly leave the individual feeling powerless. This correlation between patient empowerment and self-efficacy then further builds the claim for use of HBM in guiding infographic content creation, which embodies the construct of self-efficacy. Presenting visual and textual explanations of how to prevent cervical cancer could help make prevention measures more of a manageable concept to the target health demographic.

Experiments with patients where subjects in a medical environment were allowed the opportunity to give feedback and suggestions in terms of care and treatment were found to be much more healthier and happier (Langer & Rodin, 1976; Yin et al., 2012). Further, patients or healthcare customers can become empowered with the help from providers and practitioners, including: raising patient autonomy and participation (Yin, 2012). In terms of autonomy, it is an important factor in empowerment that a patient feels that they can come to their own rational conclusion without persuasion (Alegría et al., 2008; Yin et al., 2012). Autonomous beliefs, coupled with participatory actions (such as asking questions about treatment or procedures) helps to raise self-efficacy and therefore leaves a patient more empowered (Alegría et al., 2008; Yin et al., 2012).

***Visual strategies in patient empowerment.*** In terms of innovative methods to increase patient empowerment, visuals have been researched as a successful option to increase patient decision preparedness, autonomy and engagement (Alegría et al., 2008; Bruggers et al., 2012;

Yin et al., 2012). A multi-study by Alden (2014) helped to build upon the importance of visual use by testing the impact of decision aids on patient empowerment. The experimental portion of this study found that the interaction of the decision aid and the patient's desire for information strengthened empowerment positively (Alden, 2014). Yin et al. used a visual novel—a computer-based graphic game—that illustrated scenarios for the player to manage during a hospital stay (the games setting was in a hospital). The study outcomes highlighted that those engaged in the visual experience became more confident as they became more engaged in the game (Yin et al., 2012). Although visual stimuli like video games have induced positive outcomes in improving patient empowerment, limitations included barriers for widespread uptake, such as of production. This affirms the importance of creating more visually stimulating and engaging methods for patient empowerment that can be more easily accessible at much lower costs for both the patient and provider.

***Patient empowerment and cancer.*** In relation to cancer research, patient empowerment has been noted to be a pivotal factor in positively motivating patients already diagnosed with cancer to become engaged in their health (Alden, 2014; Lauzier et al., 2014). Studies like the prior mentioned Alden (2014) and Yin et al. (2012) study both explored visual methods of increasing patient empowerment via cancer diagnosis and treatment scenarios which had positive outcomes. Patient empowerment interventions are absolutely necessary in helping current individuals diagnosed with cancer cope with the high range of emotions and daily obstacles with treatment they may experience. It is my belief, however, that more research needs to be conducted in the area of patient empowerment in terms of cancer prevention. As profoundly stated by the title of a testimonial blog on the Patient Empowerment Network website: “An ounce of prevention is worth a pound of cure” (Goldfarb, 2015, n.p.).

In sum, the relevance of using illustrations along with text in health education for improved attention, comprehension, recall and empowerment can be considered high—especially if visuals are markedly more comprehensible than text alone. Because of the success of visuals accompanied by text (Fisher, 2014; Houts et al., 2006a; Smiciklas, 2012), visual-text combinations such as infographics could help enhance viewer experiences (Houts et al., 2006a). When created with relevant message design that is led by health communication theory, infographics for CC prevention could potentially serve as a beneficial prevention strategy for CC prevention in AAW by helping to increase health literacy while raising self-efficacy and ultimately empowerment.

### **Visual use in Health Communication**

Within the realm of health communication research, increased efforts have been employed to improve attention, comprehension and recall for patients interacting with all aspects of the health industry (Fisher, 2014). In a research project aimed to advance patient coherence, Houts et al. (2006) discussed various studies where visual aids helped patients and their families understand the dynamics of their health circumstances. As a result, it was found that pictures can help increase chances that patients or target audiences will both pay attention to images and be further persuaded to read and engage with accompanying text (Franson et al., 2007; Houts et al., 2006a; McWhirter & Hoffman-Goetz, 2013; Osborne, 2006).

Studying attention, comprehension, recall and adherence, Houts et al. (2006) discussed various studies where visual aids helped patients and their families understand the dynamics of their health circumstances. It was found that pictures can help increase chances that patients or target audiences will both pay attention to images and be further persuaded to read and engage with accompanying text (Houts et al., 2006a). In another study, that dealt with attention

specifically, Delp et al. (1996) found that people are more likely to be attentive and engaged with medical instruction with the presence of cartoon illustrations accompanied with text rather than text without cartoon illustrations. Participants in this study were also more likely to recall what they read if it was accompanied by text than handouts on the same subject (Delp & Jones, 1996; Houts et al., 2006a). The use of cartoons in this study was influenced by replicating Delp and Jones' (1996) prior testing of utilizing cartoons in messaging with individuals having elementary-middle school reading levels, further investigating the impact of low literacy on health outcomes. This means that the relevance of using illustrations along with text in health education for improved attention, comprehension, and recall can still be considered high, especially if visuals are markedly more comprehensible than text alone (Fisher, 2014; Houts et al., 2006a; Smiciklas, 2012).

Resembling the study of Delp et al. (1996) there were several additional studies, also reviewed by Houts et al. (2006), that assessed a sample of individuals where selected participants were given instructions with visuals and others without. These studies all yielded that those given visuals with text were more successful at comprehension, recall, and adherence (Austin, Matlack, Dunn, Kesler, & Brown, 1995; Leiner, Handal, & Williams, 2004; Michielutte, Bahnson, Digman, & Schroeder, 1992; Monsoor & Dowse, 2003). Most relevant to this analysis was a study conducted by Michielutte et al. (1992), where pictures in a CC prevention brochure were used to study the effects on comprehension of 217 women. Findings from this study suggested that patients appreciated the brochure with pictures more and that adults with low literacy levels can benefit from health materials that feature visuals (Houts et al., 2006a; Michielutte et al., 1992). Because of the success of visuals accompanied by text (Houts et al.,

2006a), visual-text combinations such as infographics could help enhance the patient experience (Fisher, 2014).

### **Visual Use in Social Science Research**

Considering that there is not a large body of research and information available on infographics, and visuals in general used for CC prevention, this dissertation is positively impacted by other disciplines that have research on visual use for communication—two of which is risk communication and visual psychology.

#### **Risk Communication**

Commonly defined as the probability of loss or harm times the perceived magnitude of loss, conceptual risk depends on what repercussions people perceive as harmful and how they assess probability (Houts et al., 2006a). Research on visuals in risk communication has found that visual displays are more influential in risk perception than language (Bostrom, Anselin, & Farris, 2008). As vision is the best developed human sense (Bostrom et al., 2008; Collins, 1998; Shah & Miyake, 2005; Wogalter, 2005), visual representations of risks have been known to generate stronger effective responses as opposed to other forms of risk representation (Butler & McManus, 2014; Gahegan, 2000). The use of visuals in risk communication includes various forms including figures, graphs, icon arrays, color, animation and texture (Bostrom et al., 2008).

Studies exploring the use of visuals in risk communication regarding displays of numerical data (i.e. icon arrays) have been successful in many ways, including relaying harm in medical interventions (Bostrom et al., 2008). These types of data visualizations encourage persuasion and help to facilitate accurate understandings (Gigerenzer, Gaissmaier, Kurz-Milke, Schwartz, & Woloshin, 2007; Lipkus, 2007; McCaffery et al., 2011; Vogt & Marteau, 2011). As infographics commonly utilize data visualizations and various graphic strategies (Ancker,

Senathirajah, Kurz-Milke, & Starren, 2006; McCaffery et al., 2011; Vogt & Marteau, 2011) they could further be a key form of communication for CC prevention information for AAW.

Color has also been studied in risk communication as a visual guide for attention (Diamond, 2013; Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). Research shows that proper use of color in the visualization of risks can be greatly effective, while improper use of color can stimulate confusion (Bostrom et al., 2008; Wolfe & Horowitz, 2004). Components such as color reaction and perception of color have all been found influential toward successful use in risk communication messaging (Bostrom et al., 2008; Keller & Keller, 1993). Realistic approaches of color use have been valued as the visualization of phenomena should bear colors closest to the audience's experience with the circumstance or case (Bostrom et al., 2008; Keller & Keller, 1993). Infographics, being a form of visual representation, have the ability to utilize colors and figures closest to representations of human experiences, thus potentially being a relatable method for prevention in health communication, including the relaying of CC prevention information and resources. Considering the impact on color in the design process for communicating risk, the following research question was created in relation to perceptions of color for infographic use:

**RQ6:** What types of colors and visuals do AAW between the ages of 30 to 65 think are culturally specific and can best relay CC prevention in an infographic created for their demographic?

## **Visual Communication**

### **Multimodal Media Effects**

As prior mentioned, the modalities of visual and textual media combinations have had more success with comprehension, recall and adherence than textual media alone (Butler & McManus, 2014; Gahegan, 2000). Extant visual communication research suggests that framing research limited to only one modality fails to fully explain meaning signified in multimodality framing (Houts et al., 2006a). Thus, multimodal media (e.g. infographics) offer the potential for each modality involved to complement one another and create meaning beyond the boundaries of one modality alone (Coleman, 2010; Giese & Baden, 2015). Considering the modalities of visuals and text, visuals are almost never presented in mass media without co-packaging of textual content, as textual content allows deduction of information and context that could not be extracted from the visual alone (Giese & Baden, 2015; O'Halloran & Smith, 2012). Likewise, representative visuals can affirm and heighten emotional impact and comprehension of textual content overall, as visuals are highly salient in terms of visual perception (Giese & Baden, 2015). Thus, infographics—being multimodal—for CC prevention (as the basis for this study) potentially have good chance of being more impactful and comprehensive than textual or visual content alone.

### **Infographics**

Visuals can be more easily digestible and comprehensible than plain text (Giese & Baden, 2015; M. Jenkins & Harris, 2001), thus, new emphasis is being placed on research involving visuals as innovative methods of relaying health-related information to patients. Visuals may hold more power in communication than we perceive, as they can be more comprehensible across many languages and cultures as opposed to plain text or numbers alone (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). Pictures, drawings and other visualizations

have been scientifically noted to be more instantly digestible and easily understandable than textual data (Smiciklas, 2012).

From cartoons to photographs, the use of visuals for communication with patients in health has been positively effective for increasing comprehension, attention, recall, and adherence (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). Further, it has been found that the combination of visuals and text is ultimately a more successful method of relaying information and messages relating to health. One potentially effective tactic within the strategy to increase literacy and comprehension to health-related messages is the use of infographics—a visual-text combination that can be used to display and explain an unlimited range of data.

Over time, varying forms of infographics have been used to communicate many different messages from crosswalk signs to maps. In communication, most notably in journalism in the 1930s and 40s there was an influx of infographic (e.g. maps) use to accompany editorials (Lankow et al., 2012). In this time period, it became more standard for editorials to feature a visual-text combination in support of the article (Lankow et al., 2012).

By the 1990s there were reports of infographics being used in almost every issue (Mack, 2011), and today are used for a wide range of purposes in both the digital and print realm (Diamond, 2013; Lankow et al., 2012). This onset of infographic use is partly due to the visual genre's wide range of uses such as storytelling, data framing, information communication, entertainment and exemplifying complex data such as statistics (Diamond, 2013; Jenkins, 2006; Lankow et al., 2012; Smiciklas, 2012).

### **History of Infographics**

The use of images for communication purposes dates back to ancient Egyptian and cave-man culture (Smiciklas, 2012; Lankow, Ritchie, & Crooks, 2012). The amount of information



and access to information has influenced the evolution of visual use for communication over time. Consider drawings from cavemen for instance, that typically only visualized an action and were void of textual markings—this method of communication sufficed at the time. Displaying various important moments in history, it is believed that cavemen portrayed births, deaths and events of battle all through drawings etched in cave walls (Lauren, 2013). As language in both oral and written forms began to evolve the use of both visual and textual content for communication increased.

One of the earliest labels for the combination visual and text was the term information graphic. In scientific exploration and other forms of scholarly research, information graphics have been used to best communicate data for centuries (Lankow et al., 2012). These specific uses were closely relative to data visualization as the main focus was to improve comprehension of data among viewers. Lankow (2012) has argued that infographics that are more editorial in nature, and typically used in news communication, helped begin what is today a rivalry between information graphics for commercial and entertainment purposes versus those for scientific visual communication. Further, scholarly uses of information graphics are influenced by theoretical implications and research, while more practical uses of the tool are influenced software for both creation and dissemination (Lankow et al., 2012).

There are impactful contributors on both sides of the information graphic argument, however. Edward Tufte, a statistician and artist, is one of the leaders of graphical research in scholarly and scientific publications (Tufte, 2015). Tufte's research explored the boundaries of information design complexity in relations to effectiveness and feasibility. He created the data-to-ink ratio which assessed the positive balance of information to graphic visuals in information graphics (Lankow et al., 2012). The term *chartjunk*, was also created by Tufte, which refers to

extraneous elements within an information graphic that do not particularly relay relevant information (Lankow et al., 2012). He believed that decorative information should be withheld from an information visual as much as possible to avoid tampering with the interpretation of the visual. Contrary to Tufte's view, Nigel Holmes, a British-American designer most known for his work on explanation graphics at Time magazine, believes that visual cues and metaphors help affirm an information graphic's appeal (Holmes, 2015; Lankow et al., 2012). On either side of the debate, perhaps the function of the information graphic should guide the creation of the format (Holmes, 2015).

The introduction of the internet as a common method of social interactions has also had a unique impact on the format—construction and display—of information graphics. The editorial infographic, which Lankow (2012) speaks of, was embraced on various digital social platforms, such as blogs. In terms of practical infographics, the focus on storyline and decoration is a higher emphasis than in historical scientific information graphics. The linear size and shape of recent infographics, coined as tall or tower, have become standard. Further, they can encompass an unlimited amount of information and visuals and are easier to navigate in digital realms; as our computer mouses and laptop track pads are more compatible with scrolling up and down internet pages (Krum, 2014; Lankow et al., 2012).

However, as tools and means of information graphic creation become more available much of the pre-existing methodology is simplified and even lost in the process (Lankow et al., 2012). Historically during creation of information graphics and visualizations, it has been noted that the extent of effectiveness revolves around the inclusion of three production factors: soundness, utility and beauty (Moere & Purchase, 2011). These three factors were later evolved by Lankow et al. (2012) to portray utility as two components—comprehension and retention—

and beauty was replaced with appeal. Soundness was excluded from the framework as appeal, comprehension and retention are what Lankow (2012) believes are the factors of information graphics design and assessment. This dissertation seeks to combine methodologies from both academic and practical realms. The infographic produced in this exploration is reasonably decorative for appeal and shaped appropriately for suitability in the online landscape. Yet, the creation of these infographics was driven by health communication theory to insure effectiveness in messaging.

Information graphics are perceived to be a powerful communication “tool for your eyes and brain to see what lies beyond their natural reach” (Cairo, 2013, p. 10). Having evolved during a period of time where information became exponentially more available to the public, it is noted that infographics are tools that help the viewer process sets of data more easily than if they compiled the data on their own (Cairo, 2013). The descriptive label of information graphics was first shortened to the modern term *infographics* during production of graphics for newspaper and magazines (Krum, 2014). As information graphics have evolved into more complex representations, it is said that the most effective forms of infographics have more complete storylines and resemble characteristics of articles and speeches (Krum, 2014, p. 6).

### **Infographic Uses in Health**

After an individual views a visual, the brain makes comparisons between what they already know and what they see; thus figurative explanations work better than process descriptions and manuals (Cairo, 2013). In health, various forms of figurative infographic representations have been used to clarify misconceptions and visualize severity. From promoting sunscreen lotion for cancer prevention (Stephenson & Witte, 1998), effects of graphics warning labels on cigarette boxes (Veer & Rank, 2012), to vaccination uptake (Kaplan, Hammel, &

Schimmel, 1985), infographics can play a variety of roles in health. A common use for infographics in health is to promote positive behavior change (Epstein, Alper, & Quill, 2004; Lipkus, & Hollands, 1999; Stephenson & Witte, 1998), which is the premise of this research. It is important to note, however, that many historical forms of infographics used in health communication were more simplistic—as a graphic with a caption placed onto it can be categorized as an infographic. There is one published study to date that assesses the impact of the more modern perception of infographics that usually tells a complex story. This particular study analyzes effects of didactic and narrative forms of videos and infographics on breast cancer screening, and found that videos used had more of a positive influence (Occa & Suggs, 2015). However, a potential downfall of the study conducted by Occa and Suggs (2015) is that they used a more informative style of infographic that might negatively affect the amount of persuasion on the study's participants.

### **Infographics as a Digital Tool**

In the digital age many health-related messages are designed with regards of being memorable and sharable. Infographics created with health message design principles could prove not only versatile but also viral (Diamond, 2013; Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). For instance, information created for a pamphlet in a health campaign might serve its purpose in a doctor's office, however, an infographic relaying the same information may potentially reach more publics due to its shareable nature amongst websites and social media platforms like Twitter, Instagram and Facebook (Diamond, 2013; Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). Infographics may also be more easily viewed (than a body of text) on various screen sizes should the target population of a particular health-related issue have more accessibility to mobile devices than laptops (Mack, 2011; Yu, 2014). From a marketing

perspective infographics can serve a purpose as printed materials (e.g. poster stands and bookmarks), but have maximum exposure online as they are capable of being optimized for search engines (Krum, 2014). Yet and still, the function of an infographic delegates the form by which it was accessed. Smaller informative types of infographics work best for social media platforms like Instagram, while tall infographics work well on Pinterest because it has no strict constraint on image size (Woo, 2015). However, this is an issue that is easily maneuverable as tall infographics can be separated into sections and uploaded to dimension specific platforms like Instagram (Woo, 2015).

Given the diverse capacity for infographic dissemination, the following research question was proposed:

**RQ7:** How do AAW between the ages of 30 to 65 suggest their demographic would best receive a CC infographic—online and in print?

### **Defining Infographics**

As the more complex, modern form of infographics rises to the forefront of use in many fields there have been several working definitions of infographics. Lankow et al. (2012, p. 20) described infographics as being an:

...abbreviation of “information graphic.” This term has gained popularity recently based on the increased use of graphics in online marketing over the past few years. Some use this term to connote the unique format that has been widely adopted for this application, which is characterized by illustration, large typography, and long, vertical orientation displaying an assortment of facts... an infographic uses visual cues to communicate information. They do not contain a certain amount of data, possess a certain complexity, or present a certain level of

analysis. This is no threshold to which something “becomes” an infographic. It can be as simple as a road sign of a man with a shovel that lets you know there is construction ahead, or as complex as a visual analysis of the global economy.

This definition seeks to keep the term of infographics as broad as possible—encompassing everything from the simplest form of infographics to the most complex. However, this type of broad definition also creates confusion in scholarly research as specific and measurable infographic characteristics need to be defined to prove success. Smikilas (2012) also defines infographics as “a visualization of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood” (p. 3). This definition also keeps infographics open for wide interpretation and uses that can also cause confusion in differences between infographics and other types of visuals like data visualizations. Data visualizations can be featured within infographics but are not infographics as they merely visualize data and do not give the viewer a more narrative style of storyline (Krum, 2014).

In a more specified attempt to define infographics, Krum (2014) defines the visual as a “larger graphic design that combines data visualizations, illustration, text and images together into a format that tells a complete story” (p. 6). In this use of the word, data visualizations by themselves are no longer considered to be complete infographics but are a powerful tool that designers often use to help tell their story visually in an infographic. Further clarifying functions of infographics, Cairo (2013) argues that infographics, as a tool, should (1) present several *variables* of data (i.e. population, personnel and/or budget of topic area), (2) allow for *comparisons* of data, (3) *organize* content in a way that allows for visual hierarchy and (4) make *correlations and relationships* within the provided data (p. 26-28). This set of infographic

components better helps differentiate between simplistic historical infographic uses and the more complex visual narratives that are popular today.

If infographics are to be analyzed and tested within the scholarly realm, whether qualitatively or quantitatively, categories with specific attributes must exist to maximum effectiveness of results. Although there are many types of infographics—PR, Visual Explanations, and Advertising Infographics—examination was placed on the two most prevalent types—informative and persuasive (Krum, 2014).

**Informative infographics.** The most commonly used form of infographic is the informative type, mainly because it is viewed as the exact opposite of an advertisement and people can share it and pass it along easily (Krum, 2014). Informative infographics are highly used by companies who want to tie the value of the information being presented to the value of the brand, passively attracting potential customers under the guise of providing useful tips or information that is actually largely accessible to anyone (Krum, 2014). Informative infographics usually bear an aesthetically pleasing design and are best used as a tactic to generate likes, shares, and website or social media account visitors (Krum, 2014).

**Didactic infographics.** Although Krum (2014) has coined informative infographics as a published term, others in the industry would call this visual form a didactic infographic. In the academic field, didactic infographics have been described as “an integrated visual object involving the graphic organization of information in order to communicate a message to a particular audience,” or a “graphical representation of the thought of the learner” (Guzmán-Cedillo, Lima-Villeda, & Ferreira-Rosa, 2015). When successful, infographics fuse elements of visuals, content and information to form a more easily consumable knowledgeable graphical display (Guzmán-Cedillo et al., 2015).

**Persuasive infographics.** The ideal type of visual that should be used in a circumstance (such as in CC prevention materials) should be persuasive infographics because they not only display data to inform, but also include a precise call to action from the individual viewing the visual (Krum, 2014). Persuasive infographics have been utilized as a platform for storytelling and are conducive for effectively convincing people on specific topics (Krum, 2014). As argued by Krum (2014), persuasive infographics include designs that lay out the scope of the issue and are carefully structured with powerful facts. Research by Krum (2014) on a practical level has yielded that these types of infographics usually have a step-by-step method of message and design presentation including: the key message, problem, danger, solution, and what the viewer can do to help. Since the human brain processes textual data in a “linear manner” and visual data more instantaneously (Smiciklas, 2012), infographics should routinely be utilized in health communication prevention materials for their ability to be easily absorbed and adaptable. Visual research also shows that people best remember pictures for longer amounts of time than words (Krum, 2014). This idea is called the *Picture Superiority Effect*, which states that we are likely to remember only ten percent of text or audio information three days after intake (Krum, 2014; Smiciklas, 2012). Whereas, we are likely to remember sixty-five percent of information if it is presented as a supporting image and text combination (Krum, 2014), which can most explain why logos are pivotal in company branding because people are more prone to remember the logo rather than the title of the company (Diamond, 2013; Krum, 2014). Considering the power of a text and image combination (Austin et al., 1995; Houts et al., 2006a; Leiner et al., 2004; McWhirter & Hoffman-Goetz, 2013), infographics should not be an after-thought in contexts such as crisis communication campaign, rather a strategy carefully crafted for increased prevention success. Lastly, researchers should also consider the viral nature of infographics as



they are primarily viewed and shared online (Diamond, 2013; Krum, 2014; Lankow et al., 2012; K. Mack, 2011; Smiciklas, 2012). The digital formatting of most infographics allows them to be suitable for viewing on many social media platforms, such as Pinterest (Krum, 2014).

It has been prior mentioned that infographics can take many forms, from maps to more complex visual-text combinations, which can cause confusion in assessment of infographics in scholarly extant research. Thus, a new category of infographics was created to better fulfill the needs of relaying CC prevention information to AAW. For the purposes of this visual exploration, the desired form of infographic to be created from this dissertation is a *Health Prevention Infographic*.

**Health Prevention Infographics.** A health prevention infographic (HPI) is both didactic and persuasive in nature—containing sections like key message, problem, danger, solution and cues-to-action. HPIs are for intentional use as visual health education materials—whether in digital or print. HPIs relay complex health prevention information that include multiple sets of data visualizations. Featured text displays in an HPI can be visualized as representational graphics to explain health procedures and behaviors. HPIs are not specific to CC and AAW, however, they can be used to visually convey a wide arrange of health issues.

A key element in designing an infographic tool is to decipher how target audiences would like to use the tool (Cairo, 2013). By having focus groups with AAW on CC prevention infographics, the contents of the tool can be affirmed and/or modified based upon their perception of uses for the health prevention infographics. Given that HPIs are a recent strategy for effective communication across many topic areas and disciplines, they are specifically under researched both academically and in the health and medical disciplines.

## **Health Belief Model**

The Health Belief Model (HBM) is one of the oldest and most widely used theories in health communication history (du Pré, 2014; Glanz et al., 2005; Maibach & Parrott, 1995; Rosenstock, 2000). Focused on perceptions and behavioral intentions at the individual level, the theory allows for researchers from disciplines and practices like psychological and public health to carefully analyze cognitive processing in behavior change pertaining to various demographics of individuals. Once cognitive and behavioral approaches are analyzed HBM can then be used a guiding framework for creation of successful interventions and campaigns (du Pré, 2014; Maibach & Parrott, 1995; Rosenstock, 2000).

### **Health Belief Model History**

In the 1950s there were many concerns of fallacy and ineffectiveness in preventive health campaigns of that time period (Rosenstock, 2000). Thus, a team of social psychologists created the HBM, a theory utilized to gain in-depth understanding as to why individuals engage in or disregard health related preventive measures (Maibach & Parrot, 1995; du Pré, 2011; Glanz et al., 2005). The theory was created based upon psychological and behavioral theory, yet has evolved and is heavily adapted in public health (BUSPH, 2013; Rosenstock, 2000). The model is believed to be an exemplar of a value expectancy theory, whereby “behavior is a function of the subjective value of an outcome and of the subjective probability, or expectation, that a particular action will achieve that outcome” (Rosenstock, 2000, p. 79). As the theory evolved to specifically cater to health related behavior, two principles of the model were solidified: (1) that individuals have a willingness to change and prevent diseases and (2) believe they can take measures toward prevention (Glanz et al., 2005; Hochbaum, 1958; Janz & Becker, 1984; Rosenstock, 2000).

## **Key Constructs of the Health Belief Model**

Encompassing six constructs—perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues-to-action and self-efficacy—the model gives insight on how to promote behavioral change regarding prevention (Janz & Becker, 1984).

**Perceived Susceptibility.** The construct of perceived susceptibility helps assess an individual's understanding of the chances of acquiring the disease/illness (Glanz et al., 2005; Janz & Becker, 1984; Rosenstock, 2000). This construct not only examines susceptibility to acquiring a disease in general, yet, also beliefs about diagnosis of a disease (Janz & Becker, 1984). Perceived susceptibility in CC infographics are often relayed as ratios of diagnosis (Parrish, 2015). Framing susceptibility this way could be effective if ratios were small enough to be comprehensible to those even with functional health literacy levels.

**Perceived Severity.** The severity of consequences of acquiring the disease/illness is the premise behind the construct of perceived severity (Glanz et al., 2005; Janz & Becker, 1984; Rosenstock, 2000). Assessing severity includes an individual personally evaluating how severe circumstances would be if they were diagnosed to a disease and/or the severity of accepting or not accepting treatment for the disease (Janz & Becker, 1984). Assessment of CC infographics shows that severity is usually depicted by explanation of death toll from the diagnosed population (Parrish, 2015). Just as with perceived susceptibility, this type of numerical representation could be affective if it were presented in small ratios, as larger numbers may not be comprehensible in terms of figuring where an individual stands within that ratio.

**Perceived Benefits.** The benefits, whether immediate or long-term, of taking actionable steps toward preventing a disease/illness is also an important construct in HBM (K. Glanz et al., 2005; Janz & Becker, 1984; Rosenstock, 2000). The creation of a course of action is noted to be

influenced by an individual's assessment of benefits toward those actions (Janz & Becker, 1984). Keeping this in mind, very few CC infographics examine the rewards or benefits to preventing CC (Parrish, 2015). After barriers are visually addressed within a CC infographic, it could be potentially beneficial to visualize the positive outcomes toward overcoming those barriers.

**Perceived Barriers.** The construct of perceived barriers highlights an individual's perceptions of barriers in taking steps toward preventing the disease (Glanz et al., 2005; Janz & Becker, 1984; Rosenstock, 2000). This includes individual evaluations of treatment (cost, effectiveness and/or pain) and barriers of ambiguity as to how prevention measures can happen in a realistic manner (Janz & Becker, 1984). In HBM history, perceived barriers have been noted to be the strongest construct within the model (Janz & Becker, 1984). In terms of CC prevention, barriers to prevention (e.g. medical distrust and/or health literacy levels) play a pivotal role in uptake of prevention measures, programs, clinical trials and treatment in AAW (Strohl et al., 2015). Considering that many current CC infographics do not even mention barriers to prevention (Parrish, 2015), this is potentially limiting to their full potential as visual ambassadors in boosting health literacy among AAW in regards to CC. Further, without regard to barriers a CC infographic might be entertaining and even educating, but most likely not influential in changing negative behaviors or perceptions toward prevention.

**Cues-to-action.** The construct of cues-to-action helps define initiatives that promote readiness to change (Glanz et al., 2005; Janz & Becker, 1984). These triggers can be both internal and external. Internal cues-to-action can be bodily changes like pains that resemble symptoms of a disease (BUSPH, 2013; Janz & Becker, 1984). External cues-to-action can be other persons in an individual's family or social circle that has the disease/illness and/or advice from a health provider (BUSPH, 2013; Janz & Becker, 1984). Although cues-to-action are less

researched than other HBM constructs (Janz & Becker, 1984; Rosenstock, 2000), this study interplayed the construct with the visual communication idea of visual cues by using multimodal both listing and visualizing cues.

**Self-efficacy.** As prior stated, self-efficacy addresses the extent to which the individual has confidence in the ability to take action and change (Bandura, 1977; Glanz et al., 2005; BUSPH, 2013; Janz & Becker, 1984; Rosenstock, 2000; Yin et al., 2012). The construct was added to the model in 1977 by a Albert Bandura (Rosenstock, 2000). Bandura emphasized that self-efficacy was heavily based upon an individual's perception of completing a behavior change and not their actual ability to complete a behavior change (Strecher, DeVellis, Becker, & Rosenstock, 1986). Current CC infographics that visualize preventive measures, such as types of simplistic exercises, potentially help raise self-efficacy by visually heightening perceptions of behavior completion (Parrish, 2015).

### **Health Belief Model Limitations**

Along with the many positive offerings of HBM come a few limitations to the theory that have been carefully considered during its involvement in infographic content construction. HBM has been significantly regarded as a guiding framework for discovering why prevention measures are not acted upon, however, it is not as strongly regarded for predicting behavioral involvement in prevention (HBM, 2016). Further, it is a framework that should be more specifically focused on motivating behaviors rather than predicting behavioral outcomes. Researchers using HBM in preventive research have also encountered limitations concerning the use of multiple forms of information because all forms of information might not be action oriented (HBM, 2016; ReCAPP, 2016). Other issues concerning HBM use in preventive research in existing literature are the necessity to both avoid “victim blaming” and keep cues to action updated (HBM, 2016;

ReCAPP, 2016). It has been suggested in existing research on the model that its principles of gearing messages to the viewer or target audience (self-efficacy) can insight feelings of guilt or blame if not carefully crafted. The construct of cues to action has also been stated to be subject to continuous evaluation and change as strong cues to action for one period in time may not apply to future periods; considering culture and situational changes (HBM, 2016).

### **Health Belief Model and Cervical Cancer**

Given that HBM is a pivotal prevention theory within the public health field, it makes sense that it has been used to analyze and assess CC prevention thought processes and behaviors of women's adherence to prevention and screening guidelines. HBM is heavily applied to research dealing with minority women and their experiences with CC prevention, as screening adherence is low and mortality rates are high among various minority groups (Hoyo et al., 2005; Johnson, Mues, Mayne, & Kiblawi, 2008). From Hispanic women (L. T. Austin, Ahmad, McNally, & Stewart, 2003; Byrd, Peterson, Chavez, & Heckert, 2003; Scarinci, Bandura, Hidalgo, & Cherrington, 2012) to Asian women (Lee, Eun, Lee, & Nandy, 2012; Ma et al., 2013) there are many studies that have applied the prevention-focused theory to increase positive preventive behaviors and screening uptake. In terms of quantitative assessments, Guvenc et al. (2011) created a HBM CC and pap smear scale that helps measure beliefs women have about CC prevention and further helps physicians with clinical program assessment. The use of HBM to analyze and predict CC screening behaviors in women is not restricted to national research, as the global impact of CC is even more detrimental (Institute, 2015a). As a result of, studies around the world have tried to increase prevention behaviors, especially in minority women (DM, 2013; Gillam, 1991; Guvenc, Akyuz, & Açikel, 2011; Hoque, Ghuman, Cooposmay, & Van Hal, 2014).

To date, there are no published assessments of infographics, created with HBM, as effective communication tools in CC prevention initiatives. There is one known conference presentation by Parrish (2015) that presented findings at the 2015 Eastern Communication Association regarding a content analysis of CC prevention infographics. This content analysis did not account for minority perspectives but did analyze infographics to find that many CC prevention infographics could potentially benefit from being constructed with HBM constructs for increased success. Suggestions from this presentation were also used in the creation process of the infographics for this dissertation.

Considering that the use of health communication theory in CC prevention infographic creation for AAW is newly chartered scholarly territory, the superseding questions was created:

**RQ8:** What messages and corresponding Health Belief Model constructs do AAW between ages 30 and 65 feel are most important for inclusion in a CC prevention infographic?

### **Selection of Theory**

In general, HBM is one of the most widely used theoretical frameworks for examining effectiveness in health prevention campaigns and interventions (du Pré, 2014; Rosenstock, 2000). As it is notably known to effectively inform interventions (Rosenstock, 2000), the model will work seamlessly with my scholarly endeavor to assess if visualizing certain behavioral influencers and factors in forms such as infographics could better help AAW actively engage in CC prevention measures. Extant literature states that different individuals and/or groups of individuals may be impacted by different constructs within the model (du Pré, 2014). Therefore this study serves as a qualitative exploration of infographics created with HBM by using the focus group methodology to better assess which constructs AAW perceive more influential in CC prevention infographics. Ultimately, using the theory as a guiding framework to best create

visual messages that can potential encourage and influence AAW between the ages of 30 and 65 to adhere to national screening recommendations.

Theory, coupled with research, can be used to create specific messages that target attitudes, beliefs, and barriers in desired audiences (Glanz et al., 2005; Maibach & Parrott, 1995). The same techniques should be applied to the creation of infographics used for prevention and intervention in the health field. Better outcomes could be achieved if theory along with research on health literacy and culture were considered during the design process of health prevention infographics.



### **Chapter 3: Methodology**

The purpose of this study was to explore the potential of theory-driven CC infographics as effective prevention tools for AAW between the ages of 30 and 65. As there are no preexisting academic studies that assess infographics in this light, the qualitative research method of focus groups was implemented to gain maximum insight from the targeted health population. This chapter described the methodology in which one CC prevention infographic was created with the involvement of study participants. The research design was discussed to include the flow of this focus group exploration, as well as, the design of the supporting infographic. Including factors of research and design like data collection, data analysis, validity and reliability, the infographic proposal and more.

#### **Qualitative Research Methods**

Considering this particular research context, qualitative methodological approaches are preferred based upon the sheer instance that this topic has yet to be explored via empirical, academic research (Carlsen & Glenton, 2011; Lindlof & Taylor, 2011; Miles, Huberman, & Saldana, 2014). The advantage that qualitative research has over quantitative in this unique exploration, is its nature of being successful in discovering and exploring new and underdeveloped topics (Glanz et al., 2005; Carlsen & Glenton, 2011; Lindlof & Taylor, 2011; Miles, Huberman, & Saldana, 2014). Although qualitative research may take longer to conduct, the method offers flexibility in data retrieval—as opposed to the standardized and (potentially) static methods of data retrieval in quantitative research (Berg, 2009; Corbin & Strauss, 2014; Lindlof & Taylor, 2011a; Miles, Huberman, & Saldana, 2014; Wimmer & Dominick, 2011b). This flexibility was extremely beneficial during focus groups discussions with the target health population. While an outline of question and discussion angles was prior created, the moderator

and interviewer had to be sensitive to relevant discussion shifts that may introduce new views that can impact infographics for CC prevention in AAW.

### **Focus Groups**

As qualitative research methods have become more established within medical research, focus group research has increased over the past decade as a standard method of investigation (Miles et al., 2014; Wimmer & Dominick, 2011b). Focus group research can be used as a method to conduct exploratory and explanatory data collections, program evaluation and to design and validate questionnaires (Gill, Stewart, Treasure, & Chadwick, 2008; Stalmeijer, Mcnaughton, & Van Mook, 2014). The functional purpose of focus group research is noted to be gaining information on participants' cultures and beliefs that influence behaviors, feelings and attitudes (Stalmeijer et al., 2014). Focus group research is often used in the early phases of research in topic areas that are inadequately defined (Gill et al., 2008; Rubie, 2004; Stalmeijer et al., 2014).

As this study presented CC infographics created with constructs of the HBM to members of the target health population in focus group settings, perspectives from AAW between the ages of 30 and 65 were gained on recommendations and concerns in this severely underexplored research. Although data saturation can guide the quantity of focus groups held, current focus group protocol recommends having three to five sessions in order to conduct a cross group analysis (Kitzinger, 1995; Wimmer & Dominick, 2011a). This project held six focus groups and reached content saturation between the 5<sup>th</sup> and 6<sup>th</sup> focus group. Concerning content and topic discussion, the questions regarding CC infographics and AAW behaviors/experiences provided within this focus group setting were more generalized and less personally evasive, as a group setting is not the best environment to gain potentially sensitive information (Lindlof & Taylor, 2011a; Stalmeijer et al., 2014; Wimmer & Dominick, 2011a).

These focus groups used the following procedures: (1) introduction of CC (and current issues) and potential infographic content to participants, (2) asking of questions to generate and stimulate discussion, and (3) examining of potential infographic protocol conclusions (Davies & Laing, 2002). Questions asked in the focus groups were based on the prior stated research questions and focus on areas such as health literacy, medical distrust, HBM and message dissemination. Example questions include “What ways do you think AAW in this age group would like to receive infographics” and “Do you think that this form of visual explanation is helpful in improving literacy among AAW?” (see Appendix B).

## **Data Collection**

### **Sampling**

The non-probability sampling procedures for this research exploration were a combination of purposive and snowball sampling. In qualitative research it is common protocol for sampling to be more strategic and purposive rather than randomized (Stalmeijer et al., 2014). A limitation to purposive sampling is that the sample population chosen may not necessarily be the whole population a researcher intends to explore (Kerlinger, 1986; Miles et al., 2014). As this research is specifically geared toward AAW between the ages of 30 and 65, AAW participants from ages 30 to 65 were only accepted for this study, which confirms the necessity for purposive sampling. A total of 17 African American Women participated in the study, averaging about two to three participants across six different focus group sessions (for listing of demographic characteristics see Table 4). In regards, qualitative research has been argued to focus on balancing the quality of data with quantity of sample size, as acquiring larger amounts of data can soil the richness of the set (Carlsen & Glenton, 2011). Along the research lines of AAW and

CC, other scholarly research has been conducted and published with similar sample sizing as the goal of the research is in-depth exploration and not mass exploration (Ackerson, 2010).

### **Recruitment Method**

As noted in prior research AAs are not a population of health participants that is easily accessible through independent or third party participant sampling organizations (Branson et al., 2007; Chandra & Paul, 2003; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002). In addition to creating recruitment flyers (for events, churches and frequented spaces) and emails, I also relied on word-of-mouth publicity among contacts within the health population—a particular type of snowball sampling. Snowball sampling occurs when a study’s participants enlighten the researcher of other potential candidates for study inclusion (Kerlinger, 1986). A limitation of this method of sampling is that participants suggested may be limited to a certain area or social groups, potentially bias in data collection (Wimmer & Dominick, 2011b). To combat potential biases participants were recruited across all areas and social groups of Richmond, VA. Diversity in physical location can be found in the participant summary (see Table 4).

There were a total of six focus groups conducted and study participants were offered \$10-30 in cash as incentive for offering their ideas and time for the study. Over the course of data collection for this study, approximately 25 focus groups were scheduled, however, most were canceled due to lack of enrollment and “no-shows.” Current study participants suggested their peers may be more inclined to participate for higher amounts of incentive. Thus, the recruitment incentive increased from \$10 to \$30 in an effort to encourage involvement as study participation plateaued. As typically effective, incentive has been prior successful in encouraging participation for research that may be time-consuming (Wimmer & Dominick, 2011b). Still, by natural occurrence, each focus group included about two to three participants while three to six

participants signed up for each focus group. As data collection continued, participating members also suggested that varying time frames be offered during the day to allow those who would like to participate during their lunch break an opportunity. In accordance with the suggestion, mid-day sessions were added to the continuing schedule (see Appendix A) and two of the six focus groups were successfully conducted during the newly added time frame.

In several attempts to collaborate with community organizations which already have robust research connections with the local community, meetings and discussions with several medical offices, non-profits and university-related entities were held. However, there was no success with sharing flyers or focus group information either in office or on the website of the medical offices contacted. Very fruitful discussions were held with members of a couple health-based non-profits and a medical center in Richmond, VA. —American Heart Association, Virginia Sexual Assault and Domestic Violence Action Alliance and the VCU Massey Cancer Center. However, the timeline for collaboration would need more time for clearance among organization executives at all locations. Members of the non-profits and medical center contacted did in fact share the study flyer with their communities. Thus, the final rate of participation was lower than the projected 6-12 participants that is often cited as a good participant range in focus group literature (Wimmer & Dominick, 2011b).

**Saturation in qualitative research.** As smaller sample sizes are common in qualitative research (Stalmeijer et al., 2014; Manson, 2010), some focus group literature suggest the sample size pertain to the number of focus groups conducted rather than the number of participants (Carlsen & Glenton, 2011). In fact, qualitative dyads are a method of qualitative research that involves interviewing of two participants (i.e. mother-daughter dyad) at once to initiate richer detail that may be lost with a larger amount of participants involved (Kashy, 2000; Vardeman,

2008). The idea of having a smaller group of participants is to extract in-depth explanations, ideas, behaviors and experiences from the context of the participants' lives versus quantifying participants or outcomes (Hoyo et al., 2005). Further, it is a common practice for qualitative researcher(s) to allow the number of focus groups needed to be guided by the basis of reaching theoretical saturation (or data saturation). The concept of saturation was introduced to qualitative research methods in 1967 by Glaser and Strauss (Carlsen & Glenton, 2011; Guest, Bunce, & Johnson, 2006) and implies that data collection can draw to a close when repetitive themes emerge from constant evaluation of the data.

Pertaining to smaller sample sizes in qualitative research, Mark Mason (2010) conducted a study on dissertations using qualitative research and found that out of 560 studies examined, the median sample size was 31 and the most common sample sizes were 20 and 30. In his studies, he questioned why the most commonly used sample size sets were increments of 10 if the field-wide rule for sampling is based upon saturation (Mason, 2010). Carlsen & Glenton (2011) posed similar inquiries about the idea of saturation in qualitative research in regards to sample sizes, further noting that there seems to be no wide-standing protocol across qualitative research methodologies. In a similar quest to better understand the point at which saturation can be reached in qualitative research methods, Guest et al. (2006) conducted a study where they interviewed sixty women in West African countries regarding social desirability bias along with a few other measures. During data analysis, researchers found that data saturation was reached by the twelfth interview as they noted "In short, after analysis of twelve interviews, new themes emerged infrequently and progressively so as analysis continued" (Guest et al., 2006, p.74). These findings rival earlier claims by researcher Daniel Bertaux (1981) who stated that a sample size of 15 should be the smallest amount in sociological qualitative research. Considering the

inconsistent recommendations and findings regarding qualitative research, this dissertation followed standards of theoretical sampling that are historically stated to be reached when themes are reoccurring and no new themes or findings emerge (Carlsen & Glenton, 2011; Guest, Bunce, & Johnson, 2006). The sample size of 17 participating women (roughly 2-3 per focus group) is justifiable in multiple arguments of qualitative sample sizing—it is higher than the 15 minimum that Bertaux (1981) suggested and reached saturation at an uneven number that is more natural versus a specific number that follows a rule of increments of ten (Mason, 2010).

**Virginia.** The focus groups were conducted in Richmond, Virginia at Virginia Commonwealth University (VCU). Incidences of cancer mortality have declined in Virginia over past decades; however, cancer-related death rates are still higher than national averages (Virginia Performs, 2016). Reflecting national reports, AAW residing in Virginia had a higher mortality rate than white women Virginia ( Cancer Action Coalition of Virginia (CACV), 2015; CACV, 2013). Further, white women in Virginia were more likely to have CC diagnosis at an early stage than AWW, which is beneficial for treatment and survival after diagnosis (Virginia Department of Health (VDH), 2014). Of the 1,317 women that were diagnosed with CC in Virginia from 2007 - 2012, approximately 415 cases resulted in death (VDH, 2014).

All qualifying participants were either recruited through an email campaign or by viewing the flyer to be promoted for this study. Recruitment emails were sent to members of the target population, local social organizations and local health facilities. The flyers were placed in community centers, health facilities and various places throughout both campuses of VCU. VCU IRB approved this study under the category of exemption. Thus, subjects who participated in this study received a consent information sheet, which explain the parameter of the study and their

rights as a participant, upon signing up for a focus group and not required to sign a consent form. Participants who received an initial recruitment email were automatically given the study flyer and consent information sheet. Those participants who learned of the study via the flyer were directed to send an email of interest in which the recruitment email was sent to them with the consent information sheet and study flyer attached. After receiving all information and having any questions answered, those who were willing to participate in the study were signed up for one of five focus group time slots.

### **Data Collection Procedures**

After study participants contacted interviewer to sign-up for a focus group time slot, all questions were answered and all information was clarified. When all participants arrived, focus group discussions began promptly at their scheduled time. Focus group discussions were focused around views, attitudes and beliefs of AAW that CC infographics can be an effective form of prevention communication. At various points within the focus groups the infographics were referenced on the screen and printed handouts of the infographics were passed around (for maximum visibility). At the end of the focus groups the printed infographics were collected and the participants were given a CC and AAW information sheet that they can reference for education and resource purposes outside of the focus group setting. All participants were thanked at the conclusion of each focus group and the interviewer shared personal expectations for the study. Participants were asked if any would be interested in giving me feedback on the final infographic and made note of their contact information to randomly select them for member-checking later in the process. Participants were also provided with their monetary incentive and let them know they could reach out to me to learn more about the evolution of the study in the future.



**Confidentiality.** As the focus groups were recorded, participants were informed that they can choose to be identified by a pseudonym during periods of discussion. For the purpose of this dissertation, names are not important to the outcome. Therefore, during the transcription phase participants were labeled as “Participant 1” or “Respondent 1” to further detach identity from this research. No names or identities will be used in final reports or publications that result from this dissertation.

**Focus group construction.** Focus groups were constructed in a manner that allowed for (1) explanation of the problem and key terms/concepts to participants, (2) showcase of CC infographic examples, (3) introduction of pre-created theory-driven textual and visual messages, (4) interactive construction of information and visual flow for CC prevention infographic, and (5) explanation of future steps and conclusion (see Appendix B). Each sentence/line and visual included in the CC prevention infographic was printed on a separate square. During the interactive portion of the focus groups, participant was given a printed handout of the information and visuals to read personally for a moment. Once familiar, members of the focus group were asked to give their insight on what order or arrangement they think would best communicate to their target audience. Photos and notes were taken to document the exact layout for data analysis.

**Focus group interactivity.** As prior stated, during the interactive portion of the focus groups, participating women collaborated to arrange the (prior constructed) CC prevention text and visuals to be considered for the final infographic. In that time, dynamic discussions occurred between the participants and the focus group interviewer. As the women physically arranged the materials, natural discussions surrounding content specifics occurred (which will be further elaborated upon in chapter 4). An example of this dialogue involves the arrangement of the

doctor-patient visual within surrounding text that suggested women visit a gynecologist as recommended for an annual exam. Assessment of this particular material sparked a larger discussion in many of the focus groups where participants expressed (1) their lack of communication with their doctor on the matter and (2) the extent to which they feel this type of visual/text combination would help encourage more doctor-patient dialogue. From interviewer observations, this type of hands-on interactivity and accompanied discussion allowed participants to become highly involved in the CC prevention discussion and infographic content building processes. The smaller sessions were paramount to this type of interactive focus group as women expressed that they had enough time to explain their knowledge and experiences, ask questions (of peers and the interviewer) and provide feedback for the future of this research. A larger focus group with more participants may have not allowed this level of involvement of all participants involved. The views and ideas of the women who favored the smaller focus group sizes is further expounded upon in the results section of this dissertation (chapter 4).

### **Data Analysis**

The data analysis process was guided by the Grounded Theory approach—a method of data analysis created in 1934 and later refined in the 1960's (Lindlof & Taylor, 2011a; Miles et al., 2014; Stalmeijer et al., 2014). By using the Grounded Theory approach, themes and symbols can be identified from that data, as opposed to being identified from prior speculation (Corbin & Strauss, 2014). The approach encompasses a number of coding styles that researchers can use to define categories within data (Dill, 2013).

For the explorations of CC infographics for prevention in AAW ages 30 to 65, I first applied the inductive method of open coding to the data, which includes open, axial, and selective coding styles (Denzin & Lincoln, 2000). Initially, the data was assessed using open

coding to highlight emergent categories. Following this process, axial coding was used to define trends and themes within the data. Lastly, selective coding was applied to the analysis process to find the maximum amount of correlations between all categories, themes and trends. In addition to this coding process, a constant comparative method be utilized to compare assignment and elaboration of categories, search for relationships and coherent data integration into final reports (Berg, 2009; Corbin & Strauss, 2014; Lindlof & Taylor, 2011b).

Data from each focus group session was taped and transcribed from recordings continuously throughout the data collection period to monitor for data saturation. In addition, photos (of infographic layouts), notes and memos were recorded during the focus groups to help keep track of emerging themes and trends for saturation monitoring. The combination of approaches allowed for the detection of saturation of multiple study CC prevention themes and trends to be detected between the 5<sup>th</sup> and 6<sup>th</sup> focus group session. An example of data saturation for this dissertation include hierarchy or layout of infographic content during focus groups which was consistently agreed upon with minimal variation or suggestions. Another example of data saturation pertains to the infographic background, which was largely suggested to be visualized as a “journey” to health or prevention.

### **Reliability and Validity**

Although ensuring reliability and validity in qualitative research methods are more complicated without straightforward, statistical and/or static procedures, it is still very important to the process (Miles et al., 2014; Wimmer & Dominick, 2011b). Often described in different categories in quantitative research, validity and reliability are considered in the same category when discussing consistency and credibility (Golafshani, 2003; Lincoln & Guba, 1985). Reliability is used to assess the quality of qualitative research studies (Golafshani, 2003; Lincoln

& Guba, 1985). As there are many debates on the use of reliability to assess qualitative research design, the term dependability can also be used to define the term (Lincoln & Guba, 1985). Dependability in qualitative research refers to the notion that the same methodology framework could be applied to another study and produce the same results (Trochim, 2006). Further, reliability can be used to assess the both the process of qualitative research and the outcome (Hoepfl, 1997).

As the HBM is being used as guiding framework, articulation and representation of theory constructs were routinely checked in the infographics, research questions and data reports to ensure reliability. Also, detailed observations and procedure outlines were implemented into final reporting so that the research design can be efficiently replicated in future infographic studies in health communication.

Validity is used in qualitative research as a measure and/or qualifying process (Golafshani, 2003). Just as with reliability, it is often argued that validity (as a term and process) is not applicable to qualitative research. Overtime, terms like credibility (internal validity) and transferability (external validity) have been suggested to better relay validity in qualitative research (Trochim, 2006). Reaching credibility of research affirms that outcomes for the research are realistic and credible from the viewpoint of the participants (Miles et al., 2014; Trochim, 2006). The extent to which a study's findings could be transferred to a study with a different context thus defines the term transferability in qualitative research (Miles et al., 2014; Trochim, 2006). Process member checks were conducted routinely throughout the conductance of the study to insure validity—both within the focus groups and after the final draft of the infographic was produced. During focus group discussion, participants were asked for clarification and affirmation that the input they offered, the way the interviewer interpreted it, was valid. During

the final stages of infographic production, some of the women who wished to be contacted to give feedback viewed the infographic and completed a questionnaire. Input from the questionnaire was then implemented into the final infographic. The results from the member checks are further discussed in the results chapter of this dissertation (chapter four).

**Member Checks.** Conducting member checks during qualitative research is another form of establishing validity within a study (Cohen & Crabtree, 2006; Lincoln & Guba, 1985). It is defined by Cohen & Crabtree (2006) as the opportunity for “data, analytic categories, interpretations and conclusions [to be] tested with members of those groups from whom the data were originally obtained” (Definition Section, para. 1). Member checks were randomly conducted with volunteering participants in this study after the final infographic was complete to (1) find if participants felt the final infographic best relayed their valuable input on the infographic construction, and (2) allow participants to suggest corrections and minor changes they feel best connects with their demographic. A questionnaire that included an image of the final infographic and a series of questions pertaining to its relevance based upon their feedback and opinions of focus group size was created. Examples of questions included on the brief questionnaire were “What are your thoughts on the content or wording placed within the Cervical Cancer Prevention Infographic?”, “Do you feel this infographic portrays or reflects the suggestions you provided during your focus group?”, and “How do you feel about the number of people participating in your focus group session?” Questionnaire answers were anonymous to increase the confidentiality of responses.

As member checking can provide important feedback and directions to the researcher from study participants, there are counter-arguments and drawbacks to the using this method for validity and credibility. Member checking can present challenges for the researcher as the

feedback from the participants will not be cohesive, as each participant encountered different experiences in each focus group and contributed different feedback (Cohen & Crabtree, 2006). Participants may also have different expectations of outcomes than the researcher or may not even remember what they contributed to the original focus-group discussions (Cohen & Crabtree, 2006). To combat these potential issues, I routinely sought affirmation from the women within the focus group if I had understood or recorded their ideas properly. This created statement repetition of focus group purpose and potential outcomes. When members completed the member check questionnaire, they were able to see the three (improved) images and infographic content that were involved in their focus groups, potentially encouraging memory of discussion.

Other issues with reliability and validity (internal and external) in qualitative research can include unclear research questions, triangulation, potential bias and sampling limitations (Wimmer & Dominick, 2011b). These concerns can be addressed with a number of considerations for qualitative research processes. For instance, reliability can be achieved by conducting data quality checks to combat bias, and making sure constructs of guiding theories or frameworks are clearly and correctly represented (Miles et al., 2014; Wimmer & Dominick, 2011b). Ultimately, reliability can best be evaluated by the extent to which the study can be replicated (Miles et al., 2014). Validity can be achieved through triangulation of complimentary research methods and use of the constant comparative method to ensure data is correctly being placed in categories and themes (Miles et al., 2014; Wimmer & Dominick, 2011b).

### **Infographic Proposal**

The goal of this dissertation study is not only to expound upon and diversify a lacking body of literature, but also to produce a theory-driven and culturally relevant CC prevention

infographic for AAW ages 30 to 65. In consideration of the many social and behavioral determinants that can influence non-adherence to CC prevention recommendations, it is most important that I create the proposed visual prevention tactic (infographics) with guidance of the HBM. Although HBM constructs of perceived susceptibility, self-efficacy and perceived benefits have found highly related to race and ethnicity (Glanz et al., 2005; Janz & Becker, 1984; Maibach & Parrott, 1995), my proposed study initially included components of all six of the HBM constructs. Upon conducting the proposed exploratory qualitative methodology—focus groups—inclusion of (all or selected) HBM constructs is subject to modification on the bases of needs and preferences of the target health population.

**Textual Content.** The infographic proposed serves as a general overview of CC prevention for AAW. As prior stated the creation of text for the infographic was led by various HBM constructs (see Table 3). For example, perceived severity was incorporated into the infographic through the statement: “Of all races of women diagnosed with Cervical Cancer, African American Women have the highest mortality rate.” Another example would be for the construct of self-efficacy, which is represented with the statement: “There are steps YOU can take to help prevent Cervical Cancer in YOUR life.”

Health literacy was addressed through the infographic’s textual content by making sure the readability of the text was created according to national adult reading levels. For years the national reading average is been suggested to be at a 9<sup>th</sup> grade reading level (Impact Information, 2013). Thus, according to a Flesch-Kincaid Grade Level calculator, the textual infographic content ranked at just below a 9<sup>th</sup> grade reading level at 8.8. Flesch-Kincaid Grade Level is a readability assessment tool that links the level of difficulty in English text to a corresponding grade level (Malik, Kuo, Yip, & Mejia, 2014). This assessment tool is used nationally to assess

readability of documents—from US army manuals to legal documents (Readability Formulas, 2016). The infographic’s textual content was also guided by literature about the target health population. As health literacy encompasses more than just ability to read, further assessment of the potential literacy impact was assessed during the focus group, in terms of potential comprehension, recall and usability.

Another impacting factor, cultural stigma among the AA community, was included in creation of this CC prevention infographic. To potentially raise medical trust and transparency the description of what happens during a pap smear was included in the infographic: “A pap smear, a test that collects a sample of vaginal mucus for testing, is given during a vaginal screening at your gynecologists office and can detect irregular cervical cells.”

**Visual Content.** After careful consideration and inclusion of HBM constructs, health literacy and other cultural impacting factors, I worked closely with a professional graphic designer to create three representative illustrations for the infographic (*see Figure 1*). Like the infographic content the illustrations reflect current literature AAW and CC prevention and constructs from the HBM. They were created to accompany the finalized textual content and promote maximum comprehension of CC prevention messages. The first illustration shows three different women in the age range of 30 to 65. The women are of different shapes, sizes and complexions to reflect the diversity in this health population. Potentially, inducing feelings of familiarity or likeness in AAW ages 30 to 65. The second illustration shows a woman within the target demographic at the office of a gynecologist who is also an AAW. This was influenced by literature that states AAs like to see themselves as both the doctor and patient in medical literature (Springston & Champion, 2004). It also helps to visualize a snapshot of what might happen during a pap smear visit which could potentially raise medical trust and positively impact



self-efficacy among the health population. It also speaks to potential barriers AAW between the ages of 30 to 65 may have if they do not follow screening recommendations due to uncertainty of medical procedures. The third illustration show's an AAW practicing yoga and meditation as a form of exercise for overall wellness and good health. This illustration speaks to the HBM constructs of self-efficacy, cues to action and perceived benefits as it shows a form of exercise and meditation that accomplished easily, combined with faith based practicing (such as praying), and useful for stress relief.

Both the textual and visual content that were created prior to the focus groups were open for modification based upon the feedback, suggestions and concerns AAW expressed in the focus groups.



*Figure 1*  
*Original Infographic Illustrations*

**Screening guidelines.** As screening is the most effective form of prevention it is important to include current CC prevention guidelines, specific to age, in efforts to decrease confusion. This is important because certain prevention measures are recommended according to age. For instance, HPV vaccinations are encouraged for girls and women ages 13-26, HPV

screening can be coupled with Papanicolaou (Morein-zamir et al., 2013) smears for women beginning at age 30 and women ages 65+ may no longer need pap smear testing (Davis et al., 2013). Brief inclusion of the strains that are the leading cause of HPV (strands 16 and 18) were included as it is important relay to AAW for clarification of the relationship between the virus and disease (CDC, 2015). In addition to inclusion of sources at the bottom of the infographic, CDC and ACOG websites were provided should viewers like to find out more CC prevention information.

**Infographic Revisions.** As prior mentioned, iterative assessments of focus group feedback and member-checking were conducted during this process. The initial infographic when through a series of five phases: (1) creation of theory-driven and culturally relevant information regarding CC prevention (see Table 3), (2) creation of three illustrations based upon key components of the infographic information (see Figure 1), (3) revision of the three illustrations and creation of two additional illustrations based upon focus group feedback (see *Figures 2, 3 4 and 5*), (4) creation of final infographic prototype, and (5) revision of the final infographic based upon feedback from the member-check questionnaire (see Appendix G). Revisions and final outcomes will be discussed in further detail during the results and discussion chapters (four and five) of this dissertation.



*Figure 2*  
*Revised Infographic Illustrations*

Additional infographic features such as theme background colors, layout (vertical and/or horizontal), modified and/or additional visuals and text were all addressed and suggested by study participants to best reflect the communication needs of AAW between the ages of 30 and 65.

## Chapter 4: Results

Serving as the fourth chapter for this dissertation, the results from the six focus groups will be relayed according to corresponding research questions and research components. Names have been removed from this portion of the research as prior promised to focus group participants for the sake of guarding identities and upholding anonymity. Members will be regarded as “participant” and/or “respondent” near their added statements. Although participant statements in this resulting synopsis are relayed provided by statements from the recorded transcript, some punctuation edits were made to the quotes to maximize readability potential. The following results serve as synopsis of the potential effectiveness of a CC prevention infographic as prevention communication, expressed by the 17 AAW that participated in the study (see *table 4* in appendices for demographic breakdown).

### **Statement of infographic content arrangement**

As mentioned in the methodology chapter (chapter 3) of this dissertation, the CC prevention infographic content was created prior to the conductance of focus groups. Messaging was created using HBM as a guiding framework and followed content hierarchy protocol that is characteristic to persuasive infographics-- key message, problem, danger, solution, and call to action (Krum, 2014). Each message and each visual were cut into different squares/cut-outs. During focus group discussion, all participants were asked to collectively arrange each cut-out in a manner that best reflect an information flow that would best appeal to AAW ages 30 to 65. All of the focus group sessions arranged the infographic content in the same order with illustrations next to relevant content, accept for one focus group session. This particular session had a very similar layout, except the title cut-out (“Are you an African American Women between the ages of 30 to 65? If yes, this infographic is for you”) was exchanged with a cut-out relaying age-specific

screening information (“If you are ages 30 to 65, get screenings with an HPV co-test every five years or every three years with the test alone.) Given that the other five focus group sessions unanimously agreed on the order, the counter layout was not significant enough to study results to change the layout in the final infographic.

**RQ1: How do AAW ages 30 to 65 perceive the severity of CC?**

During focus group discussion about CC in general, it became apparent that most participants across all six sessions had a (1) lack of knowledge on cervical cancer and (2) vague understandings about HPV’s relationship to CC. While mostly all participants agreed they received annual pap smears, there were still (3) misperceptions about national recommended screening guidelines. These discussions further highlighted participant concerns on (4) barriers to following screening guidelines and perceptions of the (5) lack of communal discussion regarding CC.

**Lack of knowledge on Cervical Cancer.** Over time, there have been many campaigns implemented toward educating AAW on CC and prevention of the cancer in hopes of raising literacy on the matter and behavioral uptake of prevention measures. This study’s focus group discussion on general CC information highlighted the continued need for those campaign efforts as participants largely lacked knowledge on CC. There were many responses that resembled the sentiment of this respondent who share, “I know little to nothing about Cervical Cancer. I guess what I do know is that it can lead to death, just the basics.” However, participant responses like “I have concerns about what exactly it is, and how they assess” and “I choose not to know... As I get older I think about it more, ” elude to the potential willingness of the demographic to learn more about CC and how to prevent the cancer. Further, one participant shared:

I am curious about it, I don't know anything about it. I get check-ups in the event that there is some indicator that I want to know about it and I can start working on it at an early time. When I read about your focus groups, to talk about this, I said 'oh I am interested I want to learn about that.'

There were a few participants who shared a higher understanding of CC than most due to the unfortunate circumstance of experience mortality within their family caused by the cancer.

Regarding her family member's experience with CC, one participant shared:

I had my mother's baby sister, she had cervical cancer she died from it. I know during the time she had it she was in a lot of pain. One of the reasons it was diagnosed late, because she didn't go for her check-ups... and she did die from it.

Another participant whose grandmother passed away from CC particularly young in life shared:

My moms, mom who I never met, she actually died, she died very young, she died at 35 from CC. So my mom always was afraid that she would die early, young. She has always been concerned about cancer; she is a registered nurse so the check-ups, so she was always on me about going to the gynecologist, when I turned 30 she made me go get my breast examined because my aunt had breast cancer. And so we have a high rate in our family and she wanted to get...we definitely have that history.

For these participants it was unfortunately through death of family members that they learned more or become somewhat aware of the seriousness of CC. One participant shared her personal experience with CC after other confessed they did not know much about the cancer, sharing "I was just like her until I was diagnosed with cervical cancer."

After these first general discussions, many of the sessions flowed into a period of curiosity among the focus group members. Questions like “Is there any connection with your family, is it hereditary?” and “so if they catch cervical cancer in time, it’s a, I guess it’s a chance you can pull through?” began to be posed. After answering general questions, the interviewer shared that AAW in their age range were dying the most. Naturally questions like “I wonder why is that, why do we die [the most]?” were asked. A few participants already had some idea that AAW were leading in mortality rates related to CC as one shared, “I do know that women, black women in particular suffer disproportionately from CC, which is just one category specifically.”

These opening discussions were very telling about the state of CC understanding among the women in the target health population. However, responses reflect current health communication literature that often highlights low levels of education and literacy on CC among AAW.

**Vague understandings about HPV’s relationship to Cervical Cancer.** Similarly, women participating in the focus groups demonstrated very minimal understandings of HPV and how it relates to CC. One respondent shared:

I don’t know too much about CC to be honest, I know that Gardasil, that is correlated, right? I do remember when Gardasil came out, I was just fresh out of college, I was in New York working and there was this big rush to like get Gardasil. I think I was like right at the cut off line... So I was really kind of, I didn’t know if I really wanted to get it, I’d get all these kind of, you know with new things that come out that haven’t been tried and true for a very long time. But I do remember that there were a lot of HPV studies being done at [university attended] while I was there. And kind of the ways it can be spread without you knowing and that it can manifest much later in life [and] that a lot of people were like ‘yeah, it’s just a better option for you to protect yourself and for you to

get this. So I did end up getting the shot, it was two or three. I remember there was a lot of commercials and just a lot of media around that, so I remember doing that as just a means of thinking about my health in terms of the future but always be kind of caution... I guess I should just be well versed in general on it. But other than Gardasil and those types of commercials, I don't get as much information about that. I think now, when you in college, when you are in certain settings, in college the HPV studies were going on and they were trying to get people to sign up for that and there were a lot of conversations about that and I know those were correlated. That's pretty much it, I don't know mortality rates or the survival rates or treatment, I don't know any of that.

Like this participant, many other in their early to mid-thirties had also received the Gardasil shot earlier in life, which gave them a slightly better understanding of how HPV relates to CC. Some of the participants went further and shared their own experiences with being diagnosed with HPV. One respondent stated:

My experience with CC is when I was in my 20s, going for my yearly pap smears, I think I was in my mid-20s, I had precancerous cells. So that was my exposure to it personally. As prior stated, there were a few others who mentioned they had been diagnosed with HPV before, but went into no further detail about how it related to CC. Most of the women knew that there were different strains of the virus, however, none of the participating women knew that HPV strand 16 and 17 are most closely linked to CC. Of those who were diagnosed with HPV, all mentioned that their doctors relayed that HPV can lead to CC, but none mentioned that their doctors clearly explained how different strands of the virus relate to CC.

**Misperceptions about national recommended screening guidelines.** Focus group participants generally expressed that they all get annual pap smears, whether annual, bi-annual or



tri-annual. However, misperceptions about actual screening guidelines arose in discussion. When focus group members learned of the updated guidelines it became apparent that none of the participants really followed the new guidelines and very few even knew of the recommended changes from the ACOG. One participant shared, “I thought it was every 2 years, “while another offered, “I thought it was every 3 years from 18-30 or once you turn sexually active until 30 and every three years after 30.” Concerning the suggested time change in pap smear checkups, one respondent stated:

Well with me, when I was younger it was yearly. I notice now when I go to get my physicals, because of my age, he kind of spreads it out to maybe every two years. Maybe like 2012 or so, they started saying you don’t have to get it every year but every other year.

Another participant alluded to being at least aware that there had been changes to nationally recommended screening guidelines as she shared, “I thought it was once a year. I know there have been some recent changes that expand the time and maybe even the age that you start and some people have been against that.” Mostly all of the participants in this study mentioned that they did not receive any notice to change their screening schedules or received no real explanation for the suggested screening time change (if suggested). To that point, one respondent shared:

He didn’t really say why, he just said, “well you know, you don’t have to come back every year, you can just come every other year” and he may have mentioned you don’t have to come back because you don’t have to do it as often but he didn’t go into a lot of detail.

When asked were asked if they would appreciate if there doctors would share explanations of these changes with them when new screening timelines are suggested, most agreed that they would. One of the women stated:

Yea, since it's a change cause I'm thinking, hey I'm supposed to get this done every year. Because I've been getting them done for so long, mentally I'm like "ok, I'm going to get my physical this year, I know this is going to be a part of it." So initially when he says you don't have to I'm glad about it first of all because they are just not comfortable, I don't care how many times you get them they are just never comfortable. But explaining to me why would make me feel a lot better.

In reference to whether or not the doctor shares information on why suggested screening timelines change, one participant said that she would take the liberty to ask the doctor, sharing:

I'd ask. Anytime there's any type of change in my routine, my physicals or whatever, I do ask why. And I have been through that, so going back to my situation I had to...freeze those cells off for cancer prevention. And I also had a biopsy done, which confirmed that I had precancerous cells, so they snipped a part of my cervix off, which was painful. So I had to go every six months for several years and I got it through HPV, how long I had it, I don't know. And I was too old for Gardasil when it came out. So here are the new guidelines, if you over 26 you can take it. I mean I'm fine now, but at the time I couldn't get the vaccine. So, I do ask. Why? Why am I going to a year now, you know I ask.

Because I think it's a routine with doctors, like sometimes they just give information out.

In several of the focus groups women discussed the idea of feeling uncomfortable for going without a yearly exam that they were so used to obtaining. In one particular discussion with two participants, Participant 1 said:

I went with the recommendation but know similar to what she is saying, if I would prolong it five years I probably wouldn't even go, and its stressful, I feel my heart rate going up just talking to you guys about it.

Adding to the same conversation, Participant 2 added:

I've been with my doctor for about 5 to 6 years and she has never mentioned the guidelines to me. You know, never said 'well make sure you come back next year.' I never received a reminder or anything from the doctor's office but I know it's something that I know I need to take care of, I probably will still go every year, even with the new guidelines.

**Barriers to following screening guidelines.** Conversation then flowed into discussion on reasons why women might not get pap smears or follow screening guidelines. Many of the barriers proposed mirrored social determinants of health so often stated in scholarly literature on the matter. One participant shared:

I think just lack of education about it, because it's so personal we don't always talk about it...they don't know too much about it and so they are going on the things they have heard so they don't put a lot of importance on it, not knowing the risk of things it could involve if you don't so just lack of education about it and importance of getting it [pap smear].

Another focus group member suggested, "people of color are afraid of the doctor...so if you don't go you'll never even know. You'll be walking around with a limp and won't go to the doctor, [thinking] it's going to go away." Along this same point, someone else shared, "I think fear too sometimes, because there are people that I know, you've heard the mindset that 'oh I don't know about it, I won't worry about it'."

In addition to the notions of fear and stigma, other participants felt that social and environmental factors also play a role in reasons why AAW might not adhere to screening protocol. One woman shared, “I think fear too sometimes, because there are people that I know, you’ve heard the mindset that oh I don’t know about I won’t worry about it,” while another said, “lack of insurance” may be a huge barrier AAW face when trying to follow screening guidelines. Lacking opportunities for “information access” were discussed in several sessions and one participant shared, “I don’t even know how you find out so if it changes.”

**Lack of communal discussion regarding CC.** Although there were comments made throughout the entirety of almost all focus groups about the private nature of the culture in terms of diseases that pertain to female organs, there were a few moments where participating women spoke on the matter more. Regarding having an understanding of family history despite lacking pivotal details, a discussion occurred in which two participants added their views, Participant 1 shared:

In my family though, I’ve had my mother, my mother’s oldest sister, my paternal grandmother have all had hysterectomy’s. Now, at a time where it was just a hysterectomy, but now knowing what we know now, it could have been related to CC, they don’t know and they don’t talk about it.

Along similar lines in the same conversation, Participant 2 added:

Unfortunately, my family, everyone is very quiet about their health, my older sister just randomly mentioned something about finding something, cancerous cells. And I was just like huh? And having them removed or whatever and having no long-term effects and that it was just so casual. At least one or two women in my family have had

hysterectomies at a later age. But I just feel like we haven't always been as open about our health and our experiences.

**RQ2: Do AAW between the ages of 30 to 65 perceive infographic use for Cervical Cancer prevention as potentially effective for communicating to their health population?**

Overall, the AAW who participated in the focus groups found the infographics to be a useful and attractive tool for communicating sensitive health information. The participants shaped their interest in seeing a CC prevention infographic as a communication tool for their demographic by expressing their (1) perceptions of health infographics, sharing about (2) visual materials received at the doctor's office, and sharing their (3) reactions to example CC infographic from CDC.

**Perceptions of health infographics.** Although most focus group participants knew very little about what an infographic was, once a brief definition was shared a few people drew upon their experiences with seeing visuals, like infographics, in health. One of the focus group participants shared:

I guess when I think of infographics, I think about when they leave me in that room for a while and there are all these posters up, some of them are old and faded, some of them are new but they sort of provide information about various illnesses or diseases... I think most of them are related to STD's and HIV.

During discussion on traditional forms of visuals handed out at the doctor's office, one expressed preference for infographics by sharing, "its more attractive than if you give me a pamphlet." On the same lines of the appeal of visual health materials, many participants felt that the quality of health infographics (both older and newer forms) varied greatly. One of the women stated:

To me it reminds me of a Chinese restaurant. Because it's based on the quality of the place, like they have up pictures, you been looking at those same photos since you been in 5<sup>th</sup> grade and you're not even interested in reading it. Versus, you go to a new places and it's all poppy... it's based on where you receive your healthcare.

**Visual materials received at the doctor's office.** Outside of sharing thoughts on their perceptions of health infographics, women also spoke about other forms of information in terms of what they receive and what they prefer to receive. These discussions usually entailed comments and conversation about the outdated appeals the visuals in their doctor's offices usually hold. Concerning pamphlets one of the discussants offered, "Usually when you go to like clinics or community centers, they usually have very old, old pamphlets." When asked whether their doctors explain the materials in the pamphlets they receive, most agreed that their doctors to not explain, but rather rely on the material for the women to gain greater understanding.

Concerning an issue outside of CC, one participant shared:

She didn't give me good advice; she gave me some pamphlets on it. They had a nice lady on the front smiling looking like she didn't have a worry in the worry. Just like tampon commercials where they are not trying to weigh you down. But it didn't have enough graphics for me in my mind because I was trying to use it. But I go to an OB where it's more middle aged white women go there so I think she feels she doesn't have to do that much explaining to that population.

Another participant added that they would prefer their doctor provide visuals and conversation specific to her demographic, adding:

Yea, my doctor's office, there are images up, it's more like anatomy so it's just like pink. And you just have labels. But there's nothing that's really interactive or anything that

would spark dialogue or conversation like me as an individual. I can't ever say we really even had that conversation, just me as a black female of patient hers. And talking to me as if she is aware of the issues that my population faces, specifically we've never had that conversation. But this conversation will spark that conversation in my doctor's office now, and I am very thankful for that. And I think it might even push her to become more educated and aware when it comes to black women or Latinas or whatever.

Regarding health materials that the women do actually receive from their doctor's office, many participants agreed that due to the lack of relative and up-to-date visuals, they rarely read the materials after the visit. One woman shared, "I read it when I get it, like while I'm waiting, but to be honest I don't look at it after that. Unless I am experiencing some symptoms I may have gone back to look at it."

**Reactions to example CC infographic from CDC.** As a part of the learning experience of the style of infographic I was looking to create with this dissertation, I shared an example CC prevention infographic from the CDC, pertaining to screening guidelines (see Appendix B).

Women were given a chance to read the full infographic on a large screen and weigh-in on their opinions of both the tool in general and what they like or did not like about the CDC infographic specifically. Upon first look at the infographic, one participant said, "hey, it's not scary. I'm thinking of seeing a cervix in cartoon, that scares me."

Featured on the infographic are different races of women to display diversity, as this particular example was geared to all women in general. In reaction to the AAW exemplified within the infographic one participant said, "Why she look attitude-y." The illustration of the AAW shows a woman with a hand on her hip, the sentiment on her being perceived as having an "attitude" or being perceived as "empowered" were mixed.

Regarding the form and style of infographic in general, there were many positive comments and feedback. One of the women shared:

I love it, it captures and holds my attention. All the information is there, its direct and to the point. Any questions that I think I may have, it's just basic simple information that I think I could carry around with me if I needed or somewhere I could post it, but it just gives me exactly the information I need.

Many focus group members expressed that they like the bright colors and the vibrancy of the infographic. There were a couple of participants who felt like they appreciated the design and style of the infographic, however expected more to be shared from the content. Another participant added:

It looks pretty, it looks inviting pick it up, you [would] want to read this. But reading it, it doesn't really tell me what I want to know. How many people are affected with this right here, what are the chances of me getting this?

**RQ3: How to AAW between the ages of 30 to 65 feel that CC prevention infographics can be used in community or faith-based programs and community environments?**

As women brainstormed and shared their ideas about how this infographic could be used within a community setting, most women largely agreed that it should be distributed in some form or fashion at churches and faith-related events like church conferences. One participant stated, “you know, the church a lot of times will have health fairs and this would be good to have a table and make women aware. Like different organizations in the church who have their own meetings and stuff.” Another participant affirmed disturbing the final infographic production in a church setting but urged a more hands-on approach by saying, “churches, sister's circles, like black girls run, but not have it laid out, have someone there who can talk about it and explain it.”



Focusing on the holistic side of church functions, one person voiced, “Church conferences, cause a lot of churches have women’s conferences, and there not only good with the spiritual side, but they are starting to focus on the natural side, so dealing with the whole woman.” From the perception of a lack of discussion on reproductive health in the church a respondent said, “a lot of churches, do health fairs and they do target, particularly, if it’s a black church they do focus on hypertension and things like diabetes, but very rarely do they focus on reproductive health. So that’s definitely a place where you would want to market it.” A final suggestion pointed out that there are more daily or weekly opportunities for distribution and showcase at churches given weekly meetings and activities, saying, “but I think if you get the information out to the like the centers and the churches because they have meetings all throughout the week and these women conferences are coming up.

**RQ4: How do AAW between the ages of 30 to 65 perceive CC prevention infographics as a method of increasing health literacy among members of the population with low literacy levels?**

Participating AAW ages 30 to 65 agreed that infographics were a potentially effective form of communication that could help increase literacy among their population. Many perceived this to be accomplishable because the infographic have the potential to serve as educational materials—in terms of content and visual appeal. When expressing her opinion that the visuals within the proposed CC infographic can be easily understood, one participant voiced, “definitely, with the pictures and the images. Like a said we are more visual, we don’t like to do a lot of reading. And well, most of the time we don’t have time, you got 50 things going on. I like this, this will make me look at it.” Pertaining to this particular age group, one participant added:

I think for the age of 30 this is more than like, a competent conversation. Because the vaccine is given at such a younger age, this might be too much for if you're between the ages of 12 and 15, but for 30, I think that this is very digestible.

Some focus group members agreed that while there was a sufficient amount of information being provided in this general CC prevention awareness infographic, it was easy to comprehend. A respondent elaborated, saying:

It's a lot of information, but it's simply put as far as definitions and action steps. I think a lot of times when you see information like this it's usually an ad, it's not a lot of content, it's got a good headline and it might even have a website, but this goes a step further which is important.

Another focus group member felt that this form of visual-text communication was both educational and empowering. She stated:

I think it does because it says 'remember it's your life to protect' ultimately yes, you can go to the doctor and do other things, but it's still your life to protect. It doesn't seem overly reliant on testing and outside sources to empower you. So I think as a result of that, for people who are afraid to go to the doctor you're just saying you need to go get this test and see what is what, but most of the work is actually going to come from on your own. I think that creates more comfort.

**RQ5: How do AAW between the ages of 30 to 65 believe that messages in CC prevention infographics should be designed?**

Concerning potential message frames to be added to the infographic for maximum relativity to AAW ages 30 to 65, women participating in the focus groups felt that the current family frame being used was sufficient. However, most agreed that adding more positive

imagery and social (i.e., family/friend interaction) framing would enhance the infographic. One focus group member agreed, yet offered, “I like this one because its family but maybe like spreading the word, maybe a better picture would be like someone calling their girlfriend on the phone or talking to a girlfriend over lunch.”

Another member shared, “if you were to add anymore graphics, I would just add more girly graphics like just positive hearts and butterflies, like ... it gives you like that warm comfort feeling.” One of the participants mentioned including a career frame, further suggesting “I would add a working woman frame... because you encounter so many different women outside of your family.”

Still others believed the journey theme was sufficient without adding extra message and content frames into the equation. One respondent said:

“I think it’s like a road map, it informs you on what you need to do, it informs you on what you can do, and if you want to know more information about, there’s information there that will lead you toward that... this is a great preventive measure, it spells it out from a-z. It’s not too much information, it’s just enough to hold your attention. And tell a you what to do so if you want to follow up if you can.”

When asked whether participants feel that spiritual or faith-based frames should be added to the infographic messaging, all focus group members agreed that faith should not be portrayed within infographic. Although they believe the infographic should be distributed in a church setting after production, members did not feel it was related to the content, saying things like: “we don’t need it, this is about Cervical Cancer” and “no, I don’t think so, this is about health.”

**RQ6: What types of colors and visuals do AWW between the ages of 30 to 65 think are culturally specific and can best relay CC prevention in an infographic created for their demographic?**

During the hands on construction of the infographic, women were asked to give their input about the specific details of design. Needless to say, the women involved offered vital input about the specifics of (1) visuals and color and (2) potential themes.

**Colors and visuals.** As mentioned in the methodology section, three initial illustrations—a family illustration, a doctor-patient illustration, and an exercise/yoga illustration—to be potentially included in the infographics were shown to the ladies. Thus the women gave insight regarding perceptions of the effectiveness and appeal of the illustrations at hand. In all of the illustrations, the same characters repeatedly appear. Some women found the repetitiveness to fitting to the idea of telling a story. One participant shared, “yes it looks like the same people are in the whole thing, so maybe doing her or both of them or all three of them, really all three of them, because she looks 65, they look all ages, but then having them look empowered.” Just as she mentioned empowerment, it appeared to be a well desired visual appeal to many in the focus groups. Another individual shared, “I don’t like the pictures, I like that girl like that there (AAW from CDC infographic).” Along those same lines someone else stated, “I think a photo similar to how she’s standing (AAW from CDC infographic), I think a photo similar to how she’s standing would helpful.”

In regards to the exercise scene, some women enjoyed the perception of exercising at home, like yoga. However, some shared that they would like to see other activities portrayed. One focus group member said, “I don’t know that yoga will appeal to all certain cultures, so maybe adding another form of exercise in addition” while another shared, “you can do something, maybe like

have a group of women walking some place, and you could [show] one in three.” Pertaining to the doctor-patient illustration, several participants felt the “patient” in the scene looked a bit uncomfortable. One respondent suggested:

I like the doctor’s office one, but I feel like her hands. She just doesn’t seem comfortable. She has her hands folded and seems a little uncomfortable. Maybe if we can just open her arms a little bit, so we can see that she is talking and having dialogue.

Uniquely, one participant felt that there should be a greater male presence within the infographic. Although this was the only suggestion of its kind, this participant shared, “there are no men in this, but I think that I would want, I think that encouraging men to have these conversations with their wives their daughters is important and can somehow be included.”

While most participants were fine with the variations of body type exemplified within the illustrations, one discussion occurred where multiple viewpoints were shared by different participants. Participant 1 voiced:

Even though we want to see different variations of our body types, especially on commercials and things like that because we feel like “I don’t look like that”, but we still purchase those items from the skinny models because they look good in it.

During the same discussion Participant 2 followed-up by saying, “the thing is the body type below the neck doesn’t necessarily matter, as long as that face looks strong, and your outfit looks strong.”

Regarding colors (in the background, text and illustrations) that might be visually appealing to AAW ages 30 to 65, might be attracted brighter vibrant colors. One person added, “I like that color, that’s one of my favorite. I like the use of vibrant colors on this subject matter, you don’t want it too gloomy.” When asked if the women thought Afrocentric colors would be preferred as

extant scholarly literature states, most women felt it was not necessary. One participant said, “Personally no, I find that offensive. Like you are mocking or mimicking the culture.” Some others suggested perhaps not including Afrocentric print but adding colors from the pallet. Along these lines, one person said, “I think I would like an orange background, but I could go with black if there were colors that pop on the black.”

**Potential themes.** When asked about the potential theme of the CC prevention infographic, most women were not sure how to conceptualize what that might look like. Thus, two rough drawings were created on the white board of the focus group rooms to illustrate two examples of backgrounds/themes: (1) a journey theme and (2) a scrapbook photo album theme. After seeing these examples, most women expressed that they preferred the journey theme. One woman shared:

I like the journey though, I like infographics that can take you, that are not just like block, block, block, cause that’s what you see all the time. So I think some type of journey, yea, because I mean it is a journey to get yourself to the doctor [your journey to health] yea, to get the pap smear done.

Another focus group member shared: “I kind of think it’s like a journey, when I look it this and look at following the steps of it, I kind of think it’s like a journey.” Similarly, one respondent shared a reason for liking the journey theme, adding, “the things that come to mind when you mention journey, is family and generations. Something you can sort of pass down. Because I have daughters and I have a granddaughter and this is something I want to continue to pass down.”

Themes outside of those suggested were a social media theme and a theme similar to a women traveling with a “mom van.” The first suggesting participant shared that the information

be presented in “snapshots of their lives, because people tend to document their lives through social media type of documenting.” The second theme proposed was elaborated by the presenting participant as, “I would make it a mom van, and all these things she’s picking up she’s putting in her van... this is baggage that a woman would carry.”

**RQ7: How do AAW between the ages of 30 to 65 suggest their demographic would best receive a CC infographic—online and in print?**

During focus group discussion, many participants felt that a CC prevention infographic for AAW ages 30 to 65 could be distributed very broadly in a number of fashions. When discussing distribution of the final infographic version, participating women expressed that the infographics could be easily and effectively in both (1) print and (2) online formats.

**Print.** When the example of the infographic being printed out and bookmark format was proposed to women across all six focus groups, it was largely agreed that format would be very appropriate for this demographic—especially older women. One person shared, “honestly, bookmarks may be good for 65 and up because I’m imagining people that read the bible.” Another focus group participant affirmed this idea by adding, “My grandmother, I think about her, she loves bookmarks.” Still, others felt that if you read paper-based books, no matter what your age, you would appreciate the bookmark option. She voiced, “the thing is with book marks, if you read you’re going to use it so you keep that information at the forefront.”

Other participants suggested that the infographic be presented in other forms like a hanging doorknob tab and/or a foldable leaflet suitable for carrying in one’s pocket. To these interesting idea, one participant said:

Are you familiar with, your doctor usually gives it to you, a infographic that you hang on like your shower door... something kind of like that, that can kind of just be there but not

disturbing anybody. It's kind of like that reminder in your head to be like don't forget to get checked, also it would be really nice to have a little saying that would say how important it is to get checked.

**Online.** In terms of distributing and sharing the infographic online, mostly all women agreed that it would be an excellent way to share the information on CC prevention due to the viral nature of the internet. One of the focus group members said, "honestly, I really like, I like holidays and to celebrate stuff so if notice that it was cervical cancer awareness day I would be like post, post, post... I would be like good tip for the day." Regarding the reference links that are featured on the bottom of the infographic, one respondent said, "you have links on there so I would assume it would be digitally shared."

During one part of a focus group discussion three participants shared that they would certainly share the infographic on her networks having had a family impact from the cancer. Participant 1 voiced, "I share things that I have personal experience with. I have diabetes so I always try to share information on that. For CC, I had a family member pass away from the cancer so, I mean, I would definitely share that." Participant 2 agreed, saying "Oh, yea, I definitely would share this." Only one person, Participant 3, said they weren't as active on social media, adding, "I am not a Facebook person."

**RQ8: What messages and corresponding Health Belief Model constructs do AAW between ages 30 and 65 feel are most important for inclusion in a CC prevention infographic?**

Brief explanations of HBM and how it was used to create the content for the infographic were provided to the women that attending the focus groups. This gave them a better understanding of how health communication theory could be used to guide health messaging and content. It also gave them an idea of which messages (and corresponding HBM constructs)



were most impactful to their target health demographic. The two most mention constructs (both directly and indirectly) were (1) perceived susceptibility and (2) perceived severity.

**Perceived susceptibility.** Many participating women expressed the need to emphasize the construct of stability as it was mentioned that many women in this demographic may be better compelled to read and engage with the infographic if they could think of their chances of being diagnosed with the cancer. Along these lines, as was expressed by one participant:

“I think until it happens to you, I would not have ever thought about picking up anything pertaining to [unrelated disease] until I had it. Until it happens to you that’s when you read about it.” Considering this feedback, focus group participants were asked how susceptibility could be best visualized within this infographic. It was mentioned that if a visual like an icon array were created for the “1 in 3 women with cervical cancer will die” it could probably help women see how small the ratio is actually. One person suggested, “if you have the same three women, maybe have their, have their faces side by side but have one shaded or darkened to show that one has or will die.” In terms of the familiarity of CC, one of the older members of a focus group said:

See some of the younger people have all these ailments and things that we don’t know anything about, they have new names and things. But something like CC, we’ve seen it before. It’s not brand new, but like I said, if you have something to catch your eye and you say oh what is this and then you start reading it. And then you think oh I had a friend, oh I know somebody, or oh my sister my family, you want to know more about it. I don’t know if people who are older, they don’t want to talk about it too much.

**Perceived Severity.** In terms of using words that directly highlight the severity of CC among AAW in this demographic, some women felt that the word “die” in the statement “Out of all the races with CC in the US, AAW die the most.” One participant elaborated by saying, “you’re gonna die, awww you should not use that word. That is a scary word, so that’s one of my very main topics is to give them the facts without scary words.” Another participant affirmed this idea by saying, “yes I think you definitely need to shock them...the word die will make me not read the rest of this thing though...you could use the word mortality, fatal.”

Further offering that the sentence could be rephrased “African American women are leading in Cervical Cancer deaths.” However, this feedback was in the minority considering all feedback on the phrase. Most felt that if the issue is that severe it needs to be stated that way. One participant said, “You don’t want the doctor to tell you “might have this” when you actually got it, I don’t want him to sugar coat it for me.” Members of all the focus groups felt the messages that were guided by perceived susceptibility and perceived severity should be placed high in ranking on the infographic to grab the reader’s attention.

### **Re-occurring Discussion: Doctor-Patient Relationship**

In each focus group, there was a significant amount of discussion about circumstances, experiences and potential solutions for improving doctor-patient relationships. Women overwhelmingly expressed a need to receive deeper, more culturally-tailored information from their medical practitioners. Participants felt that infographics were a potentially great way to assist with building these relationships on the surface of the issue. From the patient point-of-view, it was suggested that a future infographic be made that displays a list of questions one could ask a doctor to become more empowered in their experience. From the doctor or medical practitioner point-of-view, it was proposed that perhaps doctors hand out these culturally specific

infographics to spark conversation about serious matters that may otherwise make them uncomfortable to mention.

During a conversation that regarded women's experience at several medical offices two participants expressed their views, Participant 1 shared:

When you go to the doctor, you're expecting him to work his magic, he ain't been with you for the past two years so he needs more information. And he has more than his fair share of workload... so he may not be willing to ask you a thousand questions because he just saw a hundred people today in three hours.

Pushing the issue further, Participant 2 stated, "a lot of this not can be prevented, but can be promoted simply by talking to our doctors, but I feel like my doctor never [really speaks on these issues], probably because they don't want to scare you I guess." Although some felt that their patient experiences have been quite rushed in the past, others felt you have to work past those feelings, adding, "you have to tell them what's going on with you." In agreement, another respondent expounded on the idea, saying:

It's like my grandmother used to say "y'all study your body" so that when you go to the doctor's office you have to be able to tell them what's going on, because they don't know. Like you said, they spend a couple minutes with you and look at you and ask you what's going on. If you don't engage in a conversation with them you could leave out thinking I have paid this co-pay, and they are telling me I have to come back, for what?

When asked if their doctors explain that AAW in their age range experience higher mortality rates, none of the women agreed. A couple of the participants felt that the race of the doctor may also impact how comfortable they feel with giving you severe but relative health statistics. In one conversation Participant 1 explained:

I feel like when my doctor is talking to me I feel like particularly when you have white doctors, they are nervous about talking about things like that, they want to say I treated everyone equally. Don't, because the world isn't and these diseases aren't either. So target me, let the conversation be, 'did you know that black women...' because I didn't know that and I feel like that is something that should be discussed.

In the same discussion, Participant 2 said they she has experienced situations where she suspected her doctor was suggesting tests based upon ethnicity, however was uncertain and would have appreciated a more upfront explanation. She voiced:

There are sometimes where they say, I think maybe you should get tested more because there are some studies that suggest this, but I feel like it's always in a negative way and not in an empowering way to say this is more correlated, this is what you can do to prevent it. It's more like "you need to get tested more because this" or something along those lines.

In terms of positive experiences, one participant shared that she had experienced more success with communication with doctors on college campuses, adding:

I have had good experiences with people working on college campuses, I don't know if it's just because these kids are going through all these different anxieties, they were so familiar with the trying to write the dissertation and the stress of all these different things. She would have really long sessions with me, talking about certain things, she would say scary things like deadlines and things along those lines.

Although the intent of this exploration was not heavily focused on experiences of women and their challenges with doctor-patient communication, these are the true accounts of the participants in the target demographic that should not be ignored. Discussions of infographics

used for CC prevention among AAW ages 30 to 65 naturally yielded these feelings and insights, thus, it is really important that these concerns be highlighted and worked into future research at the intersection of health and visual communication.

### **Results from member-check questionnaire**

During the final phases of the CC prevention infographic creation process, a member-check questionnaire was developed and sent at random to focus group participants who prior volunteered to give anonymous feedback. There were four key areas of feedback received from participating focus group members that includes: *color and design, content and wording, accuracy and further edits, and focus group size and quality feedback.*

**Color and design.** Concerning the color and design of the final CC prevention infographic, participating focus group members of the largely agreed upon liking the color and vibrancy of the visual. Responses like “Love the color and design,” and “I like the bright colors” reinforced their enthusiasm. Some participants’ felt that the font size of the text was presented appropriately, however, believed that more consideration should be given to legibility in reference to the color of text. Sharing “However, I would suggest darkening or making some of the words a white color for easier reading” and “the print comes across a bit blurry depending upon the background.”

**Content and wording.** Likewise, feedback on the content and wording featured within the infographic was rather light and unanimous. One participant shared “Love the wording; very knowledgeable, yet warm and easy to understand.” Another participant added a suggestion to the infographic title, stating “I think you should eliminate the word “infographic” and use a more common word at the beginning,” although a suggested substitute was not provided.

**Accuracy and further edits.** When asked if the women feel that the infographic is culturally relevant and/or reflects their input provided during the focus groups, participants agreed unanimously that it was effective on both accounts. Participants were further asked if they would like to provide any other feedback concerning the infographic. Concerning the exercise scene, one participant added “Maybe say "exercising like yoga, mediation, and cardio (or biking) ..." since there is a picture of ladies on bikes.” While another offered the suggestions to “change certain bullet points coloring and/or sizing” for color contrasting effects.

**Focus group size and quality feedback.** Regarding the size and quality of the focus groups, a majority of the responding participants felt that the smaller focus group setting worked well. One respondent shared “it was a small and intimate group, easy to participate.” Another added “it had a good amount and I enjoyed arranging the info in our preferred order.” Along the same lines of the focus group set-up, another participant added “I really enjoyed the sorting activity, it was really unique.” However, one participant did suggest that they would have appreciate input from “more participants” during the focus group session.

## **Chapter 5: Discussion**

The discussion chapter of this dissertation will offer a comprehensive overview of CC prevention via the infographic study outcomes. The chapter starts with analysis and discussion about overall cervical cancer findings from the focus groups and the creation process for the cervical cancer prevention infographic, which includes: defining health prevention infographics and the visual impact on literacy. The discussion is further shaped by inclusion of sections that concern designing culturally specific health materials and recruiting AA populations for health research. Theoretical, practical and methodological implications, conceived from data analysis and research experiences, are then discussed. The chapter is rounded out by discussion of limitations of this study and areas of future study. The dissertation and chapter will wrap-up with concluding thoughts.

### **Cervical Cancer**

Expounding upon current research involving CC and health communication, this dissertation adds innovative exploration to a growing body of research that invites interdisciplinary approaches to prevention. Prior to going in-depth about infographic findings from this study, it is important to highlight the relationship and understanding which AAW ages 30 to 65 have with CC. Considering many social determinants of health (such as income, education and geographical location), AAW ages 45-65 are at the greatest risk for dying from CC (Davis et al., 2013; Glick, 2012; Rauh-hain et al., 2013). Among many risk factors, lack of early detection of cancerous cells (largely related to HPV) is typically the way women in this demographic pass away from the preventable and treatable cancer (Davis et al., 2013; Glick, 2012; Rauh-hain et al., 2013). Cohesive with current literature on the demographic, the women that participated in these focus groups seemed to be largely unaware of exactly what CC is and how it is prevented. As

also proven in prior literature, little was known about HPV's role in CC prevalence, although it is the number one risk factor for the cancer.

Although most mentioned that they did receive their regular pap smear exams as directed from their doctors, perhaps the most alarming finding was that most women in the focus group also did not know they were among the highest group at risk from dying from the cancer. Some participants felt as if their doctors failed to properly inform them of the risk, while others willingly admitted to purposefully not seeking more education on the matter. Whichever the scenario, this critical lacking of knowledge and understanding will likely keep the demographic among the highest to pass away from CC—simply because little is known about prevention. In all the focus groups conducted, a fairly large amount of discussions occurred surrounding the doctor-patient relationship and how the women participating felt they were marginalized during their experiences in medical offices. Many women did agree that they could ask their doctor's questions regarding their annual exams, however, most also agreed that their doctors willingly provided explanations for changes on a very limited basis. When screening recommendations changed, it was reported that most of the women's doctors suggested they extend their exam visits by a year or two, however, no explanation was provided. In scholarly discussion it has been noted that many doctors do not follow screening recommended screening protocol to avoid patient concerns on increased time periods between annual screenings (Perkins et al., 2013; Teoh et al., 2015). However, Teoh (2015) noted that women who understood these recommendations were scientifically based were more likely to adhere to the exam suggestions from their doctor. This is congruent with the feedback from the study's focus group participants who felt that they would benefit from and appreciate these types of explanations and discussions when changes arise. Findings yielded that an infographic, like the CC prevention infographic at hand, might



even serve as a catalyst for conversation if given to a patient from a doctor. The women felt that if the doctor has reservations on providing explanations for any reason (cultural stigma or screening concerns), visual like this can serve as an opening for that conversation and further allow for two-way discussion as the participant can now read and visualize the important information the doctor is trying to relay.

The exploration of a CC prevention infographic for AAW ages 30 to 65 ultimately yielded a comprehensive and culturally relevant educational tool for future testing, implementation and evaluation. The purpose of this dissertation was to provide a foundation for another method of effectively communicating CC prevention to potentially increase health literacy levels on the issue and encourage positive behavioral change in members of the target health population to act on prevention measures.

### **Cervical Cancer Prevention Infographic**

Existing literature on cervical cancer, health communication, and visual communication provide, to some extent, research that highlights the positive outcomes of (Delp & Jones, 1996; Fisher, 2014; Houts, Doak, Doak, & Loscalzo, 2006b) fusing visual and textual content for increased uptake and comprehension of various messages and content (Coleman, 2010; Giese & Baden, 2015). This dissertation represents a cohesive extension of this disjointed but needed body of literature. Specifically focused on creating a multi-modal form (infographic) of communicating CC prevention information to AAW ages 30 to 65, the research conducted and presented positively reinforces the premise and direction of interdisciplinary research project. Reinforced by members of the target demographic as a potentially effective form of communicating health prevention, the potential impact of using infographics that focus on CC prevention is seemingly rich in positive outcomes. Among the first opportunities encountered by

this research is the necessity to define this specific type of infographic as health prevention infographics (HPIs) for positioning in both scholarly and practical discussion.

**Defining Health Prevention Infographics.** Given the widespread interpretation of the term information graphics, that evolved into “infographics,” a more tailored and centralized definition for the uniqueness of what is being explored in this body of work has been created. As prior stated, health prevention infographics (HPIs) are both didactic and persuasive in nature—containing educational sections like key message, problem, danger, solution and cues-to-action—and can be used as visual health education materials—whether in digital or print. It is important to define a specific category of infographics utilized for health prevention because as found in both current literature and the focus group discussions, there is confusion about exactly how an infographic looks and performs. Prior literature states that an infographic is any combination of visual and textual content, such as a stop sign (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). This interpretation was pretty similar to feedback from focus group participants, as some considered pamphlets and posters to be categorized as infographics. Highlighting inconsistencies from scholarly and practical sources, “modernized” infographics have been influenced by the age of the Internet and have become largely more complex rather than simplistic. These newer versions of infographics can exist in many different sizes and formats, however, the most prevalent style of representation is a long or tower format that is most compatible with the navigation on our computers and digital handheld devices (Krum, 2014; Lankow et al., 2012).

The evolution of looks, structure and format of current online infographics should not be neglected or overlooked. Any field/researcher using the term infographic without specific understanding or explanation of the tool opens way for more gaps in understanding of the pivotal

uses of the innovative resource. For this reason, HPIs have been defined to create cohesion among researchers and practitioners for interdisciplinary fields who seek to use the tool to its maximum potential. Although the HPI created for this particular study pertains to CC prevention for AAW ages 30 to 65, they can actually be used to portray a limitless variety of preventative content for health purposes. There is inclusion of the word “prevention” in the defined title because the term “health infographic” is broad and can entail everything from prevention to treatment. Given the already broad understanding of infographics, it is necessary to be as specific as possible to help pave the foundations for cohesiveness with infographic use for health prevention.

**Infographic impact on health literacy.** As proven by extent literature on visual used for improving literacy, infographics for health prevention (and specifically CC prevention), are potentially capable of being effective visual tactics for increasing health literacy among the target demographic. The findings of this dissertation stated that the visual and textual combinations that are presented in the proposed infographic can help in breaking down literacy barriers that may be faced by AAW ages 30 to 65. There are multiple sets of visual-text combinations within the proposed infographic that help reinforce the CC prevention information presented. For example, the original stimuli for this research included one form of exercise (yoga) and was increased to two forms of exercising (yoga and bike riding) based upon suggestions from population members. These suggestions positively assist in increasing literacy as the combination provides a variety of understanding of its supporting texts that states “Exercising for better health, like yoga or meditation for stress relief...”

The infographic that was created in conjunction with feedback from both participants (and the graphics illustrator) addresses and promotes health literacy engagement on multiple

levels, including functional, interactive and critical. During infographic discussion, there was an overwhelming consensus from study participants to exemplify the infographic as a journey. Thus the infographic incorporates the flow of a journey or pathway, walking viewers through key (and easily attainable) steps of prevention. This theory-driven form of visual education maintains the integrity of a persuasive and didactic infographic (via offering educational steps of prevention) while also working to increase viewer literacy on CC prevention (Guzmán-Cedillo et al., 2015; Krum, 2014). Concerning functional health literacy, which typically does not require critical thinking (Nutbeam, 2000; Paina et al., 2014), the proposed infographic and its content provides simplistic actions one can take to prevent cervical cancer both in oneself and among others, like “exercise” and “spread the word.” For infographic viewers classified on an intermediate health literacy level, there are specific instructions provided by age division among the target population for increased prevention effectiveness. Individuals that are categorized on a intermediate literacy level are characterized by having the ability to be able to gain understanding from multiple sets of information and apply it to future information gained (Nutbeam, 2000; Paina et al., 2014). Critical health literacy is a category of literacy that is used in regard to an individual who is more advanced in processing, interacting with and seeking new types of (complex) health information. Individuals that have a critical level of health literacy can interact with the infographic the same ways as individuals having functional and intermediate health literacy levels, however, the content can be processed and applied beyond the presented information (Nutbeam, 2000; Paina et al., 2014). Individuals at this level may visit the links provided “for more information” to verify health content provided and learn more about CC prevention.

During the years of 2013 and 2014, it was noted that approximately 72% of adults sought health-related information online (Pew Research Center, 2015). This high national figure is a direct indication of the necessity to further focus on health literacy in the digital realm, most notably coined as eHealth literacy. eHealth literacy has been defined along the same context of health literacy, however, it adds and considers the element of internet usage during health information retrieval, comprehension and usage (Norman & Skinner, 2006). A CC prevention infographic for AAW ages 30 to 65 could potentially have positive implications for visual-textual content shared online as (1) tailored health content can improve health literacy and comprehension of information (U.S. Department of Health and Human Services, 2008), and (2) the ability for infographics to be visually educational, viral and accessible on many digital platforms (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012).

Although individuals at different health literacy levels can interact with the proposed infographic in different ways, it is intended that the infographics potentially encourage intermediate and critical levels of health literacy to encourage increases in prevention and empowerment on the issue. As AAW are the most likely to die after being diagnosed with CC and individuals with low literacy levels are more likely to die from a health ailment, this dissertation and its infographic proposal caters to needs of empowerment and prevention of death of multiple levels.

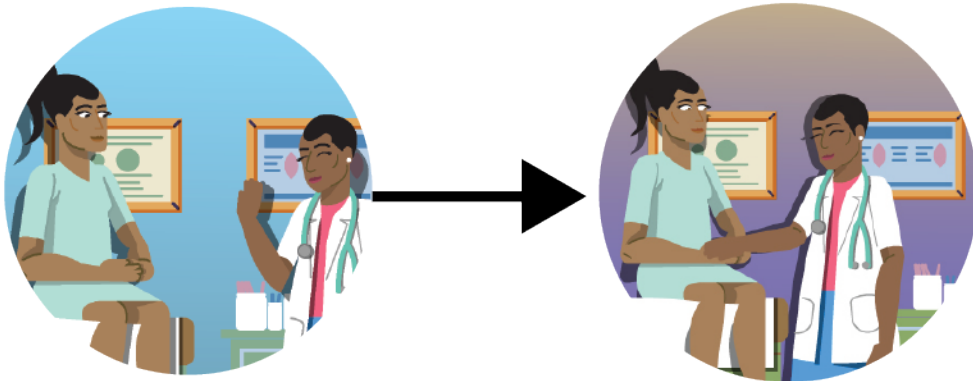
### **Culturally Specific Health Materials**

The conductance of focus groups with AAW ages 30 to 65 made it ever-so clear that culturally specific health materials are crucially important for reaching this specific health population. Current literature on materials designed for AA does elaborate that information for the culture should in some way reflect ideas and practices from the demographic (Springston &

Champion, 2004). However, what is not highlighted as often is the need for continuous research and inclusion of the target population to ensure effective measures are being applied over time in a sustainable, sensitive manner. Which is crucially necessary given the largely negative historical relationship the target health population has had with the medical and health field, specifically with incidences such as the Tuskegee Syphilis Study and the case of Henrietta Lacks (Skloot, 2010; University of Tuskegee, 2015). However, populations of individuals naturally have evolving needs and desires from health content over time. Thus, Springston and Champion (2004) previously highlighted that materials designed for AA would be highly preferable if the design included Afrocentric designs and colors. This dissertation found contrasting input, as AAW did not express strong needs on having Afrocentric design and color inclusion. Further, it was suggested on multiple occasions that the colors be vibrant and relevant to the subject matter—CC. This research was positively impacted by using the qualitative research method of focus groups to obtain the genuine and interactive views of participants on the design of illustrations and message content.

**Portraying the message through design.** Concerning the design of the infographic—from textual to visual content—focus group participants provided a wealth of direction for this dissertation’s proposed infographic. During discussion of the color elements to be added to the infographic, feedback largely rivaled existing literature in terms of including dominating Afrocentric colors and themes within the infographic. Many participants instead suggested more feminine or “girly” colors and patterns. When discussion of the specific characters used within the infographic, many participants described these illustrations as a way to portray empowerment, rather than traditionally through textual content alone. All illustrated scenes within the infographic that were greatly influenced by this feedback. Mirroring existing literature

on designing for AA populations, the doctor-patient illustration received positive feedback from the focus group participants, as both the doctor and the patient are AAW. Suggestions for improving this illustration included portraying the patient as empowered through an upright posture and positive facial expression. Additional feedback for making the doctor more transparent involved suggestions of having the doctor place a hand on the patient to portray endearment and positive discussion (see *Figure 3*). This type of feedback was usually directly surrounding suggested improvements for doctor-patient relations, highlighted both in this study's findings and in current literature (Teoh et al., 2015).



*Figure 3*  
*Doctor-Patient Visual Progression -*  
*Infographic Illustrations*

Participants also liked the variety of women that were portrayed within the infographic, which were representation of multiple generations of family members. In addition, the women appreciated the variety of body shapes, hairstyles and skin tones presented in the infographic to reflect the extent of variety among the demographic. Although a few focus group members expressed interest for more variety among the women, most liked the consistency of having the

same individuals appear multiple times during the infographic to create a narrative. This was positive feedback as infographics are largely known for explaining sets of information in a story-like or narrative format. Thus, when the background of the infographic was discussed a majority of the participating women liked the idea of having the infographic resemble a journey to allow the information to flow in a chronological and story-like way. In terms of the interior design settings within the illustrations, participants had no strong desire for them to be Afrocentric in nature, however, participants did suggest family photos and artwork be present in the background when relevant. Relating to that suggestion is scholarly literature that prior highlighted the importance of family involvement and “sisterhood” within the target demographic, as the AAW are culturally more inclusive and interactive than some other races of women (Eng, 1993; Williams & Templin, 2013).

*Conceptual and design challenges.* Concerning the overall essence of the infographic presented, participants felt that this was a good introduction to CC prevention for women among the targeted age-group and race. Most women agreed that this could serve as a general overview of the issue, while future infographics could explore specific topics like CC’s relationship with HPV and what exactly to ask your doctor during an annual exam. This presented small challenges in terms of the limitation of information that could be aesthetically shared within the infographic. For instance, there is only a one-liner featured in the infographic about HPV and what strands cause CC. Ideally there could be more elaboration on this important topic area, however, as suggested by participants, the topic should at least be covered but further elaborated in a separate infographic. Another instance is a suggestion from a couple of participants that thought showing what types of food to eat to maintain a healthy lifestyle would be important to add to the infographic. While eating healthy foods is a very important aspect of disease



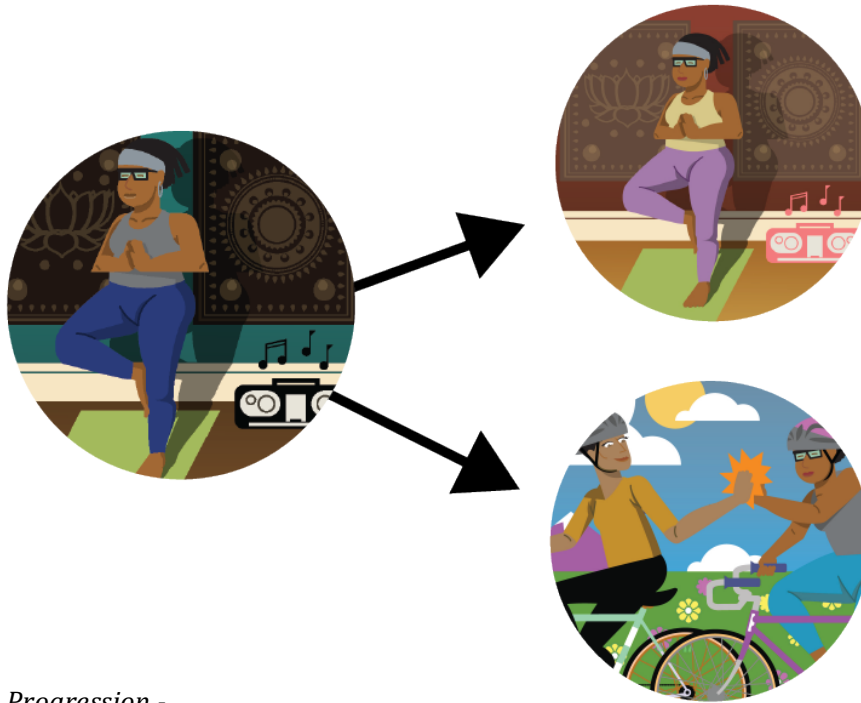
prevention, this particular infographic is geared towards motivating the action of getting regular vaginal examination for detection of abnormal or cancerous cells. Thus, in order to fit in the high-ranking actions women can take to prevent CC, representations of healthy foods to consume did not have a lot of feature room in this more general visual. Healthy food types were displayed by portrayal of apple (fruit), carrot (vegetable) and water bottle outlines. In a future infographic, healthy food types and lifestyle changes can be further elaborated upon. There was one instance where a suggestion was made by one participant that the word “die” used in the sentence “of all races of women with cervical cancer in the U.S., African American women die the most,” was too harsh considering that AAW have high mortality rates in many disease categories.

Considering the sensitivity of the feedback, the interviewer posed the question of whether or not the word “die” was too harsh for the infographic in following focus group discussions. As a result, a majority of women shared that they thought it was necessary to be upfront about the actual level risk. The interviewer/researcher combined their comments with research on HBM construct of perceived severity to decide upon keeping the word “die” as it properly illustrates the level of severity AAW ages 30 to 65 are at in terms of risk factor.

**Culturally relevant themes.** Considering the impact of faith on culture in the AA community (Banda et al., 2012; Davis et al., 1994; Duru, Sarkisian, Leng, & Mangione, 2010; Haynes et al., 2012; Studts et al., 2012; Wolde-Tsadik, 1974), it was initially projected that the infographic would be designed with some depiction of faith-based involvement. However, feedback from participating subjects rivaled that of existing literature on faith-based tactic inclusion. Instead, participants suggested that specific faith practices (like prayer) or specific religions (like Christianity) not be portrayed in the final version of the infographic. Input on the reasoning was so that the infographic could remain as inviting and inclusive as possible for

individuals who practice different religions or none at all. It was however, suggested that during the implementation phase of distributing this infographic it would be most effective to collaborate with church or faith-based programs for increased uptake of the tailored health material. This is largely consistent with past interventions and clinical trials for CC prevention that were documented by researchers who collaborated with churches or faith-based programs.

One theme, which is a relatively lacking body of literature, that arose as a suggestion within the focus group discussion, was social and “sisterhood” portrayals. In current research, there are a few intervention studies that were created around the theme of sisterhood and family (Duru et al., 2010; Eng, 1993; Williams & Templin, 2013), however, there isn’t much focus on how these themes are portrayed in visual communication on health matters for AAW. For instance, some women in the focus groups liked the portrayal of yoga for exercise but wanted to see illustrations where women exercise together for friendship and accountability. Thus, the illustration of the two women riding bikes was created to both show variety in exercises and also the fun and social side of preventing CC and keeping your body healthy (see *Figure 4*).



*Figure 4*  
*Exercise Visual Progression -*  
*Infographic Illustrations*

This idea of social interaction and happenings was also portrayed in the visual that accompanied the “spread the word and save lives” text. In the illustration the family of women is seen laughing and conversing over tea (see *Figure 5*). This could potentially combat perceptions that all health and prevention conversation has to be serious and morbid; instead of being driven by fear of sickness or death the participants were more interested in depicting open conversations motivated by love and concern among family/friends.



*Figure 5*  
*“Spread the Word” - Infographic*  
*Illustration*

**Addressing Cultural Stigma.** As culture stigma represents a rather large portion of existing literature on the historical AA experience in the health field (Brandon et al., 2005; Branson et al., 2007; Brown et al., 2000; Chandra & Paul, 2003; Cohen, 2003; Frank, 2004; Jones et al., 2006; Kelch, 2002; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002), there were indeed discussions of cultural stigma during the conducted focus groups. Although there were varying perceptions of the concept of cultural stigma pertaining to age range. Many women participating felt like older women might prefer messaging addressing cultural stigma pertaining to the historical mistreatment of AA populations in medical practices. They felt that these were messages that should be communicated during future health research experiences from recruitment to research outcomes. Contrasting these views, younger women in the focus groups (closer to 30) felt like the cultural stigma experienced by their age group was more about lack of education on the process of actually getting a pap smear and less about racial or discriminative historical occurrences. This is an interesting area of research when it comes to segmenting messages for various age groups within AAW, as there is very limited literature on the matter. The difference in views on culture stigma could potentially serve as a barrier for screening uptake if never addressed, as younger women may disconnect with the provided (non-age specific) health messages on cultural stigma.

All participants felt that presenting vital CC prevention information via infographic form was potentially a highly effective way of addressing cultural stigma and providing transparency among health practices utilized for prevention. From the endearment shown in the doctor-patient scene to the positive facial expressions the illustrated women portrayed while participating in prevention measures, study participants felt this infographic would be a good start to opening discussion on CC prevention, which is not as often spoken about in their culture.

**Effective methods of distribution.** Along with creating an infographic for future use in CC prevention among AAW ages 30 to 65, this dissertation also sought to outline the best methods of distributing the HPI. Discussion with members from the target health population yielded that the infographics would be best distributed both in digital and print formats. Both digital and print suggestions are compatible with the flexible nature of infographic (Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). For women who preferred tangible health information, it was suggested that the infographics be printed as bookmarks and/or as material that can hang from door knobs or shower handles to serve as a daily prevention reminder to women. Suggestions like these are potentially effective ways of getting the word out further (beyond digital means) as Krum (2014) mentioned that print infographics can be utilized in many different ways, including large stand-alone posters for display at events. The suggested forms of printed infographics were also mentioned in conjunction with distribution through churches or faith-based programs. Participants agreed that they would be strongly appreciative of receiving this type of print material from a doctor's office in conjunction with a conversation with the physician about CC's impact on AAW.

Although there is a lacking body of literature surrounding how AAW in this age range receive their health information, study participants confirmed that they do in fact gain a lot of their knowledge from various online exchanges, which, is congruent with PEW (2015) research that highlights that approximately 72% percent of Americans access and engage with health information online. When social media was mentioned as an avenue for the CC prevention infographic distribution, many study participants agreed existing infographic research that implies the tool's effectiveness as way of widely spreading the visual message (Diamond, 2013; Krum, 2014; Lankow et al., 2012; Smiciklas, 2012). A majority of the women said they would

share or repost the content if it appeared on their social media feeds, as the content proposed is relevant both culturally and health wise, creating more of an interest to share with their friends and loved ones. A couple of participants mentioned that they may have a higher chance of sharing and reposting this information on social media platforms during periods of CC prevention spotlight, like CC Prevention Awareness Month. This type of feedback will be pivotal for future research in crafting culturally specific campaigns for infographic distribution. When the idea was proposed, younger study participants agreed that infographics could also be separated into sections to work well on platforms like Instagram (Woo, 2015), in addition to already being effective on Twitter, Facebook, and Pinterest (Diamond, 2013; Krum, 2014; Lankow et al., 2012; Smiciklas, 2012).

### **Recruiting African American Populations for Health Research**

One of the greatest challenges in conducting research for this dissertation was experienced during the recruitment process. This experience remains consistent with nationally and historically low levels of AA involvement in health research and clinical trials. Although this study was not a clinical trial or health intervention, future use of tactics from these forms of health research may positively impact recruitment success in the future.

**Community Access.** Concerning research access of AA populations (like AAW ages 30 to 65), researchers have long stated in academic literature that access to underserved populations such as the above are a challenge to recruit (Corbie-Smith et al., 1999; Price et al., 1992; Tanner et al., 2015). Among social determinants of health that underserved populations encounter, there are other factors like health literacy, cultural stigma and medical distrust that might prohibit members of these communities from involving in health-based research. Considering corrupt medical research occurrences like the cases of the Tuskegee Syphilis study and Henrietta Lacks

(Skloot, 2010; University, 2015), it has been highlighted that individuals may fear mistreatment during involvement in research relating to health (Brandon et al., 2005; Branson et al., 2007; Brown et al., 2000; Chandra & Paul, 2003; Cohen, 2003; Corbie-Smith et al., 1999; Frank, 2004; Jones et al., 2006; Kelch, 2002; Quinn et al., 2007; Seto, 2001; Shavers et al., 2002; Tanner et al., 2015). Despite access obstacles, there is still a possibility to gain access with the community with the assistance of resources like long-term (flexible) timelines and adequate funding. There are several studies that educated AAW on CC and HPV prevention through hiring health workers to conduct home visitations (Ansell et al., 1994; Price et al., 1992), and/or by collaborating with well-regarded faith entities in the perspective communities researched (Baldwin, 1996; Davis et al., 2013; Springston & Champion, 2004). Factors like these will be considered and implemented during future phases of this research concerning health campaign distribution of the CC prevention infographic.

**Cultivating Community Relationships.** This dissertation advances scholarly literature on medical and health research recruitment among the AA community by providing proactive solutions that benefit both researchers and at risk populations being recruited for research. It is crucially important to begin cultivating relationships with community partners and community members prior to, during and after research is established. There have been many interventions and research studies that have utilized community connections (such as churches or centers) for success in recruitment (Baldwin, 1996; Davis et al., 2013; Springston & Champion, 2004), however, little literature stating how these connections were maintained after research. One study, by Ackerson (2010), that explored use of the Interaction Model of Client Behavior (IMCB, popularly used in health disparities research) to discover motivations for AAW getting pap smears followed a similar approach. The study featured a small sample size of AAW that

were individually interviewed (n=24) and recruited the participants from a prior research study with maintained communication and participant relationships (Ackerson, 2010). Considering researchers that do not maintain a relationship with their study participants, it is my belief that these abandoned relationships help to create a bigger rift in participation from AA populations as it can be seen as closely familiar to past and corrupt research that left communities with no greater resources or understanding of future outcomes. Thus, independent researchers like myself could greatly benefit from aligning with current research entities that have long-existing relationships with certain communities for increased recruitment success and avoidance of community relationship abandonment.

**Other factors to be considered.** In discussing factors of reasons why AAW did not or were reluctant to participant in studies like these, factors not typically addressed in scholarly literature arose, such as time, compensation and enhanced study description. Some women suggested that women between ages 30 and 65 are at their busiest stage of life and may be in transition from job to caretaker or from job to social activity/obligation. Despite a childcare professional being offered to watch children during a focus group session, some participants offered that parents may not trust the professionals provided to watch their children. Others mentioned that greater monetary incentive might increase initial interest in study participation. Suggested ranges for study participation concerning money included anywhere from \$50-\$100. Still others thoroughly appreciated and enjoyed the conversation that was had during the focus group discussion, and even suggested that more emphasis be provided on the expression of enjoyment that might be encountered during focus group participation. Although cultural stigma and medical distrust are strong factors in the lack of participation among AA populations, more research should be



conducted on the amount of influence factors like time, compensation and enhanced study descriptions have on participation success.

### **Theoretical Implications**

Over past decades theory has been used as a guiding framework for maximum effectiveness in health-based message construction and dissemination (du Pre, 2014; Maibach & Parrott, 1995; Rosenstock, 2000). Further, using health communication theory in message design allows researchers to tailor specific content components that specifically address needs and barriers of the target population (Glanz et al., 2005; Maibach & Parrott, 1995). This dissertation helps build upon current literature on using a theoretical foundation for message design in health by adding visual design to the picture. There is a lacking area of scholarly discussion regarding theoretical use for visual protocol improvement in health prevention, which this body of work sought to expound. The CC prevention infographic proposed was using the constructs of HBM. To date, there are now known studies that included innovative approaches to creating comprehensive multimodal content.

**Health belief model inclusion.** As HBM is one of the most widely used health communication theories for determining barriers to prevention (du Pre, 2014; Glanz et al., 2005; Maibach & Parrott, 1995; Rosenstock, 2000), it was highly suitable for use in guiding the CC prevention infographic at hand. Currently, there is very little literature that examines how HBM can be used within campaign creations for AAW regarding CC (Davis et al., 2013). However, there is no known information that elaborates on how HBM can be used to create cohesive visual and textual data to best communicate CC prevention measures and potentially raise health literacy on the matter. All constructs of HBM—perceived susceptibility, perceived severity,

perceived barriers, perceived benefits, cues to action and self-efficacy—were used to guide the creation of the visual and textual components of the proposed infographic.

Concerning feedback from AAW participating in the study, the use of HBM to guide the creation process of the infographic was successful in that it yielded specific and tailored content for the AAW community. For example, the doctor-patient scene addresses perceived barriers from the AA community pertaining to cultural stigma and medical distrust. It is accompanied by several sets of information that explain in detail what the preventive measure of “pap smear” is and how it can be obtained. These two modalities, both created with theory, have the potential to be far more impactful than either modality alone. Another example is the small “1 in 3” ratio that was presented to relay susceptibility. Per focus group discussion, it was suggested that this be accompanied by a visual with the appearance of three women, one being shaded to visually reinforce the ratio. This visualization is also important in speaking to the barrier of numeracy (Wong et al., 2012), which can dull out susceptibility perceptions if the number is too high to be comprehensible in terms of getting and dying from cervical cancer.

This holds solid implications for the field of health communication in that more consideration should be given to the process of visual creation for health related materials. Just as textual messages are created with theory as a guiding framework, so should the accompanying visuals for increased opportunities of triangulation during viewer comprehension. This also holds interdisciplinary implications for the merging of health communication and visual communication. The two fields should not be used in conjunction without deep consideration of how theoretical applications from health can improve practical guidelines in visual communication. In the instance of this dissertation, use of HBM in textual and visual creation enhanced the practice of using multimodal methods of communication in visual studies.

**Exploring the limitations of the health belief model.** Application of HBM to the construction of this study's proposed infographic provided much guidance to the creation process, however, the theory did not provide much insight into the prediction of outcome behaviors. Congruent with current HBM literature, the theory is integral for helping to decipher why certain prevention measures are not acted upon, but does not provide specific guidance for predicting outcomes once those behaviors have been defined (Health Belief Model, 2016; ReCAPP, 2016). For this reason, HBM may only be limited to the infographic construction process as the future steps for this research should begin to predict and assess how AAW ages 30 to 65 will behave based upon interaction with the infographic. A theory that can better assist with this future phase of research is the Theory of Planned Behavior (TPB), as it was created to help predict behavioral outcomes based upon an individual's beliefs (BUSPH, 2013; Williams, Povey, & White, 2008). Another limitation of using HBM for visual and textual infographic constructs for CC prevention was that there are a wide-range of reasons that AAW ages 30 to 65 may or may not act on prevention measures. Although this research project aimed to minimize the range of factors to those most pertinent according to existing literature, HBM is most effective with specific prevention behaviors rather than multiple. In the future, it will be better to create infographics with themes such as "cultural stigma" or "doctor-patient relationships" in order to increase effectiveness and focus of all HBM constructs to be used. Thus, more success may be acquired by creating specific infographics that focus on one facet of prevention behavior and not multiple.

HBM is also historically geared toward igniting personal action and responsibility from the targeted viewer, which if super-imposed can potentially spark feelings of guilt (ReCAPP, 2016). Thus it was important that while direct language was included for the purpose of raising

self-efficacy, careful attention was applied to avoid the infographic content from being accusatory or condescending. Concerning the construct of cues to action, it has been noted (in scholarly and practical application of the theory) that providing strong and relevant cues to action must be continuously updated and evaluated (ReCAPP, 2016). This ties back into the prior proposed concept of long-term community relationships that provide continuous updates of cultural needs so that messages stays current and accurate for the target demographic. Based on this dissertation, then, a solely HBM-guided messaging strategy is not sufficient as a one-stop fix.

### **Practical Implications**

Considering the practical focus of this dissertation to create an infographic to be further evaluated for health communication campaign use for CC prevention among AAW ages 30 to 65, there are a couple of very impactful implications that arose. The implications for potential impact on literacy and culture stigma have surfaced repeatedly in existing literature across this interdisciplinary research venture. The multimodal form of communication (infographic) at hand in combination with theoretical guidance has formed a solid and comprehensive outcome that can potentially increase health literacy and positive behavioral actions from the target health population (pertaining to CC prevention). However, focus group discussions with target health population members yielded that other implications from this interdisciplinary approach are worth exploring.

**Doctor-patient relationships.** As discussed in the focus group sessions, many women spoke of the limited transactions and communication they have with their doctors regarding CC prevention, even when they mentioned that their doctors were pleasant. This information alone is pretty devastating to the academic and health-field efforts to educating, empowering and

positively influencing behavioral change in terms of prevention. Reason being is that academic efforts have been put forth (via research) to advance CC prevention, on both sides—doctor and patient perspectives. However, if women are open to taking extra effort in communicating with their doctors on the matter then the same efforts should be reciprocated from those who ultimately hold the information to inform and educate. Many participating women expressed that they feel their doctor should be the first point of information concerning CC during their pap smear exams, which is a large part of prevention. During these visit, the doctor has a pivotal opportunity to explain risk factors and prevention methods to patients for their increased literacy and empowerment concerning CC prevention. Even more alarming is that not one participant said that their doctors told them that AAW in their demographic have the highest mortality rate from CC. Some participants projected that their doctors may be too busy or may not want to come off culturally insensitive. However, even though they may be taking steps toward prevention themselves, hearing the severity of the issue for their demographic is an opportunity for them to become messengers and spreaders of the issue to their peers. In addition, they also gain a better understanding of why they receive pap smears and what they can ask and tell the doctor upon each visit.

Along the same lines, focus group participants said that their doctors simply told them to come in for visits every one to three years, but never explained the changes in guidelines. None of the focus group participants had the updated guideline correct, although a couple of them had different parts of the guideline correct. These findings mean that there is a lot of communication undertaking to be done outside of the presence of this infographic. Although participants felt that they would appreciate receiving this infographic from their doctor, they mentioned that they would like it in conjunction with oral validation from their doctor. This implies that

communication improvement should take place on the doctor-patient level to improve effectiveness of supplemental materials like this CC prevention infographic. From the patient standpoint, focus group participants suggested that a future infographic be focused on empowerment via providing questions to ask the doctor pertaining to CC prevention. This relates to current scholarly literature on empowering the patient to become personally accountable and also confident in holding their doctor accountable for relaying vital information.

**Health communicators and graphic designers.** Another area of collaboration and intersection that holds significant practical implication within the outcomes of this dissertation is the collaboration between health communicators and graphic designers. Although this collaboration or intersection was not highlighted in existing research focusing on visual use in health, it is certainly important to examine in the future because this collaboration holds more impact on the outcomes of effective health materials than often credited. The varying expertise area in which the health communicator and graphic designer holds are distinctly different. Thus expectations can be easily miscommunicated and/or wrongly translated through design without a plan of action and/or careful consideration of one another's expertise.

After personal experiences with collaborating with a graphic designer (with no health background) these five best practices are being provided for most effective collaborative outcomes:

1. Health communicators should provide graphics designers with a comprehensive background of theories and ideas to be involved in the graphic visual. This goes beyond sharing a description of the visuals and textual content you want. It includes explaining how message design or

theoretical concepts have influenced initial ideas to allow for the expertise of the designer to also guide practical creation of the visual.

2. Health communicators should keep the graphic designer updated and informed about the research process and flow. Providing the graphic designer with an outline of how your research process works will allow the designer to properly understand the timeline and needs for future reconceptualization of visuals. For example, with qualitative research like focus groups, process evaluation is continually implemented and changes to the visual being researched may need to be updated along the way instead of once at the beginning or ending. Allowing the designer understanding of important concepts like member checks allows the designer to also be prepared for multiple rounds of final drafting.
3. Providing a projected/tentative timeframe for production. Many designers work expediently to complete design projects for turnaround effectiveness. If the study or visual creation process will be conducted over a long period of time, it is important that these things be communicated to the designer so that deadlines and payments can be determined in advance.
4. Health communicators should have continuous involvement in the design process. Giving a set of details to a designer without continuous involvement in the process may yield to visuals being created that don't necessarily convey the intended message or work against message design efforts. The health communicator is the expert on the overall purpose and

intended use for the visual being created, thus, their input is imperative during the entire process for maximum visual outcomes.

5. Create multiple forms of the material for various platform use. In conjunction with the graphic designer the health communicator should work to have several versions of the same content created to be relayed across several different platforms. If the visual is an infographic, it can be displayed as whole on platforms like Facebook or Pinterest or divided into multiple sections that would make it more suitable for social media platforms like Instagram. In terms of print production, the visual can be created into bookmarks, large-scale posters, and/or doorknob tabs. Across these varying forms of production, there are different requirements for size and coloring that the graphic designer can produce that will allow the visualization to remain legible and appealing.

### **Qualitative Methodological Implications**

As discussed in the literature review (chapter 2) and the methodology (chapter 3), there are varying accounts of what constitutes a valid sample size for qualitative research (Carlsen & Glenton, 2011; Guest et al., 2006; Mason, 2010), namely regarding focus groups. Some researchers argue that focus group sample sizes should only pertain to the amount of focus groups conducted, while others argue that sample sizes should pertain to number of focus group participants or both (Carlsen & Glenton, 2011). Still some researchers argue that this discussion highlights the fact that there are no rigorous standards in designating proper sample sizes in qualitative research and call for future research to explore and stabilize standards (Carlsen & Glenton, 2011; Guest et al., 2006; Mason, 2010). Following popular communication focus group



protocol (Wimmer & Dominick, 2011b), this research originally set out to conduct five focus groups with a minimum number of 30 participants and maximum number of 60 participants (6-12 participants per session). Although saturation was reached and final research outcomes exceeded the overall amount of projected focus groups (6 were conducted) but fell short of projected participation (17 AAW ages 30-65 participated). However, by other standards of qualitative sample size protocol, the sample size of 17 for this study was in line with the typical units of analysis for qualitative research samples (Carlsen & Glenton, 2011; Guest et al., 2006; Mason, 2010). These outcomes and inconsistencies further allow for critical discussion on qualitative and focus group methodology protocol for research on both innovative and culturally sensitive subjects.

**Innovation.** Employing qualitative research methodologies in the process of exploring both complexity and depth of new communication phenomena or innovative approaches is academically and scientifically appropriate (Carlsen & Glenton, 2011). As various qualitative research methods are best utilized for discovering organic relationships, trends, themes and categories within data, it was highly suitable to use qualitative approaches to explore the potential for infographics to serve as CC prevention communication among AAW ages 30-65. As this is an interdisciplinary study that has not been previously conducted, justification for the final sample size aligns with current arguments of saturation and quality over quantity (Carlsen & Glenton, 2011; Guest et al., 2006; Mason, 2010). Although higher numbers of engagement had been prior estimated for this dissertation, final outcomes are just as impactful. The idea of saturation in qualitative research is when new themes cease to emerge (Guest et al., 2006), which is what happened when the 5<sup>th</sup> and 6<sup>th</sup> focus groups were conducted and analyzed. Reoccurring themes pertaining to lack of knowledge on CC, weakened relationships between the women and

their doctors, and inclusion of colors, visuals and background trends were apparently dominant throughout the focus groups and new suggestions ceased to emerge.

Focus group data was analyzed using the grounded theory approach, which allowed for constant comparison analysis and assessment of study data as first available (Carlsen & Glenton, 2011). Reliability of this study was reinforced continuous assessment of the infographic protocol based upon the guiding framework of HBM and prior literature on the target population. These constant assessments kept all infographic working parts (visuals, data and content) remained cohesive in their message and presentation, as well as, keeping the process dependable for future replication (Lincoln & Guba, 1985). Validity was achieved and maintained by making sure the insights obtained from the participants was accurately recorded and portrayed in the final infographic. This was done through continuous member checking of data and final study outcomes to maintain credibility of findings (Trochim, 2006). Validity was also exemplified in form of transferability (Trochim, 2006), as the steps taken toward producing a CC prevention infographic for AAW ages 30-65 can potentially be used in the creation of other theory-driven HPis. Further, as the first known study to focus on infographic content creation for health prevention purposes, it was more significant that focus be directed to the quality of feedback from focus group participants, rather than the amount of participants. This is the first focus group that the researcher conducted with this type of hands-on approach, where participants' literally arranged cut-outs of information in a form suitable for communicating to their target demographic. From the participation of the 17 AAW involved, a great understanding of cultural needs and acceptance of the proposed infographic was gained.

**Cultural Sensitivity.** In dealing with culturally sensitive or highly stigmatized research information, it is sometimes suggested in qualitative research that the methodology of interviews be used to allow participants maximum confidentiality and comfort. Although focus groups can be utilized to generate interactive discussion on culturally sensitive subjects, it is sometimes argued that higher numbers of participants do not necessarily breed levels of genuine participation (Carlsen & Glenton, 2011). During recruitment, challenges were encountered when assessing recruitment outcomes of a notably challenging population to recruit against current and dominant focus group sampling standards. This in itself presents a major problem that can take away from maximum finding extraction during data analysis, as the focus is heavily weighted on quantity. It is largely stated in scholarly research that AA population members are much harder to recruit than other populations (like Caucasian and/or student populations) then standards of sampling “success” must be evaluated differently when researching these populations.

In regards to this study, the perceived limited participation enrollment from the target health population worked in favor of the research outcomes. The best of both research methods was achieved. Women participating were able to share their experiences with enough time to elaborate and engage with others while also having the opportunity to have specific questions and needs addressed by the researcher without feeling rushed for the sake of the research agenda (simulating one-on-one interview interaction). Given that there were two-three women participating in six different focus groups, women were able to engage with one another, without the sense of feeling overwhelmed by too many participants in the room. As many women expressed that CC is not a topic typically discussed among their friends and their families, participants seemed to enjoy the small anonymous crowds that offered the social and sisterhood affirmations noted to be central to their target health population. As opposed to having women

arrange the infographic content on a one-on-one interview basis, the women involved probably gained more insight on issues and possible recruitment methods through building infographic content for their own demographic. This very involvement potentially fosters ownership and empowerment in the potential for the women to further communicate CC prevention among their personal communities. Participants who completed the member-check questionnaire confirmed their appreciation for the smaller focus groups, noting that they were the perfect size for the type of interactive discussion being conducted.

**Re-envisioning Interactive Focus Groups.** After experiencing saturation of information (between focus groups 5 and 6) and the positive outcomes of conducting smaller, more interactive focus groups, much consideration should be given on placing strict, quantity-based expectations on research outcomes, particularly for qualitative research. The nature of the research and data should ultimately guide the “success” of retrieval in terms of how much data to capture during focus group research (Carlsen & Glenton, 2011). Further, an area of focus group research could be specifically created for hands-on, practical approaches such as the creation of a theory-driven CC prevention infographic. This is highly logical and possible as other forms of qualitative research (like in-depth interviewing) utilizes methodology that require smaller sample sizes (like dyads) for richer, more collaborative sets of data (Kashy, 2000; Vardeman, 2008). Although specific guidelines in terms of quantifying focus group protocol may not be the most effective, future research in this area should work toward more streamlined protocol in terms of the criteria for how and when saturation is reached and how that impacts the sample size. Researchers conducting interdisciplinary social science research could potentially benefit from smaller, more interactive focus groups for research projects that yield a collaborative product/outcome for tailored usage.

## **Limitations of Study**

There are many strengths of this study, including creating more cohesion between interdisciplinary approaches to visual communication in health. However, this research was met with several limitations, due to the (1) relatively unexplored topic, (2) sensitive relationship the study's target health population has with medical and health industries, and (3) financial study restrictions.

**Lack of infographic research.** As this study examines infographics, an ever-evolving field of visual communication, the specific definitions provided for this study will potentially be met with opposition. My definition for health prevention infographics is somewhat in between scholarly and practical perceptions of infographics. However, either side of the argument could view the definition as too broad or too narrow depending on their specific views of infographic functions (Lankow et al., 2012). A limitation of this study also includes the lack of scholarly research on this specific intersection. As the review of literature in this dissertation drew from fields including visual psychology, visual communication, health communication, and risk communication there is a potential for more explanatory research to be undiscovered in the process. This dissertation seeks to add to a cohesive body of literature that provides a holistic frame of research surrounding infographics and visual use in social science and health communication.

**Limited population access.** Another limitation to this dissertation is lack of direct access to the target population, which limited the method of sampling for this study to snow ball sampling. Given that the AA population is less likely to be involved in sampling databases, it limited the study to a more word-of-mouth method of sampling which could offer biases to the methodology (Wimmer & Dominick, 2011b). Even as an AA researcher, I found issues with

community access as I had limited community connections in RVA prior to conducting the study. During recruitment of AAW ages 30 to 65, I reached out to several local advocacy organizations, doctor's offices and research institutions for recruitment collaboration. In this process I learned that because of the sensitive nature of the topic and troubled history of AA's in healthcare it is crucially important to foster relationships with outside (or community) partners at least 3-6 months prior to data collection and study recruitment. This timeframe is suggested because although I met partners during my study recruitment process who were willing to help, they had specific guidelines and/or time frames for collaboration approval that would take about 3-6 months. Further adding to sample size limitations and population access, as this was a qualitative research study it is not generalizable by nature (Wimmer & Dominick, 2011b). Thus, future research must be conducted on the study's outcomes to determine feasibility across the general target population.

**Financial Restrictions.** Lastly, this study's timeframe and infographic production outcomes were heavily guided by the amount of financial support allocated for study completion. As a graduate researcher, funding for all parts of this study was provided out-of-pocket, including: participant incentives, infographic design and creation, and focus group interview transcription. In terms of participant recruitment, the study initially offered incentive of \$10 cash for participation. After experiencing a lack of participation, I raised the participation incentive to \$30, which had little to no effect on focus group attendance. This could possibly mean that members of the target demographic would participate with higher amounts of incentive (like \$100) in order for the study to be seen as comparable for an hour of their time from their hectic schedules. However, \$30 was the maximum participation incentive budgeted for this study. The infographic for this study was created in direct collaboration with a professional graphic designer

that roughly totaled \$1,000. The creation of the infographic illustrations and layout did not exceed initial expected budgeting. Payment for transcriptions also did not exceed initial budgeting, yet totaled \$400. If this study was perhaps grant funded there would potentially be more time and money to recruit subjects at higher incentive rates, however, this study exhausted funding from its initial budget.

### **Future Research**

**Interactive focus group research.** Considering the perceived success experienced in this research project during the conductance of smaller, more interactive focus groups, future research should be conducted on validating this form of qualitative research. Typical focus group research protocol suggests a minimum of six participants and a maximum of 12 participants. However, when focus group protocol goes beyond discussion and includes hands on activities for participants to engage, focus groups may benefit from having smaller sessions that have a minimum of two participants and a maximum of five participants. These smaller more interactive focus groups potentially allow participants to be more comfortable with (1) equally collaborating via the hands on process and (2) feeling comfortable enough to share thoughts and ideas on the interactive process. Further, future research on this matter should be conducted to assess and streamline saturation protocol for smaller, interactive focus group research and focus group research in general. As areas evolve and merge, so must our research methodologies in order to effectively yield outcomes most relatable to the true nature of the subject at hand.

**CC prevention infographic experimentation.** Due to the fact that qualitative explorations are not generalizable (Wimmer & Dominick, 2011b), this study is subject to undergo quantitative research procedures following this study to prove the effectiveness of CC infographics as health prevention for AAW ages 30 to 65. It is imperative, to the future of this

research, that the proposed infographic from this dissertation undergo experimental research procedures because specific elements (visuals and text) can be isolated to ensure the messages fulfill their intended purposes—such as literacy and visual relevance. After experimental testing and necessary revisions are implemented, for increased success, construction of a distribution campaign for the infographic will be conducted. This process can also be monitored and tested for future effective HPI distribution within health communication campaigns.

**Barrier-tailored CC prevention infographics.** After success is obtained from the initial HPI research and campaign implementation, it was encouraged by focus group participants that more tailored/specific infographics be released. This content can range anywhere from content on cultural stigma tailored to specific AAW age groups, like 30-45 and 46-65, to an infographic displaying a step-by-step information for retrieving updated CC guidelines from the ACOG. Other frames that could potentially be included in future CC prevention infographics were suggested to be male involvement on the issue of prevention and introducing “working woman” frames. There is burgeoning academic research interest in male perspectives of reproductive health, especially CC. Extant research states that when partners of women are informed about the severity and prevention of CC, they are more likely to encourage their partner to actively prevent the cancer (Rosser, Zakaras, Hamisi, & Huchko, 2014; Wright, Aiyedehin, Akinyinka, & Ilozumba, 2014). Thus, this research could be positively impacted by exploration of male and couple involvement on increasing positive prevention behaviors toward CC prevention. Likewise, it was also suggested in the discussions that frames like “working woman” and “mom van” be explored to help research a portion of the demographic at hand that aligns themselves with career advancement or the care-giving patriarchal role of the family. Further, if success is



found from these initial CC prevention infographic efforts from AAW ages 30 to 65, then other HPI approaches should be continually utilized and studied.

*User experience design.* One continuously burgeoning area of product design, coined as user experience design (UXD) by Don Norman, pertains to specific methods of design and management applied to a product for specific use by a target population or persona (Cummings, 2007). Norman & Nielson (2016, n.p.) explain that the “user experience encompasses all aspects of the end-user's interaction with the company, its services, and its products.” In relation to this dissertation’s infographic outcome, UXD could be an area of experimentation that further defines and enhances the utilization of infographics for health communication to the AAW population. Careful consideration of the exact needs of the target audience along with in-depth understandings of how they will use the product are the foundations of UXD (Norman & Nielson, 2016), and furthermore the basis of this research. Thus, the infographic outcome for this dissertation was created on the track for maximum effectiveness in the area of UXD for AAW ages 30 to 65—whether used in digital and/or print formats.

## **Conclusion**

The premise of this dissertation was to explore an innovative approach of using an infographic to communicate CC prevention information to the at-risk population of AAW ages 30 to 65. Using qualitative research methods this dissertation not only provides perspective and insight from members of the at-risk population regarding CC, however, it also provides a carefully designed infographic that was influenced by both scholarly literature and the opinions of those who it is targeted towards. In reference to literature on CC, health communication, health theory, and visual communication, this is the first known body of work to produce interdisciplinary results concerning visual CC prevention for AAW ages 30 to 65. The results of

this dissertation provides insights on (1) current views/perceptions of visual health strategies, (2) positive reinforcement of visual uses in communicating CC prevention and (3) culturally inclusive approaches to accessing AA populations for health-related research—from the target population studied.

Findings from this dissertation suggest that cultural content regarding health created for at-risk populations should be created with intensive detail and collaboration from members of the specific health demographic. These efforts help reliability and validity of research outcomes while better ensuring the message is relative and acceptable from the target health demographic. In addition, this dissertation's findings highlight the potentially positive implications of incorporating theory into the construction of health related visuals and messages for potentially increased uptake and comprehension from the target health demographic. Utilizing health theory in visual communication approaches can have the same effect as when designing traditional health messages—providing clear and cohesive content with effective messaging to influence positive health changes.

In terms of health literacy, this dissertation provides findings that visually appealing forms of health communication can potentially help bridge communication gaps between health content creators and receiving health populations. Another important finding of this dissertation was the need for more consistent, long-term community relationships with at-risk populations and the healthcare field (doctors, researchers, health workers, etc.). In order to access underserved populations cultural stigmas in health must be addressed and long-term community partnerships must be formed to increase health-field transparency and interactivity from community members.

In total, the intent of this dissertation is to advance scholarly and practical ideology and approaches to creating culturally relevant and sensitive infographics for future prevention of CC related mortality rates among AAW ages 30 to 65. Considering the final infographic outcome and the prior highlighted study findings, this body of work is perfectly positioned for testing and refinement. By gaining lived experiences and insights from members of the target health population, this body of work has become a collaborative effort in exploring the potential pivotal role of infographics in preventive health communication.

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**Table 1**  
*Definitions of an Infographic*

<b>Source</b>	<b>Type</b>	<b>Definition</b>
Krum (2014)	Infographic	[An infographic is a] larger graphic design that combines data visualizations, illustration, text and images together into a format that tells a complete story. In this use of the word, data visualizations by themselves are no longer considered to be complete infographics but are a powerful tool that designers often use to help tell their story visually in a n infographic. (Pg. 6)
Lankow, Ritchie, and Crooks (2012)	Infographic	[An infographic is an] abbreviation of “information graphic.” This term has gained popularity recently based on the increased use of graphics in online marketing over the past few years. Some use this tem to connote the unique format that has been widely adopted for this application, which is characterized by illustration, large typography, and long, vertical orientation displaying an assortment of facts. We refer to such graphics as editorial infographics, which can also be presented in different formats... an infographic uses visual cues to communication information. They do not contain a certain amount of data, possess a certain complexity, or present a certain level of analysis. This is no threshold to which something “becomes” an infographic. It can be as simple as a road sign of a man with a shovel that lets you know there

		is construction ahead, or as complex as a visual analysis of the global economy. (p. 20)
Smiciklas (2012)	Infographic	An infographic is defined as a visualization of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood. The process of developing and publishing infographics is called data visualization, information design, or information architecture. (p. 3)
Krum (2014)	Informative Infographic	“Informative infographics are the dominant form you see... [They display] information presented in common knowledge, available publicly to anyone that wants to compile it.”
Krum (2014)	Persuasive Infographic	“[Persuasive] infographic designs lead the reader to a ... predetermined conclusion and then provide a specific action that the reader should take.”
Dissertation Proposal	Health Prevention Infographic (HPI)	“A health prevention infographic (HPI) is both didactic and persuasive in nature—containing sections like key message, problem, danger, solution and cues-to-action. HPIs are for intentional use as visual health education materials—whether in digital or print. HPIs relay complex health prevention information that include multiple sets of data visualizations. Featured text displays in an HPI can be visualized as representational graphics to explain health procedures and behaviors.”

**Table 2**  
*Research Question Map*

<b>RQ</b>	<b>Research Question</b>	<b>Conceptual/Theoretical Framework or Key Components</b>
<b>RQ1</b>	How do AAW perceive the severity of Cervical Cancer among the age group of 30 to 65?	Health Belief Model
<b>RQ2</b>	Do AAW between the ages of 30 to 65 perceive infographic use for Cervical Cancer prevention as potentially effective for communicating to their health population?	Infographic Communication
<b>RQ3</b>	How to AAW between the ages of 30 to 65 feel that CC prevention infographics can be used in community or faith-based programs and community environments?	Cultural Relevance
<b>RQ4</b>	How do AAW between the ages of 30 to 65 perceive CC prevention infographics as a method of increasing health literacy among members of the population with low literacy levels?	Health Literacy
<b>RQ5</b>	How do AAW between the ages of 30 to 65 believe that messages in CC prevention infographics should be designed?	Infographic Design
<b>RQ6</b>	What types of colors and visuals do AAW between the ages of 30 to 65 think are culturally specific and can best relay CC prevention in an infographic created for their demographic?	Infographic Design
<b>RQ7</b>	How do AAW between the ages of 30 to 65 suggest their demographic would best receive a CC infographic—online and in print?	Message Dissemination
<b>RQ8</b>	What messages and corresponding Health Belief Model constructs do AAW between ages 30 and 65 feel are most important for inclusion in a CC prevention infographic?	Health Belief Model

**Table 3**  
*Infographic Content Map*

<b>Infographic Text</b>	<b>Conceptual/Theoretical Framework or Key Components</b>
Are you an African American woman between the ages of 30 to 65? If yes, this information is for you:	Infographic Title
Cervical Cancer can be prevented and treated. Still about 1 in 3 women with cervical cancer will die.	Perceived Susceptibility/Severity/ Persuasive Infographic – Problem
Out of all races of women with Cervical Cancer in the US, African American Women die the most.	Perceived Severity/ Persuasive Infographic – Danger
A huge cause of Cervical Cancer is the Human Papillomaviruses or HPV. Certain types of HPV (types 16 & 18) cause cancer more than others.	HPV Research/Didactic Infographic
Follow these steps to help prevent Cervical Cancer in YOUR life.	Self-Efficacy/Cues to Action
Learn your history! Talk with the women in your family to learn if you have a family history of Cervical Cancer.	Self-Efficacy/Patient Empowerment/ Cues to Action
Get regular womanly check-ups, also known as pap smears.	Didactic Infographic/Cues to Action/ Persuasive Infographic – Key Message
A pap smear is a test that collects a sample of vaginal fluid for testing and is given during a vaginal screening at your gynecologists office and can detect irregular cervical cells.	Health Literacy/Didactic Infographic/Perceived Barriers
To get a pap smear, find a local gynecologists through your insurance company or a Clinic that gives free and/or affordable screenings	Perceived Barriers/Cues to Action
If you are ages 30 to 65, get screenings with an HPV co-test every five years or a three years with the test alone.	Persuasive Infographic – Solution/ Cues to Action
If you are ages 65+ you may no longer need a pap smear under recommendations from your gynecologist.	Persuasive Infographic – Solution/ Cues to Action
Exercising for better health, like yoga or meditation for stress relief, and eating healthy can also help prevent Cervical Cancer.	Persuasive Infographic – Solution/ Cues to Action/Perceived Benefits
Spread the word and save lives. Share cervical cancer information with your mothers, daughters, sisters, cousins, aunts and friends.	Perceived Benefits/ Cues to Action
Remember, it is YOUR life to protect, YOU	Self-Efficacy/Patient Empowerment



can prevent Cervical Cancer!	
For more Cervical Cancer information visit the Centers for Disease Control and Prevention: <a href="http://CDC.gov/cancer/cervical/">CDC.gov/cancer/cervical/</a>	Source/More Information/Cues to Action
Visit the American Congress of Obstetrics and Gynecologist for updated screening guidelines: <a href="http://www.acog.org/Patients/FAQs/Cervical-Cancer-Screening">http://www.acog.org/Patients/FAQs/Cervical-Cancer-Screening</a>	Source/More Information/ Cues to Action

**Table 4**  
*Overview of Focus Group Participants*

<b>Characteristic</b>	<b>Number of Participants</b>
<b>Age</b>	
30	1
32	2
34	3
35	1
36	1
37	1
38	1
39	1
52	1
54	1
55	1
58	1
61	2
<b>Relationship Status</b>	
In a Relationship	10
Single	7
<b>Location – Richmond, VA. Zip Code</b>	
23220	1
23223	2
23229	2
23222	1
23225	2
23227	1
23294	1
23230	1
23832	2
23224	1
22304	1
22306	1
23237	1
	<b>Total # Participants: 17</b>

## Appendix A: Recruitment Email

Hello (*Name*),

I am a doctoral candidate in the Media, Art & Text program here at VCU. As I near the end of my dissertation experience I wanted to share my research opportunity with you in hopes that you may be able to participate or share this email with women who might be eligible.

I am interested in studying the use of infographics—a visual-text combination—as a form of cervical cancer communication and education for African American Women. Through this research study, strategies to better spread prevention actions will be created, potentially adding to current strategies to decrease the rate of African American Women who die from cervical cancer.

Although cervical cancer can be prevented and treated, African American Women die the most from this type of cancer. My study hopes to educate and empower African American Women from ages 30 to 65 to better understand prevention steps, screening procedures and guidelines to combat diagnosis rates later in life. In doing so, I am having focus group discussions to learn about the potential impact of visual communication for cervical cancer prevention.

**I will have five focus groups with about 6-12 African American Women ages 30 to 65 in Richmond, Virginia. Participation is completely voluntary, and if you decide not to participate at any time you will not be punished in any way. As appreciation for participation, \$10<sup>2</sup> cash and light refreshments will be offered. I will also have an experienced child-care professional onsite for mothers who would like to bring their children while they participate.**

Your answers will be audio recorded for later transcription, however, they will remain confidential and no names or information will be linked to any of the findings. In addition, any reports or presentations resulting from this project will present responses in combined form, grouped with other participant responses.

I will be conducting focus groups at the School of Media & Culture in the Temple Building and at the James Cabell Library at VCU, which will ideally require about 60-90 minutes of your time. **If you are interested in bringing your children, please let me know for coordination with the child-care professional at our location. To participate, please email me your top two desired focus group time frames and I will reserve and confirm your space for participation in the study.**

### **Focus Groups to be held on the campus of VCU:**

**Monday, April 4th - 6:00pm - 7:30pm**  
Temple Building, Room #2211

**Tuesday, April 5th - 6:30pm - 8:00pm**

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<sup>2</sup> Incentive later increased to \$30 as a strategy to potentially increase participation.

Cabell Library, Room #240E

**Wednesday, April 6th - 6:00pm - 7:30pm**

Cabell Library, Room #240E

**Thursday, April 7th - 12:00pm - 1:30pm**

Temple Building, Room #2211

**Friday, April 8th - 12:00pm - 1:30pm**

Temple Building, Room #2211

**Friday, April 8th - 6:00pm - 7:30pm**

Temple Building, Room #2211

Metered street parking is available for two-hour time frames and becomes free after 8pm. However, there are also two parking decks closest either building that allow visitor parking: [West Main Street Parking Deck](#) & [West Cary Street Parking Deck](#). The Richard T. Robertson School of Media & Culture is located in the Temple Building: 901 W. Main Street, Richmond, VA 23284. The James Cabell Library is located at 901 Park Ave., Richmond, VA 23284.

**Please feel free to pass this message along to African American Women between the ages of 30 and 65.** I have a flyer attached to this email that briefly explains the study's details. I also have an information sheet with a more detailed description of the study.

If you have any questions about this research study or about me, please feel free to give me a call at (571) 432-6261 or e-mail me at [parrishcp2@vcu.edu](mailto:parrishcp2@vcu.edu). Thank you very much for your time and consideration, your help is greatly appreciated.

Sincerely,

Candace P. Parrish, M.S.  
Ph.D. Student  
Media, Art & Text  
Virginia Commonwealth University

## Appendix B: Focus Group Guide

*Hello! My name is Candace Parrish and I am a Doctoral Candidate at Virginia Commonwealth University. Thank you so much for agreeing to be interviewed today about the use of infographics for Cervical Cancer prevention among African American Women.*

*Before we get started on our discussion, there are just a few things I'd like to point out. We are audio recording this session so we can effectively listen to what you have to say. The audio file will help me in writing my report and are used for this purpose only. Everything you have to say will be kept secure and anything that is reported will be done without names or identifiers. In other words, no one who reads the final report will know or be able to figure out that any of you participated in this study. Also, please remember that you can choose not to respond to a question at any time and that your participation in this study is completely voluntary.*

*There are also a few ground rules that I would like us to adopt for our discussion:*

- ◆ *You have been asked here to offer your views and opinions.*
  - *We know that each of you might have different views about this topic. You might hear opinions that you do not agree with, and if this happens, we ask that you respectfully listen and then share your opinion.*
- ◆ *To the extent the law allows, I will keep all comments secure.*
- ◆ *I ask that you not share comments you hear today with anyone outside this room. You should know that there is the possibility that a focus group participant may not honor this request.*
- ◆ *Everyone's input is important; I may call on you if you are being quiet.*
- ◆ *Avoid side conversations.*
- ◆ *Let one person speak at a time.*
- ◆ *Please turn off all cell phones and electronic devices!*
- ◆ *There are no right or wrong answers.*
- ◆ *All answers will be kept secure and anonymous, so feel free to speak your mind.*
- ◆ *Respect one another at all times.*
- ◆ *It's okay to disagree.*
- ◆ *As a way to help us please state whatever name you are using today whenever you make a comment.*

*Let's start off by talking a little about today's topic, which is the use of visuals toward cervical cancer prevention. Let's go around the room by first introducing ourselves, and then sharing what you know about Cervical Cancer.*

### **Background/Education – Cervical Cancer**

Thank you for your input. Just to clarify, Cervical cancer is a type of cancer that only occurs in women, as it forms in the within the cells that line the cervix, located at the lowest area of the uterus (Institute, 2015e; Society, 2015c). Types of cells that can eventually evolve into cervical cancer are medically noted as pre-cancerous cells. After the formations of pre-cancerous cells in the cervical lining, it could take anywhere from

less than one year to several years for the cells to progress into cancer of the cervix (Society, 2015c).

***Does anyone know of risk factors pertaining to Cervical Cancer?***

- Risk factors for cervical cancer include: smoking, former childbirth, engaging in sexual intercourse at a young age and having many sexual partners (Institute, 2015d). However, the greatest risk for developing cervical cancer is acquiring the Human Papilloma Virus (HPV) (Institute, 2015d).

***Is anyone familiar with HPV?***

- HPV is a sexually transmitted virus and is the first known virus to be directly linked to causing CC (NCI, 2015c; CDC, 2015c). There are many different strains of this virus, however, strains 16 and 18 have been linked with the cervical changes that often lead to CC (NCI, 2015c). The prevalence of HPV is that most women, by the age of 50, will have acquired HPV (CDC, 2015c). Though, the immune system may rid the body of the virus in most women, it should still be monitored by a health professional if detected to further help decrease chances of CC going undetected. A huge effort to prevent HPV among women from ages 13-26 is the Gardasil vaccine, which helps prevent acquiring strains 16 and 18 (CDC, 2015d). Although the vaccine can be taken by women older than 26, they are often not the target of that prevention campaign. For all women, the most common way of detecting pre-cancerous cells and HPV is through a routine vaginal exam, called a pap smear (National Institutes of Health, 2013).

***Is anyone familiar with the medical screening procedure called a Pap smear?***

- The Papanicolaou test, shortened to “pap smear,” named after leading cytology researcher George Papanicolaou (Shepard, 2011) who often was known by “Dr. Pap.” In the 1930’s Papanicolaou perfected the method of collecting vaginal smears from women to use for various purposes, including detection of cancerous cells (Shepard, 2011). The pap smear is perhaps the most pivotal invention to CC history and was introduced to routine well woman health exams in the 1950’s (National Institutes of Health (NIH), 2013; Shepard, 2011; Teoh et al., 2015). Since, the method of CC early detection has contributed to a 70% decrease in mortality among American women (Teoh et al., 2015).

***Is anyone familiar with national recommendations for screening procedures?***

- Regulations for national screening recommendations come from the American Congress of Obstetricians and Gynecologists or ACOG. In 2009, it was recommended by ACOG that women begin receiving pap smears at age 21 and continued with biennial screenings until age 29 (Perkins et al., 2013). These guidelines also included recommendations for women age 30 and above (with normal pap smears) to receive triennial pap smears with HPV co-testing until age 70, when screening could be discontinued (Perkins et al., 2013). In 2012, the American Cancer Society (ACS), the American Society for Colposcopy and Cervical Pathology, and the American Society for Clinical Pathology and by the US Preventive Service Task Force contributed to updating national CC screening guidelines (Perkins et al., 2013; Teoh et al., 2015). Suggestions included that women aged 21-29 received triennial pap smear testing, and women aged 30 to 65 receive pap smears in 5 year intervals with HPV co-testing (Perkins et al., 2013).

***Based upon hearing those screening guidelines, does anyone know of any barriers African American Women might specifically face knowing, understanding and following the guidelines?***

1. How many of you get screenings?
2. Do you screen according to these guidelines?
3. Are you aware of the guidelines?
4. What does your doctor tell you about screening guidelines?

***Do any of you who do go to get screenings from your OBGYN feel that your doctor fully or clearly explains CC prevention or screening guidelines?***

1. If yes, do they tell you that your demographics is at risk?
2. Do they give you any health materials that you feel are effective?

***Concerning comprehension of health materials, do you think it would be helpful if your doctor gave you literature that feature graphical representations of the text?***

### **Infographics for CC Prevention**

***Is anyone familiar with infographics?***

1. Tell me your thoughts about health information that uses pictures and graphics more than words?
2. Have you seen any infographics on cervical cancer?

***If you are not familiar with infographics, they derive from the term “information graphics,” and are defined as a larger graphic design that combines data visualizations, illustrations, text, and images to convey complex information to an audience in a manner that can be quickly consumed and easily understood (Krum, 2014; Smiciklas, 2012)***

Give example of CC infographic from CDC:

# Prevent Cervical Cancer

with the **Right Test**  
at the **Right Time**



Screening tests can find abnormal cells so they can be treated before they turn into cancer.



① The Pap test looks for changes in cells on the cervix that could turn into cancer if left untreated.

② The human papillomavirus (HPV) test looks for the virus that causes these cell changes.

The only cancer the Pap test screens for is cervical.

**HPV is the main cause of cervical cancer.**



① HPV is a very common virus, passed from one person to another during sex.

② Most people get it, but it usually goes away on its own.

③ If HPV doesn't go away, it can cause cancer.

**Most women don't need a Pap test every year!**

Have your 1st Pap test when you're

# 21

If your test results are normal, you can wait **3 years** for your next Pap test.



HPV tests aren't recommended for screening women under 30.



When you turn **30** you have a choice:

If your test results are normal, get a Pap test every **3 years**.

OR

Get both a Pap test and an HPV test every **5 years**.

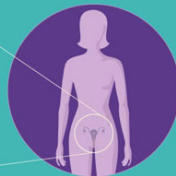
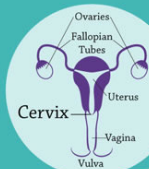
**You can stop getting screened if:**

① You're older than **65** and have had normal Pap test results for many years.



② Your cervix was removed during surgery for a non-cancerous condition like fibroids.

The cervix is the lower, narrow end of the uterus (womb) that connects the uterus to the vagina (birth canal).



No insurance? You may be able to get free or low-cost screening through CDC's National Breast and Cervical Cancer Early Detection Program. Call (800) CDC-INFO or scan this QR code.



More information about cervical cancer: [www.cdc.gov/cancer/cervical/](http://www.cdc.gov/cancer/cervical/)

National Center for Chronic Disease Prevention and Health Promotion  
Division of Cancer Prevention and Control





### **CC Prevention Infographic Content**

*So lets take a look at this CC Infographic I have created on the screen. I have two versions as of right now: vertical and horizontal.*

*I have also printed out this infographic on large sheets of paper so that we can construct an infographic that you feel will best convey CC prevention messages to your demographic.*

*\*\*\*Display study infographics and infographic cut-outs and move around as participants feel they should be arranged.\*\*\**

*After creating this infographic, what do you all think about everything the display of information to use of colors?*

1. Do you think this is a effective method of reaching AAW from ages 30 to 65?
2. Do you think that AAW from ages 30 to 65 could relate to or appreciate this representation on CC prevention information?
3. Do the graphic depictions remind of you AAW accurately?
4. Are the colors attractive and relative to this population? Should colors represent more afrocentricity?
5. Do you have any suggestions?

*Most infographics are designed with a certain theme in mind that influences colors and backgrounds. Do you all have any suggestions for themes that would appeal to your demographic?*

*Ex. Scrapbook theme, bulletin board theme, or roadmap/journey theme.*

### **CC Prevention Infographic & Health Literacy**

*Are you all familiar with health literacy?*

*For clarification, health literacy is the “ability to understand your health, medical care and overall wellness” (Torpy et al., 2011, p. 1158).*

1. Given this definition how literate do you think many AAW in the age group are to CC prevention measures?
2. Do you think that this form of visual explanation is helpful in improving literacy among AAW?
3. What literacy barriers do you think should be addressed that are not already addressed in this infographic?
4. Are there any that are more important than others? Should the order of information in the infographic be changed?

### **CC Prevention Infographic & Messaging Frames**

*Both of these infographics were made using HBM as a guiding framework (show/explain which parts on Infographic).*

1. Should message frames surrounding “family” and/or “children” children be included?
2. Should message frames around spirituality be added in?
3. Do you think message content should include anything about how politics effects CC regulations and policy? Or should that be another infographic?

### **CC Prevention Infographic & Sharing**

*An advantage to infographics like these is that they can be shared online or via print fairly easily.*

1. What ways do you think AAW in this age group would like to receive these types of infographics?
2. Would you look at this information if you saw it on Social media? (Facebook or Pinterest)
3. Would you share this or pass it along? If not, what would compel you to?
4. Would you prefer to receive this at the doctors office also, as a handout or perhaps a bookmark?
5. How else do you think these infographics could be shared to those who need it most? Community centers and/or churches?

### **CC Prevention Infographic & Cultural Stigma**

*To round out our discussion, lets talk about cultural stigmas or feelings of distrust toward the health and medical fields among AAW?*

1. Do you think this type of visual helps to ease uncertainty about what happens during CC prevention measures?
2. Do you think guidance from the HBM constructs of perceived barriers or self-efficacy could help ease or eliminate some of these feelings?
3. What concerns and/or fears do you have with the health industry that you would like or think should be addressed in these infographics?

*Would anybody like to provide any further comments?*

*Does anyone have any other questions?*

I sincerely thank you for participating in this study. This is a topic that means a lot to me and that I will advocate for throughout the rest of my academic career. I can be contacted at any time to inform you of what stages the research is in. The next steps after this study is complete are to test it on a more national level before mass dissemination.

I have \$10 (or \$30) cash for everyone along with a CC prevention information sheet and parking validations. Thank you!

## Appendix C: Exempt Information Sheet

### **TITLE: Exploring Visual Prevention: Developing Infographics as Effective Cervical Cancer Prevention for African American Women**

**VCU IRB NO.: HM20004893**

In exploration of the use of Cervical Cancer (CC) prevention infographics as health communication campaign tools, this study seeks to assess how African American Women feel about the use of infographics for CC prevention.

You are being asked to participate in this study because you are an African American woman between the ages of 30 to 65. This demographic is specifically being targeted because African American Women in their 40's, 50's and 60's have the highest incidences of death from Cervical Cancer, despite the disease being preventable and treatable. The goal of this research is to create visuals, infographics, with your input that might influence women in your race and age group to engage in prevention measures now to better avoid Cervical Cancer diagnosis or mortality later.

Participation in this study is completely voluntary, you will not be punished for deciding to withdraw at anytime. There will be approximately 30-60 other participants in this study.

The researcher is conducting focus groups with participants like you who can provide important perspectives on how effective infographics might be in educating African American Women on Cervical Cancer prevention. Procedures involve conducting (approximately) 60-90 minute focus group sessions at specific dates and times in conference rooms in the Temple Building on the Virginia Commonwealth University Monroe Park Campus. The focus groups will have roughly 6-12 participants. During each session participants will be asked questions about their current perceptions of infographic use in for CC prevention. Other examples of focus group discussion are best strategies for sharing these visuals to this race and age group and how the visuals and messages should best be placed on the infographic for maximum appeal. The focus groups will be audio recorded only for the purposes of being transcribed and analyzed for the study. All audio-recorded responses will be destroyed after one year. There will also be someone taking notes at the focus groups to help document interactions and important occurrences that cannot always be remembered through the recordings.

If you decide to be in this research study, you will be asked to contact the Student Investigator, Candace Parrish (Email: [Parrishcp2@vcu.edu](mailto:Parrishcp2@vcu.edu), Cell: 571-432-6261) to sign up for a focus group session that will be comprised of a series of questions that focus on visual communication strategies in relation to CC prevention among AAW. The focus group is projected to be between 60 to 90 minutes in length.

You will receive \$10.00 cash when you participate in a group session. The \$10.00 cash will be given at the end of each session. You may receive a total of \$10.00 if you participate in one session. You will also be offered free child supervision during participation in the focus groups.

Significant new findings developed during the course of the research which may relate to your willingness to continue participation will be provided to you.

The risks to your physical, emotional, social, professional, or financial well-being are considered to be minimal.

All data are to be stored in a password protected electronic format. Only the researchers for this study will have access to the records. I will keep the data and documents for one year upon completion of this study and then destroyed. A data and safety-monitoring plan is established.

What we find from this study may be presented at meetings or published in papers, however, you will only be identified in these presentations and/or papers as “participant” or “respondent”.

You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. You may also choose not to answer particular questions that are asked in the interview.

## **QUESTIONS**

If you have any questions, complaints, or concerns about your participation in this research, contact:

**Dr. Rowena Briones, Principle Investigator**

**Email me at [rlbriones@vcu.edu](mailto:rlbriones@vcu.edu) or call office phone**

**(804) 827-2048**

The researcher/study staff named above is the best person(s) to call for questions about your participation in this study.

If you have any general questions about your rights as a participant in this or any other research, you may contact:

Office of Research

Virginia Commonwealth University

800 East Leigh Street, Suite 3000

P.O. Box 980568

Richmond, VA 23298

Telephone: (804) 827-2157

Contact this number to ask general questions, to obtain information or offer input, and to express concerns or complaints about research. You may also call this number if you cannot reach the research team or if you wish to talk with someone else. General information about participation in research studies can also be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

## Appendix D: Study Flyer

**A Study for  
African American Women  
on Cervical Cancer  
Infographics**

**Are you a Black or African American Woman  
between the ages of 30-65?**

If so, you are eligible to participate in a study that focuses on better ways of communicating Cervical Cancer prevention actions to women of color.

Participants will complete one focus group session that will last between 60-90 minutes.

Compensation will be provided for study participants and a child-care professional will be onsite if you wish to bring your children. Light refreshments will also be provided.

If you are interested in participating in this study, please contact:

**Student Investigator (Main Contact):  
Candace Parrish, M.S.  
Doctoral Candidate, Health Communication  
Media, Art and Text Program  
Virginia Commonwealth University  
Parrishcp2@vcu.edu  
(571) 432-6261**

**Principal Investigator  
Dr. Rowena Briones  
Assistant Professor, School of Media & Culture  
RLBriones@vcu.edu  
(804) 827-2048**

IRB Study: HM20004893

## Appendix E: Study Focus Group Information Sheet



# What African American Women Should Know about Cervical Cancer

### African American Women & Cervical Cancer

- African American women have the highest incidence of death from Cervical Cancer
- African American women ages 45-60 are 2.5 times more likely to die from Cervical Cancer than White women

### Cervical Cancer & HPV

- Cervical Cancer is the second most common cause of cancer-related death world-wide, with 4,000 deaths/year and 10,000 new cases a year in the United States
- HPV is the first identified virus that causes cancer. HPV strands 16 and 18 are primarily responsible for cervical changes that can lead to cancer.
- By age 50 at least 80% of women will have acquired HPV infection.

### Prevention & Screenings for Women 30+

- Pap smears have decreased the incidence of HPV by 75%. A pap smear looks for pre-cancers, or cellular changes on the cervix that may become cervical cancer if not treated.
- Pap smears should begin at age 21, and then every three years for women ages 21-29.
- At age 30, women can choose to have an HPV test along with the pap test. When both tests are done together, it is called co-testing.
- At age 65, a woman with normal pap test results for several years or who has had her cervix removed as part of a total hysterectomy for non-cancerous conditions, may no longer need pap testing. What is important to keep in mind is that doctors may change the interval testing based on the individual and their findings.

For more Cervical Cancer information and Screening Guidelines visit:

- <http://www.cdc.gov/cancer/cervical/>
- <http://www.acog.org/Patients/FAQs/Cervical-Cancer-Screening>

## Appendix F: Final Cervical Cancer Prevention Infographic

**ARE YOU AN AFRICAN AMERICAN WOMAN BETWEEN THE AGES OF 30-65?**  
If yes, this information is for you:

**Cervical Cancer can be prevented and treated.** Still about 1 in 3 women with cervical cancer will die.

Out of all races of women with Cervical Cancer in the US, African-American Women die the most.

**A huge cause of Cervical Cancer is the Human Papillomaviruses or HPV. Certain types of HPV (types 16 & 18) cause cancer more than others.**

Follow these steps to help prevent Cervical Cancer in YOUR life.

- Learn your history! Talk with the women in your family to learn if you have a family history of Cervical Cancer.

- Get regular womanly check-ups, also known as pap smears.

A pap smear is a test that collects a sample of vaginal fluid for testing and is given during a vaginal screening at your gynecologists office and can detect irregular cervical cells.

- To get a pap smear, find a local gynecologists through your insurance company or a Clinic that gives free and/or affordable screenings.
- If you are ages 30-65 get screenings with an HPV co-test every five years or a three years with the test alone.
- If you are ages 65+ you may no longer need a pap smear under recommendations from your gynecologist.

EXERCISING FOR BETTER HEALTH, YOGA OR MEDITATION FOR STRESS RELIEF, AND EATING HEALTHY CAN ALSO HELP PREVENT CERVICAL CANCER.

Spread the word and save lives. Share cervical cancer information with your mothers, daughters, sisters, cousins, aunts and friends.

**Remember, it is YOUR life to protect, YOU can prevent Cervical Cancer!**

Written & conceived by Candace Parrish  
Illustrated & designed by Bishan Khosla/brandish  
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For more Cervical Cancer information visit the Centers for Disease Control and Prevention: [CDC.gov/cancer/cervical/](http://CDC.gov/cancer/cervical/)  
Visit the American Congress of Obstetrics and Gynecology for updated screening guidelines: [www.aog.org/Patients/FAQ/Cervical-Cancer-Screening](http://www.aog.org/Patients/FAQ/Cervical-Cancer-Screening)



## **Vita**

Candace Patrice Parrish was born on September 11, 1987, in Alexandria, Virginia. She graduated from T.C. Williams High School, Alexandria, Virginia in 2005. Parrish received her Bachelor of Science in Public Relations in 2011 and her Master of Science in Strategic Public Relations in 2013, both from Virginia Commonwealth University, Richmond, Virginia. Between studies, she held several internships in the area of health communication (American Diabetes Association, American Heart Association) and public relations (Social Driver). Parrish served as the Social Media Coordinator for The Red Flag Campaign—a national college campus sexual assault and domestic violence prevention campaign—during the 2015-2016 school year.