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The Effects of Physical Attractiveness in the Health Care Industry

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THE EFFECTS OF PHYSICAL ATTRACTIVENESS IN THE HEALTH CARE INDUSTRY

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Abstract

Physical appearance has a far-reaching influence on a variety of human interactions, yet the effects on one domain has been largely ignored. This dissertation examines the potential effect of physical attractiveness on health care quality. Theoretical explanations for the development of both prejudice and stereotypes are presented, with a focus on the development and effects of attractiveness-based stereotypes. Several studies have found that workers in the medical field are susceptible to the same biases as the general public and that these are associated with lower health care quality for those more marginalized by society. Therefore, two studies were conducted to establish first, that health care workers possess attractiveness-based stereotypes similar to other segments of society and second, that these stereotypes affect the quality of health care received by individual patients. Based on these findings, there is a dire need for further research into this area. Automatic stereotype activation is extremely difficult to prevent, yet even more so when individuals are unaware of these stereotypes. Although programs exist to help reduce race and gender based stereotypic behavior in fields such as medicine or law enforcement, attractiveness-based stereotypes are largely ignored. Attempts cannot be undertaken for education and corrective action until we have a larger body of substantial basic research supporting the power that attractiveness-based stereotypes have over health-related decision-making.

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Chapter 1: Introduction

Despite mounting evidence regarding the profound impact that stereotypes have on human interaction (Lindgren, 2015), people often believe that individuals in certain occupations are immune to their effects (Rojek, 2003). Although these narratives may be comforting, this dissertation presents literature suggesting that individuals such as first responders are held just as captive to the forces of stereotypes as any other segment of society. Medical practitioners, such as nurses and doctors, are another segment of the work force where there is a presumption of reduced bias. Unfortunately, empirical research in the medical industry suggests that this is not the case. Both racial and gender-based stereotypes are shown to influence the quality of care that individuals receive as well as the specific diagnosis that one is given (Hamberg, Risberg, Johansson, & Westman, 2002; Kutner, & Brogan, 1991). Thus far, very little is documented in the literature regarding the influence that physical attractiveness may have on the health care system.

The goal of this dissertation is to explore the impact of the attractiveness stereotype on the delivery of health care, with the focus on how patient attractiveness influences the professional responses of healthcare workers. To examine this, I will first review the literature on stereotypes, exploring both the nature of stereotypes as well as the processes involved in their development. Next, I will examine the nature of attractiveness. As it comprises the focus of the paper, I will then present an overview of the attractiveness stereotype. This review details the pervasive nature of beauty-based biases, formation of the stereotype, and effects that it may have on an individual's life trajectory, such as career and mating opportunities. Finally, I propose specific hypotheses to test whether physical attractiveness stereotypes impact patient healthcare and report on the results of two experiments delving into this issue.

Chapter 2: Literature Review

Stereotypes

Researchers have offered a variety of definitions of both prejudice and stereotypes (Blum, 2004; Brigham, 1971) which has resulted in some confusion about the meaning of these terms (Kanahara, 2006). For purposes of this paper, prejudice will be defined as an attitude toward the members a specific group, leading the persons who hold this attitude to evaluate members in a characteristic fashion, solely on the basis of their membership in that group (Brown, 1995). Current models regarding the structure of human attitudes suggest that they contain both affective components (feelings) and cognitive components (beliefs) (Breckler & Wiggins, 1989). In the case of prejudice, the affective component consists of negative feelings regarding members of a particular group. The cognitive component centers on beliefs and expectations one has about members of that group. The behavioral component manifests as discrimination, such as refusing to employ members of a certain group. In this conceptualization, the cognitive component is what is referred to as a stereotype. In the following section, I will explore variables related to development of stereotypes.

Social categorization. To operate in the social world, persons need to answer a number of fundamental questions about the people they encounter (e.g., Will this person help me? Will this person hurt me? Is this person related to me? Will this person reciprocate? Is this person an appropriate mate?). Ideally, these questions would be answered by a thoughtful and unbiased assessment of each individual; however, a vast literature has demonstrated that most of our perceptions of other persons are a product of relatively spontaneous inferences guided by pre-existing theories and beliefs about the social world (e.g., Macrae & Bodenhausen, 2000; Macrae, Bodenhausen, Schloerscheidt, & Milne, 1999). On the surface this appears to be a poor way to

operate in the world, however, this less thoughtful approach in person perception is not surprising because we often do not have direct access to important information (thoughts, motives, or feelings of other persons) and only limited processing capacity and time to form inferences (Bargh, Chen, & Burrows, 1996; Böckenholt, 2012; Tversky & Kahneman, 2004).

One of the shortcuts we often use to make inferences about others is to place individuals into categories. The categorization process is largely beneficial, in that it allows us to save cognitive effort; along this line, Ionescu and Goldstone (2007) suggest that the categorization of outside stimuli is one of the building blocks of human thought. As we group stimuli into categorizes, such as mammals, reptiles, or vegetables, we are able to make inferences about the properties of these items without the necessity to scrutinize each individual item. For example, participants are able to rapidly detect the presence of categorized objects, such as animals or vehicles, in new scenes that are presented for a very brief time. This is even true when the participants are simultaneously performing an unrelated task that is taxing their cognitive resources (Peelen, Fei-Fei, & Kastner, 2009).

The same process occurs as individuals perceive other humans. People have a natural tendency to sort others into groups based upon factors such as gender, race, education, cultures, and socio-economic status (Maner, Miller, Moss, Leo, & Plant, 2012). As is the case with non-sentient stimuli, inferences about individual characteristics are made during this categorization process.

Ingroup/outgroup. One special type of categorization that is applied to other persons is the ingroup/outgroup distinction. While developing a theory of social identity, Henri Tajfel conducted a series of studies in the 1970's finding that humans engage in a unique style of categorization when their perception involves other humans. Unlike the categorization of

objects, when perceivers engage in human categorization, the perceivers are also members of the categories. Thus, groups that people consider themselves a part of are considered to be *ingroups* and groups that people do not consider themselves to be a part of are considered to be *outgroups* (Tajfel, Billig, Bundy, & Flament, 1971; Tajfel, 1970). This distinction between the ingroup and outgroup is viewed as a fundamental element of social cognition (Haslam, Oakes, & Turner, 1996). Conceptually it is comparable to the figure/ground distinction of visual perception, in that humans use this distinction to develop their sense of social identity as distinct from other individuals.

Several studies have helped to demonstrate the automatic nature of the ingroup/outgroup distinction and how this distinction influences human behavior. One of the first to expose the often-arbitrary nature of this categorization process was the development of the Minimal Groups Paradigm (Tajfel, 1970). In this classic study, participants reported to the experiment and the researcher randomly assigned them to one of two groups. Of note, the participants were explicitly informed that group assignment was arbitrary. As conditions of the paradigm, members of the same group never interacted, and the actual identities of the participants were not known. The task for the participants was to read over a series of booklets asking them to allocate money to other participants in the study. Despite a scenario where participants could not obtain any personal gain regardless of how the assets were allocated, participants invariably awarded more assets to the group to which they were arbitrarily assigned. This minimal group situation demonstrates the manner in which our perceptual processes tend to categorize persons around us into two distinct categories, representations of us (or ingroup) and them (outgroup). Once other humans are placed into these categories, they are no longer viewed as separate individuals, but

are seen in the context of their label (Hewstone, Rubin, & Willis, 2002). Additionally, the minimal group situation demonstrates how easily perceptual distortions are created.

Ingroup/outgroup perceptual distortions. There are a number of perceptual distortions, or biases, that are associated with the ingroup/outgroup distinction. One of the most common is the Outgroup Homogeneity Bias, which is the tendency for humans to perceive of outgroup members as more homogenous or similar than ingroup members (Quattrone & Jones, 1980). Thus, not only are outgroup members seen as different from ingroup members, but also they are seen as being all the same. For example, in one study participants were tasked with estimating the proportion of men or women who would endorse a variety of personality measures that varied on stereotypic meaning (masculinity–femininity) and social desirability (favorable–unfavorable). As predicted, researchers found that out-group members perceived a group as endorsing more stereotypic views and fewer counterstereotypic views than did in-group members (Park & Rothbart, 1982). This demonstrates that persons do not only see outgroup members as physically similar, but also see them as similar in personality.

Beyond the subjective experience of trait inference, it seems that the Outgroup Homogeneity Bias affects human visual perception. Persons often report having difficulty physically distinguishing members of the outgroup. In essence, outgroup members genuinely all look alike for many individuals. Terrence Luce (1974) conducted one of the earliest studies to explore this phenomenon. He recruited participants from four racial backgrounds (Black, White, Chinese, and Japanese) and they were shown photographs of individuals of either the same race or a different race. After 1 minute, the participants were shown another set of pictures and were asked to identify which pictures had been in the first group. All four groups of participants demonstrated the own-race effect, in which they were best at the identifying individuals of their

own race. Additionally, previous interactions with members of other races did not demonstrate an influence on the results.

Similar results were produced in a naturalistic field study. Two opposite-race confederates, one White and one Black, visited convenience stores in which there was a single clerk working alone. Both confederates engaged in some sort of memorable activity during their visit, such as paying for their goods in all pennies or asking for detailed directions to the airport. Two hours later, the convenience store clerks were asked to look at a lineup of photographs consisting of 6 Black and 6 White individuals and identify any that they had seem in the last day. The own-race effect was seen, in that the clerks were best at correctly identifying individuals of their own race. Additionally, highly attractive and distinctive individuals were more like to be remembered (Brigham, Maass, Snyder, & Spaulding, 1982). In the ensuing years, there have been many replications of this own-race effect (see Meissner & Brigham, [2001] for a meta-analysis), indicating this to be a very robust effect. It appears to significantly affect human interactions with serious consequences, such as eyewitness testimony and police activity (Young, Hugenberg, Bernstein, & Sacco, 2012).

Reasons for homogenous perceptions. There are several factors that promote the tendency to experience outgroup homogeneity. Findings suggest that less complex cognitive structures are used when thinking about outgroup members compared to thoughts about the ingroup (Quinn & Rosenthal, 2012). Thus, the schemas produced when thinking about outgroup members tend to be simple and starkly basic. In one seminal study, researchers instructed participants to actively think about various ingroups and outgroups (e.g., Black and White, young and old). Next, participants were given a stack of cards with adjectives printed on them and were tasked with placing them in piles that belong together to represent the individuals that

they had thought of earlier. These piles were examined, so that the number of independent dimensions could be measured. Researchers found that participants created more unique dimensions for ingroup members compared to those of the outgroup (Linville, 1982); thus, outgroup members are perceived as homogenous because the structures used to think about them result in lumping them all together.

The simplicity of cognitive structures created when evaluating outgroup members creates a tendency to not only see them as more similar but also as more extreme. In her work on complexity, Linville noted that simple structures tend to lead to more extreme evaluations. Therefore, if a person uses simple structures to think about outgroup members, then it should be expected that those resultant evaluations would be extreme (1982). To explore this hypothesis, researchers presented scenarios to participants that depicted either an ingroup member or an outgroup member engaging in a minor transgression or describing an accomplishment. The participants then rated the severity of these events on a Likert-type scale. As expected, scenarios depicting outgroup members resulted in more polarized judgments. Linville explained these findings by suggesting that due to the few number of dimensions used to think about an outgroup member, a single instance has a more powerful effect on person perception. For example, if we learn that a student has an F in a course and academic performance is one of only three things that we know about the individual, this will have a greater influence on our perception of them than if we know 10 things about the student. The relative simplicity of these cognitive structures results in more sensitivity to the limited amount of available information.

Development of negative beliefs. Biases in the perception of outgroup members then tends to result in viewing them as both similar and extreme. Although these are strong contributing factors, these findings do not directly address the development of prejudice, which

would involve unfounded negative beliefs about the members of a group. For this to develop, there must also be the development of undesirable views regarding the outgroup. Several theoretical explanations have been posited in regard to the development of prejudice. One of the earliest explanations put forth is simply the idea that prejudice is a culturally transmitted phenomenon. There is strong empirical support for this notion, both cross-culturally (Pettigrew, 2001) and in a variety of contexts such as the military and the police force (Guimond, 2000). Additionally, it has been suggested that the pernicious nature of prejudice can explained through the tendency for children to learn prejudice at an early age. As children develop, they learn from their parents and peers that certain other groups possess negative traits (Hughes & Chen, 1997). Once these mental associations are made, they can be extremely difficult to remove later in life.

Although concepts regarding socialization do an adequate job of explaining how prejudice is transmitted, they still fail to explain how these prejudices originate. One contributing factor simply seems to be the law of small numbers. Most of our personal experiences are with ingroup members and most of our experiences with outgroup members are through the media, where there is often a focus on the reporting of negative instances (Allport, 1954; Combs & Griffith, 2007). Additionally, since we tend to have fewer interactions with outgroup members, cultural differences often lead to negative experiences due to misunderstandings. As a natural extension of social categorization, we then tend to generalize from a few experiences with exemplars of an outgroup, extending these assumptions to encompass the entire outgroup. Thus, if one experiences a couple of Caucasian individuals that are thieves, one often erroneously concludes that all 800 million Caucasian people are thieves.

Social Identity Theory, developed in the 1970s, based largely on the work of Henri Tajfel, may also help to explain the development of these negative beliefs. According to Social

Identity Theory, our self-identity is largely defined by membership in various overlapping groups (Tajfel & Turner, 1986). Accordingly, many biases originate from the motivation to see one's own group as positively distinct from other groups. For example, recent work has found support for Social Identity Theory in team-based health-care organizational settings. Surveys of doctors, nurses, and psychologists employed in this environment revealed significant amounts of outgroup discrimination that could be predicted by measures of ingroup favoritism (Hennessy & West, 1999). Overlapping with Social Identity Theory, Optimal Distinctiveness Theory posits that humans face two competing drives, the need to assimilate with others and the need to maintain uniqueness (Brewer, 1991). A key component of this model is that individual identification with a particular group hinges upon the distinctiveness of that group. In many cases, associations with groups that are too encompassing, or welcoming of others, will leave the individual unsatisfied, as their social identity lacks uniqueness. Conversely, should group membership remain too restrictive then the individual will yearn to be part of a larger collective, although it should be noted that individual differences do exist in preferences regarding the level of group restrictiveness (Wheeler, Mennecke, & Scudder, 1993). Taken together, these models indicate that individual self-identity paradoxically hinges on identification as a member of a group and seeing that group as significantly different from nonmembers.

Attribution errors. Attribution errors may also play a pivotal role in the development of prejudice. Attribution refers to the process by which we as individuals attempt to explain the causes of events or behavior. As is the case with many cognitive processes, biases exert a great deal of influence over the attribution process. Chief among the attribution errors affecting group processes is the Ultimate Attribution Error, in which there is a tendency to attribute negative behavior of the outgroup member to internal disposition and attribute positive behavior to

external factors (Pettigrew, 1979). For example, in one study Hindu office clerks read a short description involving either a Hindu or Muslim actor behaving either positively (engaging in generosity) or negatively (cheating). Additionally, the descriptions involved four variations of the situation, such that the actor might portray a shopkeeper, teacher, injured human, or homemaker. Researchers then asked the clerks to fill out a questionnaire indicating whether they attributed the described behavior to internal or external causes. As predicted, internal attributions were made when reading about positive ingroup behavior and were also made when reading about negative outgroup behavior (Taylor & Jaggi, 1974). When the Ultimate Attribution Error biases the attribution process, it is easy to develop negative attitudes regarding other group members, as positive behavior can be easily discounted as luck or a special circumstance, all the while regarding negative events as accurate indicators of "those people."

Self-esteem maintenance. Self-esteem can be defined as how positively or negatively one evaluates the self. Evolutionary explanations for the function of self-esteem posit that is serves as a type of meter (the sociometer) to indicate to the individual how accepted or shunned they are by society (Leary, 1999). Therefore, group membership is intrinsically tied with the self-concept and membership in a group can serve to enhance self-esteem. This boost in self-esteem, however, is contingent on how favorably your group compares to other groups. As such, derogation of outgroups can serve to bolster one's opinion of their ingroups and by extension serve as a means of self-esteem maintenance.

One key assumption of Social Identity Theory is the idea that persons are motivated to maintain a positive sense of self (Tajfel & Turner, 1986). A variety of ways to modify self-esteem have been found, but group associations clearly have implications for self-esteem. Thus, one way to increase self-esteem is by associating with successful groups and by inflating the

positivity of ingroups and the negativity of outgroups. For example, people often wear apparel associated with sport teams when the teams are winning and neglect to wear them when the same teams are losing. This model suggests that this is less driven by team loyalty than it is by a need to maintain a positive self-image. Additional empirical evidence suggests that increasing the saliency of the ingroup affects social comparison to the extent that it alters self-perception (Brewer & Weber, 1994).

Another functional explanation. Social content models of stereotyping propose that individuals have a more favorable image of others that possess characteristics seen as indicative of higher social status (Conway, Pizzamiglio, & Mount, 1996). Consistent with this model, empirical findings suggest that individuals make stereotypic predictions regarding another human's internal traits based upon their social status (Caprariello, Cuddy, & Fiske, 2009). Therefore, according to this model, stereotypes may develop as a mechanism for the reinforcement of social order. More recently, the stereotype content model has been used to explain a common paradox regarding the workplace. Older adults are often regarded as less employable, despite a tendency to have greater experience than younger adults. Research suggests that this effect is powered by the stereotypic tendency to regard older adults as having greater warmth, but lacking in competence (van Selm & Van der Heijden, 2013). This helps to elucidate the often unexpected influence that stereotypic expectations have over human interaction.

Support for this stereotype content model appears for a wide variety of personal characteristics. When examining gender, weight, or race a more favorable societal status accurately predicts stereotype content (Fiske, Xu, Cuddy, & Glick, 1999; Vartanian & Silverstein, 2013). For example, individuals tend to see members of a societally favored race as

more competent, encompassing characteristics such as power, intelligence, and efficiency. Additionally, these findings in support of the stereotype content model have been replicated in several diverse cultures, both individualist and collectivist (Cuddy et al., 2009).

Thus, social categorization is a necessary component of the process of person perception. As humans engage in this categorization process, others are generally categorized into either the ingroup or the outgroup. This occurs as a normal process, yet it often leads to a variety of perceptual distortions, which help to create negative beliefs about outgroup members. Although models offering differing explanations regarding the development of stereotypes, they all share a focus on the beliefs created through these perceptual distortions.

The Nature of Physical Attractiveness

The nature of beauty is one of the oldest areas of concern in Western philosophy. Along with the study of taste, the study of beauty comprises the branch of philosophy known as aesthetics. A divisive question in the field of aesthetics is whether standards of beauty are objective or subjective. Early Greeks, such as Plato and Aristotle, held that beauty was objective in nature. Predictably, the rise of modern European philosophy has resulted in more acceptance for the views of cultural relativity espoused by Hume and Kant (Sartwell, 2017). At least within the realm of human faces, data suggests that the Platonists are correct. A meta-anayltic review of reliability found that agreement among adults when viewing adult faces within their own culture resulted in an $r = .90$. There was a slight drop when viewing adult faces from other ethnicities, however it was still extremely high at $r = .88$ (Langlois et, al., 2000). This strongly suggests that despite popular maxims, beauty is not in the eye of the beholder. The slight culture variation mirrors Darwin's findings regarding emotion, specifically that they are universal and evolutionary in nature yet may reflect minor cultural variations in their expression (1872). This

also addresses the very nature of *what* physical attractiveness is. Far from simple personal preferences, evolutionary psychologists assert that we perceive as beauty is simply an automatic response to indicators of good heath (Nedelec & Beaver,2014), as well as reproductive value and heritable fitness (Berry, 2000). Given this perspective, it should be expected that preferential attitudes develop for those high in physical attractiveness.

Attractiveness Stereotype

Physical appearance is one domain for which humans often create stereotypes. Consistent with the stereotype content model, the attractiveness stereotype is the predisposition to presume that physically attractive individuals have positive personality traits. Conversely, there is a widespread inference that unattractive people have less desirable characteristics (Dion, Berscheid, & Walster, 1972). Building on the seminal work done by Dion and her associates (1972), there is a corpus of research finding that physical attractiveness can greatly influence the way in which one is perceived by others. As one example, Sheppard, Goffin, Lewis, and Olsen (2011) presented participants with sets of videotaped interviews, each set consisting of both highly attractive individuals and unattractive individuals. For each set of videotapes, participants evaluated the individuals and indicated which one of the pair was higher in select personality traits (e.g., agreeableness, industriousness) in addition to general mental ability. Additionally, the researchers asked participants to provide both absolute ratings and relative ratings. As predicted, the participants rated the more attractive individuals significantly higher for both positive traits and general mental ability, compared to their less attractive counterparts. Participants also provided the more attractive stimuli individuals with higher absolute ratings. The use of videotaped interviews also helps to extend these findings to real-world scenarios, as much of the research in this area has relied on paradigms involving still photographs.

Conceptual replications have extended these findings into a wide variety of domains. For example, attractive individuals are often judged to have warmer and friendlier dispositions (Fiske et al., 1999). Additional findings reveal that attractive individuals are considered to be both more intelligent (Eagly, Ashmore, Makhijani, & Longo, 1991) and more competent (Jackson, Hunter, & Hodge, 2005); these inferences appear to occur rapidly and automatically. For example, when participants are shown faces for only 100ms, they not only determine the more attractive faces as more competent, but also deem them more worthy of a vote in a hypothetical election (Olivola & Todorov, 2010). Additionally, when participants sorted photographs into piles representing higher social status, participants almost universally group the attractive individuals as coming from a higher status background. Furthermore, the participants indicated that a motivating factor in their decision-making process was the belief that the attractive individuals were more likely to have earned success in life (Kalick, 1988). Overall, this line of research has consistently found that individuals believe that physically attractive humans have many other positive features, whereas individuals judged to be unattractive possess negative qualities (see Langlois et al., 2000 for a theoretical review and Eagly et al.,1991 for a meta-analysis).

Evidence further suggests that this differential treatment of others based on physical attractiveness begins at an early age. By the time that children enter school, they are already using appearance to evaluate others. To demonstrate this, Dion presented children (ages 3-6) with pictures of other children in their own age group that had been evaluated by adults as either attractive or unattractive (1973). The participants were then asked to pretend that the photographs represented schoolchildren potentially transferring to their school. The participants demonstrated a strong preference for the attractive students as future friends and expressed a

dislike for unattractive students. Furthermore, the participants had subjectively better evaluations regarding the personality traits of the attractive children, inferring that the attractive children were more likely to act in a prosocial manner, whereas the unattractive children would exhibit antisocial behaviors.

More recently, researchers in this area of child development have attempted to explore how physical attractiveness stereotypes may influence a child's information processing. Researchers read stories to children (ages 3-7) involving two characters that differed regarding their described attractiveness (Ramsey & Langlois, 2002). These stories also manipulated the character traits expressed, such that they were either consistent with the attractiveness stereotypes or inconsistent. For the consistent condition, the beautiful character was good; however, in the inconsistent condition, the attractive character was bad. After listening to these vignettes, the children then viewed pictures of the characters and were tasked with indicating which character possessed the positive traits described in the story. When the vignettes were inconsistent with the attractiveness stereotype, the children made significantly more errors. These data not only demonstrate the influence that attractiveness biases hold over impression formation, but also the young age at which humans develop the tendency for these biases.

Beauty also heavily influences impression formation when adults evaluate children. In a laboratory task where researchers confront participants with a child who has committed an offense, such as intentionally stepping on the dog's tail, individuals tend to rate transgressions as more serious when they are committed by an unattractive child. Additionally, adult participants engaged in trait inferences, such as perceiving the unattractive children who transgress as less honest and less pleasant than the attractive children committing the same transgressions (Dion, 1972). More recently, researchers have found that adults often base their decisions regarding a

child's trustworthiness on their physical beauty (Ma, Xu, & Luo, 2015). These findings held true for both Caucasians and Chinese individuals. As there is consistently a high level of cross-cultural interrater agreement regarding physical attractiveness (Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Langlois et al., 2000), this suggests effects more global in origin rather than those that are simply culturally driven. Thus, what emerges from this literature is that we, as humans, experience differential treatment throughout our childhood and that this treatment is based largely on our physical appearance.

This differential treatment may begin on the day one is born. Although conventional wisdom suggests that all mothers consider their own children beautiful, research indicates that this is may not be case. One study incorporating an observational paradigm found wide disparities in the manner in which mothers interact with their children. Specifically, mothers with better looking infants are more playful and affectionate with their children, compared with mothers of less attractive children (Langlois, Ritter, Casey & Swain, 1995). Additionally, mothers with less attractive infants are more likely to attend to the others in their environment, rather than focusing on their own child. Furthermore, when completing surveys about the experience of motherhood, women with less attractive children are less likely to endorse positive attitudes about motherhood compared with mothers of better looking children. Although some may find it surprising to note that a mother's affection may be moderated by appearance, this is consistent with the findings examining parents of children having congenital deformities. A large body of research indicates that when children have facial abnormalities, their mothers tend to engage in less verbal communication with them(Allen, Wasserman, & Seidman, 1990), are less responsive to their needs (Field &Vega-Lahr, 1984), and behave in a less affectionate manner (Barden, Ford, Jensen, Rogers-Salyer, & Salyer, 1989). Clearly, even at a very young

age, people are being judged due to their level of attractiveness even by those that are closest to them.

Explanations for the Attractiveness Stereotype

Several possible explanations have been advanced for the cause of attractiveness stereotypes. Perhaps the most parsimonious explanation is simply that they may be true. It could be the case the perceivers are observing the true relationship between beauty and personality characteristics and as such are accurately determining that beautiful people tend to exhibit characteristics such as better social skills and intelligence. There is certainly empirical support for this perspective, such as studies confirming that more attractive individuals actually do perform better on job-related outcomes (Hosoda, Stone-Romero, & Coats, 2003). Furthermore, physical beauty was found to be predictive of performance for both males and females when objective measures of performance have been employed, such as number of cars sold. Research has found a positive correlation between physical appearance and school performance (Zahr, 1985). These findings would suggest that even though there is a bias in favor of those judged as attractive, this is not entirely unjustified. Features generally found as attractive, such as facial symmetry, are often correlated with signs of overall good health. Additionally, these features are generally considered desirable in a potential mate (e.g., Jones, Little, Penton-Voak, Tiddeman, Burt, & Perrett, 2001; Rhodes et al., 2007; Thornhill & Gangestad, 1993). Therein lays the adaptive potential for creating inferences about an association between appearance and positive personality traits. These attractiveness-based stereotypes may serve to compel humans to both associate and mate with other individuals most likely to possess good health and good genetic material.

There are a couple of theoretical rationales for these correlations. First, personality traits may be subject to the same forces of mate selection that apply to physical attractiveness (Buss, 1985). This line of reasoning would suggest that females prefer intelligent males, as intelligence is often correlated with wealth and status. Additionally, males generally prefer physically attractive females, thus it should be expected that attractiveness and intelligence covary. Beyond intelligence, it is certainly likely that these same forces could be guiding other traits deemed desirable, such as empathy and social skills.

A second possible rationale for these correlations could be that they are acquired through exposure. Not only do our own stereotypes influence our personal behavior and attitudes, being exposed to stereotypes held by others can influence us as well. This is clearly demonstrated in the classic work by Rosenthal and Jacobson (1966) in which randomly selected students that were given preferential treatment by their teachers demonstrated greater academic success, as well as increases in intelligence. Given the nature of self-fulfilling prophecies, as well as the strong support for the notion that highly attractive individuals receive privilege, it follows that as attractive students are treated as better students they then become better students. In one longitudinal study, teacher expectancies of students in elementary school could accurately predict scholastic performance in their senior year (Smith, Jussim, & Eccles, 1999). Stereotypic attitudes held by parents regarding gender roles affects the development of a child's self-concept such that that influences their preference in toys (Weinraub et al., 1984), as well as their later career aspirations (Barak, 1991). In the academic environment, the profound effect of stereotype threat is a well-documented phenomenon (Keller, 2007). This pattern of findings creates a narrative suggesting that an individual's social reality is based on perceptions of others'

expectations; therefore, these relationships could simply demonstrate a response acquired through exposure.

As with any type of observational learning (Bandura, Grusec, & Menlove, 1966), attractiveness stereotypes could be caused by exposure to cultural representations of beautiful persons. Lay-theories often posit the common assertion that positive attributions based on beauty are likely driven by media or cultural norms (Posavac, Posavac, & Posavac, 1998). This perspective has some empirical support. For example, researchers examined a random sample of Hollywood films covering a 50-year period (Smith, McIntosh, & Bazzini, 1999). To assess the degree to which beauty is often perceived to associate with positive traits, they then evaluated the characters in the films on appearance as well as several personality traits, such as intellect, social skills, and personal values. The researchers discovered a strong correlation between appearance and every positive characteristic that they assessed. Additionally, this relationship occurred across decades, and this relationship was not affected by the character's gender.

The same research team conducted a follow up study to establish what effects exposure to these biased films might produce under real-world conditions. Participants were randomly selected to watch a film judged to be highly biased or a control film deemed unbiased. After viewing the movie, they then rated the qualifications of a fictitious applicant to a graduate program that was depicted as either attractive or unattractive. Individuals that had viewed the biased film showed significantly greater favoritism for the attractive applicants, suggesting that even limited exposure to biases held by society might have an effect on human interaction.

Another explanation for the attractiveness stereotype focuses on innate factors. As is often the case with biases, attractiveness stereotypes appear to have both a natural origin as well as reinforcement through culture. Certainly, the media may contribute to this reinforcement of

physical attractiveness stereotypes, however the evidence suggests that attributions based upon appearance develop without media contact. Additionally, these effects occur cross-culturally. One potential explanation put forth then is that these stereotypes might serve an adaptive function regardless of their veracity.

Further, even a cursory examination of the developmental literature suggests that the attractiveness stereotype is not generated solely because of cultural indoctrination. By the age of 6 months, infants exhibit behavior consistent with the categorization of others based upon appearance. When given the option, infants demonstrate a significant preference for looking at more attractive human faces (Langlois et al., 1987). Beyond simple looking preferences, data suggest that physical attractiveness can influence infant behavior. When presented with dolls of varying attractiveness, infants prefer playing with the more attractive dolls. Additional studies have demonstrated that when encountering an unknown individual, infants express more positive affect when this individual appears physically attractive. Furthermore, infants engage in less withdrawal behavior when this stranger is physically active (Langlois, Roggman, & Riesler-Danner, 1990). This line of research suggests that by 1 year of age humans have already developed biases for others based upon physical beauty. Not only are these infants able to distinguish between individuals of differing attractiveness levels but are also showing an active preference for association with more attractive humans. Researchers have also demonstrated these positive attributions to attractiveness in various cultures (Singh, 2004; Wheeler & Kim, 1997). This helps to illuminate the idea that even when wide variations in cultural norms and standards occur, positive attributions based on beauty appear to be a human universal.

Cognitive vs. motivational bias. An issue that often arises when researching stereotypes is whether these biases are primarily caused by cognitive or motivational factors. A cognitive

bias occurs when there is a systematic pattern of deviation between the 'correct' answer to a task or question; whereas motivational biases occur when personal judgment is influenced by the desirability (or undesirability) of the selected choices or events (Montibeller & von Winterfeldt, 2015; Tversky & Kahneman, 1974). As such, there is often a great deal of overlap between these biases, suggesting that biases are influenced both by the way in which humans process information (e.g., availability) and by personal motivation (e.g., ego defense). For example, belief in a just world has been associated with biases relating to physical attractiveness. To demonstrate this effect, researchers had participants fill out the Belief in a Just World Scale, which is designed to measure endorsement of the common reasoning fallacy in which individuals assert that there is a sense of global justice. Afterwards, participants viewed photographs of individuals that were beautiful or unattractive and were tasked with rating their personality characteristics and expected life outcomes. The participants attributed more positive traits to the attractive males, and expected them to have more positive life outcomes (Dion & Dion, 1987). The rationale advanced by the research team is that belief in a just world compels the perceiver to believe that attractive individuals deserve to have better traits and a better life as a condition of their preferential physical features.

A pair of more recent studies has provided empirical support for this notion (Callan, Powell, & Ellard, 2007). In one study, participants read a vignette detailing the experiences of a young woman that perished in an apartment fire. Attached was a photograph that depicted the female as either attractive or unattractive. Participants then rated how unfair and how tragic they found this death to be. As predicted, researchers found that the death of an attractive woman was considered more tragic and unfair than the death of a less attractive individual. In a follow-up study, participants read vignettes describing a female that suffered in a house fire. When

participants learned that the victim had suffered a great deal, they remembered her as being less attractive than when they believed that her suffering was minimal. What these studies reveal is that the commonly held belief in a just world results in both cognitive and motivational biases. Humans tend to prefer believing that the world operates in a predictable and fair manner, yet individuals are often faced with situations in which there does not appear to be a rational cause. Through cognitive distortions, such as blaming the victim for a crime or blaming the poor for their poverty, the individual is able to retain their belief in the just world. Additionally, there may be a strong motivation to do so, as belief in a just world has been correlated with lower rates of depression (Ritter, Benson, & Snyder, 1990) and greater life satisfaction (Fatima & Suhail, 2010). The effects of these biases may well create a situation in which more attractive lives are more valued by members of society.

Additional findings suggest that attractiveness biases are created rather quickly, with very little cognitive effort required. For example, when participants were presented with attractive and unattractive target faces for only 1000 ms they were able to correctly categorize the faces. When asked, the majority of participants said they did not actually see the faces and felt they were just guessing (Olson & Marshuetz, 2005). Given their accuracy, this lends credence to the idea that evaluations of physical attractiveness occur effortlessly and unconsciously. A follow – up study was conducted to explore whether the act of viewing attractive faces biased subsequent cognitive processing. Participants viewed stimuli faces, rated as either attractive or unattractive, and then were asked to categorize words appearing on a computer screen. They found that participants had significantly shorter reaction times when categorizing words with a positive valence after viewing the attractive stimuli photographs. Taken together, these two studies

indicate that appraisals of attractiveness occur quickly and have an effect of subsequent cognitive processing.

There is also emerging evidence that these biases work in both directions; not only does attractiveness influence trait inferences, but perhaps one's own personality biases what is found attractive. It is suggested that attractiveness stereotypes are so ingrained that as individuals make mating choices, their perceptions of what they find attractive is influenced by what traits they find desirable. Thus, if one is seeking a mate with a dominant personality then facial features associated with dominance will be selected as more attractive (Little, Burt, & Perrett, 2006). To provide support for this hypothesis, participants filled out a questionnaire in which they indicated traits that they personally desired in a mate (e.g., warmth, assertiveness, sexiness, maturity). The participants then rated a series of males and female faces and rated the faces on attractiveness. Based upon these data, the researchers created a preference score for each face indicating how attractive it was found to be to a person desiring a specific trait. The 15 faces found to be the strongest exemplars of each trait were selected and morphed in a composite face. A second group of participants were then presented with the composite faces and asked to rate them in terms of what traits they represented. As predicted, participants were able to easily identify the traits represented in the composite. For example, when participants viewed the composite of the faces rated attractive by one desiring assertiveness, they judged the person to be assertive, thus suggesting that personality traits associated with facial characteristics influence judgments of physical attractiveness. This may help to account for the personality and cultural variance that can be found regarding attractiveness despite the evidence for the universality of attractiveness stereotypes. Both cultural and individual differences in traits exist and this may affect standards of beauty.

The literature on stereotypes has previously been dominated by work exploring race and gender-based stereotyping; however, it is becoming increasingly clear that physical attractiveness can affect person perception just as powerfully. Humans not only show a preference for associating with more attractive individuals, but also create more positive inferences regarding those deemed attractive. This differential treatment not only begins at birth, but is also found across the globe. Several explanations for the development of attractiveness stereotypes have been put forth, such as forming as learned responses or simply that they are true, however what emerges from the literature is their universal nature.

Effects of Physical Appearance on Treatment

When viewing an attractive person, not only does one tend to infer other positive traits about them, but one also tends to have a subjectively positive experience (Singh, 1974). Thus, it is not surprising that an individual's physical appearance will have a profound effect on how that person is treated by others. This differential treatment tends to influence many aspects of an individual's life, such as their mating potential or employment prospects.

Legal outcomes. Another way in which appearance affects individual treatment regards legal outcomes. The growing body of literature indicating the significant advantages to being born beautiful extend even into the courtroom. Several research paradigms have found that jurors are less likely to find an attractive defendant guilty. Additionally, should a guilty verdict seem warranted, jurors have a tendency to provide sentences that are more lenient to attractive defendants (see Mazzella & Feingold, 1994 for a meta-analysis). As seen in so many other domains, the effects of attractiveness in the courtroom spill over into ascription of personal traits as well. Jurors tend to infer that attractive defendants also possess more desirable personality traits, Darby & Jeffers, 1988).

In instances of crimes that have a victim, the attractiveness of that victim may play a role as well. Findings indicate that jurors judge assaults on attractive victims as much more serious crimes, deserving of harsher penalties (Callan, Powell, & Ellard, 2007; Kerr, 1978). Additional research exploring these effects in the courtroom strengthen the view that attractiveness stereotypes are global, instead of simply the result of media pressure. Researchers have performed successful replications in various cultures around the globe, encompassing not only Western cultures but also diverse nations such as Indonesia and China as well (Angira, 1987; Wuensch, Chia, Castellow, & Chuang, 1993). The evidence is quite clear that there are significant advantages to being born beautiful, despite this being a matter that is largely beyond one's personal control. In some instances, it may actually dictate an individual's degree of personal freedom.

Mate selection. Directly related to beauty, individual appearance has a significant influence on mate selection (Fales, Frederick, Garcia, Gildersleeve, Haselton, & Fisher, 2016). Although there are a variety of traits (e.g., general signs of health, dependability, signs of fertility) found desirable in a potential partner, researchers have consistently demonstrated the overwhelming impact of beauty on initial attraction. In one pioneering work (Walster, Aronson, Abrahams, & Rottman, 1966), researchers advertised a campus wide dance in which participants would complete a battery of personality scales and then based upon their individual responses, a computer would match them with a compatible partner. Researchers actually randomly assigned participants, disregarding the personality scales in the matching process. Following the dance, participants then rated how much they enjoyed the experience, specifically focusing on their compatibility with their partner. The largest determinant of how well they liked their dance

partner was the physical appearance of the partner. Additionally, the participants' own attractiveness did not influence this effect.

More recently, participants evaluated various advertisements posted in online dating websites and attempted to predict how successful the individual ads would be. The one factor that emerged as the primary predictor of success was physical attractiveness (Colwell, 2007). Overwhelmingly, these data suggest that many long-held beliefs about relationships, such as an emphasis on personality or values, are little more than folklore. Interestingly, people are often hesitant to admit the extent to which attractiveness influences their mating preferences, perhaps for fear of seeming shallow or due to cultural taboos. When using a research paradigm employing a bogus pipeline, however, participants more readily admit that their preferences are largely driven by appearance (Hadjistavropoulos & Genest, 1994). Of course, individuals seek out a potential mate possessing positive personality traits, as long as those traits are bundled in an attractive package.

Job-related outcomes. The professional and business world is another domain in which physical appearance plays a profound role in how a person is treated. A wide variety of research supports the belief that attractive job applicants benefit from many advantages as the compete for a position. One influential study, examined biases that may influence application evaluation (Dipboye, Arvey, &Terpstra,1977). Participants rated a series of fictitious job applications that varied on factors of applicant sex, attractiveness, and qualifications. Each packet also contained a small picture that participants were led to believe was the applicant and served as the manipulation for gender and physical appearance. Participants then evaluated each candidate, indicating how likely they would be to hire the candidate and making a recommendation for an initial salary. Finally, two independent observers rated the attractiveness of the participants. As

predicted, highly attractive candidates were scored significantly higher on both measures. Interestingly, this effect was not influenced by either the gender of the participant or their own attractiveness.

Replications indicate that highly attractive candidates can overcome even the most mediocre of qualifications (Cann, Siegfried, & Pearce, 1981; Tews, Stafford, & Zhu, 2009). Additionally, candidates with low levels of beauty often face harsh criticism for shortcomings regarding their credentials (Przygodzki-Lionet, Olivier, & Desrumaux, 2010). These data indicate the harsh realities facing less attractive individuals attempting to enter the workplace. The effects that physical attractiveness can have on the hiring process are astounding. Researchers conducting a meta-analytic review discovered that beauty accounted for 37% of the variance in both hiring and promotional decisions. Additionally, these attractiveness biases were consistent across studies that containing both low and high levels of information relevant to the job position. Furthermore, this study found evidence that, despite professional training, business professionals are often just as responsive to beauty-based stereotyping as college participants. Gender does not appear to play a role, as these effects were also just as strong for male participants as for females (Hosoda, Stone-Romero, & Coats, 2003). This effect does not end once the initial hiring decision is reached. High attractive individuals tend to receive both higher starting salaries (Raza & Carpenter, 1987) and more active organizational retention efforts (Dickey-Bryant, Lautenschlager, Mendoza, & Abrahams, 1986). Taken together, these data suggest that in many ways the hiring process is little more than a beauty contest, mediated by other influences such as gender, race, and perhaps the occasional qualification of the candidate.

Stereotypes and first responders. There can be little doubt that that attractiveness has a plethora of social benefits. Unfortunately, it may even have implications for personal survival.

Despite training programs to reduce prejudice in domains such as race, the influence of stereotypes has a profound effect on first responders. Stereotype activation involving interactions between police and community members have been documented in the literature (Najdowski, Bottoms, & Goff, 2015). For example, a series of studies conducted using both undergraduates and police officers as participants found that there is a strong perception of Black Americans as more prone to violence and crime (Eberhardt, Goff, Purdie, & Davies, 2004). Furthermore, this association influences something as fundamental as object perception. When primed with faces of Black Americans, participants were quicker at detecting crime relevant images, compared to primes of White faces or no prime. This is consistent with other research indicating that stereotypes may influence visual perception of ambiguous objects. When participants complete a first-person-shooter task, objects held by racial minorities were likely to be perceived as a weapon, whereas objects held by the stereotypically privileged are more likely to be perceived as a benign item, such as a wallet (Correll, Wittenbrink, Crawford, & Sadler, 2015).

These stereotypes are so strongly held and well known to the public that minorities tend to be fearful of police encounters, based on the assumption that police view minorities as dangerous (Najdowski, Bottoms, & Goff, 2015). Minority fears are not unfounded; recent work has indicated that African Americans disproportionately engage in false confessions. One empirically supported mechanism guiding this self-destructive behavior is activation of stereotype threat (Najdowski, 2011). Black suspects are more likely to feel threatened than White suspects due to stereotypic beliefs held by police officers. These anxious reactions may be interpreted by officers as indicators of guilt. The personal feelings regarding the guilt of a suspect have been shown to influence the degree of coercion used in the interrogation process

(Kassin, Goldstein, & Savitsky, 2003) and the link between coercive tactics and false confessions has been well documented in the literature (Kassin, 1997). Research in this area has revealed the life-changing effects that may occur to some individuals as a result of the stereotypic attitudes held by certain first responders.

Despite the widespread knowledge that stereotypes influence police behavior, attempts at prejudice reduction have largely proven unsuccessful. This is to be expected, as most models of stereotype activation indicate that prejudice operates as a dual-process model (Devine, 1989). The gist of the dual-process model is the idea that there are both controlled (explicit, conscious) and automatic (implicit, unconscious) processes influencing human cognition. Stereotype activation can occur as the result of both of these processes. Individuals may be aware of attitudes held towards others as the result of personal biases or experience. Stereotype activation also occurs as a result of automatic processes. These automatic associations are generally much more difficult for humans to take into account, as we are often unaware of such associations. Individuals often report attempts to reduce the controlled aspects of stereotypes, yet these automatic associations continue to have an incredible amount of power over behavior, despite our best attempts to reduce prejudice.

The power of these associations often extends to members of one's own ingroup. For example, gender and raced based stereotypes are prominent among American firefighters. Despite successful performance on tests of fitness, female firefighters often face discrimination from their male peers, perceived as lacking both the physical and mental strength required for the job (Craig & Jacobs, 1985). Furthermore, these attitudes are not moderated by familiarity. In survey research conducted by Craig and James (1985), neither having worked with female firefighters in the past nor working with them for extended periods of time reduced negative

stereotypical attitudes held by male firefighters. Additionally, African American firefighters have noted marginalizing behavior directed towards them. In a series of interviews, issues such as insufficient training and coworker hostility were often mentioned regarding their work experiences (Yoder & Berendsen, 2001). These issues help to highlight both the prevalence and power held by stereotypes on society, even among members dedicated to the protection of humanity.

Stereotypes and Health Care

There is a considerable body of evidence indicating that health care professionals hold stereotypic attitudes (Swift, Hanlon, El-Redy, Puhl, & Glazebrook, 2013; Vatanoğlu-Lutz, Coban, & Izgi, 2014). Similar to those made by first responders, decisions made by individuals in the health care system are often made quickly and the ramifications of those decisions may be of dire importance. The health care industry is unique in that they provide essential services to virtually every American at some point in their life and those services often determine whether one continues to live. That makes understanding the influence of stereotypes in the health care industry of vital importance. Programs currently exist to help reduce race and gender-based prejudice in the health care industry (Burgess, van Ryn, Dovidio, & Saha, 2007), however attractiveness-based stereotypes have been historically ignored.

The Implicit Association Test (IAT) has proven to be a particularly useful tool for detecting biases for which individuals are unaware of yet are exerting a profound influence on cognition. Originally developed by Greenwald, McGhee, and Schwartz (1998) to explore implicit processing of the racial associations that my drive racist behavior, the IAT has since been extended to explore a wide variety of biases where socially desirable responding may influence the results of explicit measures. To assess biases held by medical practitioners, nursing

students completed an IAT designed to explore their implicit attitudes towards overweight individuals in a medical setting (Waller, Lampman, & Lupfer-Johnson, 2012). As predicted, these individuals held strong negative evaluations of overweight individuals. Additionally, researchers compared these results with data collected from undergraduate psychology students. No significant differences were found, indicating that neither medical training nor occupational selection effectively reduces stereotype activation. Finally, for both groups, these negative biases to overweight individuals were stronger against female targets, suggesting that gender stereotypes play a role in the impressions formation of patients as well.

Evidence for being influenced by stereotypes

Racial stereotypes. Further, there is evidence that not only do health care professional hold stereotypic beliefs but that these beliefs influence their medical decisions. Previous research has indicated the role that racial stereotype activation may play when doctors attempt to diagnose medical conditions. For example, Moskowitz, Stone, and Childs (2012) found that after priming with African American faces, physicians were more likely to diagnose patients with conditions generally associated with stereotypes of African Americans. This held true for conditions of genetic origin, but more importantly the effect was just as robust for conditions of a more social or cultural nature. For example, the physicians in the study were quicker at associating African Americans with HIV. These data help illustrate that physicians are no more immune to stereotype activation than the rest of humanity. Perhaps this is to be expected, however it also demonstrates the potential for social categorization to result in death. Similarly, McKinlay, Piccolo, and Marceau (2013) discovered statistically significant differences in the diagnosis of diabetes as a function of race. When they presented physicians with scenarios depicting an African American patient, the diagnosis of diabetes was more common, despite identical

symptoms. Additionally, race has also been found to influence the likelihood of a psychiatric diagnosis in the emergency room (Kunen, Niederhauser, Smith, Morris, & Marx, 2005).

Racial disparities have also been observed in the manner in which doctors manage pain, such as pain perception, assessment, and treatment (Green et. al, 2003). These researchers found that non-Hispanic Whites were more likely to receive prescriptions for pain medication compared to ethnic minorities. Thus, physician prescribing patterns appear to be influenced by race, in that minority patients are perceived to be less believable by these physicians when describing their pain symptoms. Additionally, researchers found these disparities for all types of pain and in all settings that were explored, such as the emergency room as well as the family physician. Specifically, they found that the source of the pain did not diminish the noted racial disparities, as the researchers found them for a variety of ailments ranging from cancer related pain to worker's compensation claims. Racial biases also demonstrate an influence over which patients will eventually receive a kidney transplant, even after taking into account both legitimate medical needs and ability to pay for services (Kutner & Brogan, 1991).

These racial attitudes held by health care practitioners seem quite resistant to change. Recent research examining the racial attitudes of Canadian medical students revealed that they understood the negative connotations of stereotyping patients (Ly & Crowshoe, 2015). Knowledge aside, they still held negative views regarding Canadian aboriginal populations. Furthermore, they justified these negative stereotypes through the belief that their negative views represented true assessments of the aboriginal population, further galvanizing racial discrimination in the medical system.

Finally, racial differences have also been noted regarding mortality in the hospital setting. Specifically, Black Americans are much more likely to die than White Americans when

receiving life-sustaining treatment in hospital intensive care units (ICU) (Barnato, Chang, Saynina, & Garber, 2007). Recent findings suggest that one potential cause for these differential mortality rates is differing nonverbal communication styles by utilized by attending physicians. Researchers coded data collected from actual practicing physicians and discovered that the physicians sampled used fewer positive, rapport building nonverbal cues when communicating with Black patients. The authors posit that the activation of self-fulfilling prophecies by providers may result in less positive outcomes for Black patients in the ICU environment (Elliot, Alexander, Mescher, Mohan, & Barnato, 2016).

Gender stereotypes. The effect of gender biases on clinical assessment is a well-noted phenomenon in the literature (Garb, 1997; Widiger, 1998). Gender biases in the medical field are less noted, but a growing body of research is starting to indicate how prominent these biases are indicating that males tend to receive better care. One study found significant differences in the way that coronary symptoms were both managed and diagnosed (Anand, 2005). Even when symptoms were identical, such as acute chest-pain, female patients were taken less seriously by their doctors and thus were given fewer invasive procedures, such as angioplasty. As a result, the researchers found that female patients suffered from a variety of complications such as increased rates of rehospitalization and refractory ischemia. More recent work has found similar results for Canadian patients, finding that women were less likely to receive pertinent information regarding heart disease risk and management option (Grunau, Ratner, Galdas, & Hossain, 2009). These gender disparities also increase with age, precisely at the time when many need quality health care the most (Cameron, Song, Manheim, & Dunlop, 2010). What these studies pertaining to racial and gender-based disparities help illustrate is that the quality of health given in the U.S. favors individuals holding stereotypical positions within society.

Additionally, the presence of similar results in Canada indicates that this is a phenomenon not unique to American health care, but likely representative of an automatic response to a stereotype.

Physicians are more likely to associate female symptoms as psychosomatic and emotional in origin (Bernstein & Kane, 1981; Leung & Chung, 2008). When addressing pain management, primary care physicians regarded symptoms expressed by male patients as more severe and more likely to require additional tests for diagnosis, as compared to female patients (Hamberg, Risberg, Johansson, & Westman, 2002). This particular study design relied upon written descriptions of the patients that were identical except for gender. Previous explanations for gender biases regarding medical diagnoses had posited that males tend to be more assertive, thus finding greater compliance from physicians for ease of their ailments. The written scenarios used in this case can help to rule out the assertiveness explanation. The gender biases expressed in this study were as powerful for female physicians as they were for male physicians. Additionally, this particular study was conducted in Sweden, a nation renowned for their attempts at gender equality (Stenmark, Bergström, Hägglöf, Öhman, & Petersen, 2016). These additional facets highlight how persistent gender biases in medicine may be and their resistance to effort at elimination.

Medical stereotypes. Additional studies conducted with Israeli medical students further demonstrate the power of stereotyping on the medical field. Researchers informed medical students that infants either were delivered after a full-term or were born prematurely, something that was assigned arbitrarily through random assignment (Stern, Moritzen, Carmel, & Olexa-Andrews, 2001). The medical students altered their expectancies regarding the infants based upon common stereotypes of premature infants. Specifically, they judged the infants that they

believed to be premature as having lower expectations for a quality life in the future. Given the high regard given to the opinions of medical professionals, this could be particularly problematic. Although knowledge of base rates may have influenced this shift in judgment, when one takes into account the power of self-fulfilling prophecies (see Rosenthal & Jacobson, 1966), children could face diminished life prospects from Day 1 simply due to stereotypes held by the attending physician.

Attractiveness Stereotype and Health Care

Despite the conclusive evidence that health care decisions are influenced by stereotypes, one area has remained ignored in the literature; unfortunately, very little research has examined the effects of patient physical attractiveness on the health care services that they receive. Given what we know concerning the power of physical attractiveness stereotypes and data demonstrating that individuals of all occupations are susceptible to the effects of stereotypes, a plausible conclusion would be that attractiveness stereotypes influence both the diagnoses and the level of care given to patients. However, it is possible that the attractiveness stereotype might not operate in the medical realm. It could be argued that these biases are not applicable to medical decisions because they are too important to be influenced by appearance. This may be a comforting thought, as noted above, the literature strongly indicates the power that other stereotypes have in the medical field. This creates a situation in which additional research is needed to explore the potential effects of beauty. It may also be argued that medical professionals are trained to only consider the facts and ignore irrelevant features. However, there is little evidence that such training occurs and trivial factors such as body-language have been shown to affect the doctor-patient relationship (McKinley, 2013). Therefore, data on how

physical attractiveness influences health-care practitioners, as well the quality and level of care provided, needs to be collected.

Chapter 3: Current Study

The purpose of the present study is to address a question largely overlooked in the current literature. Do physically attractive patients receive better quality health care compared to those that are less attractive? Due to the societally privileged position that more attractive individuals possess over those that are less attractive, we should expect that more patients should receive better quality health care. Additionally, attractiveness stereotypes seem to affect individuals regardless of their own gender, thus I do not expect the participant's gender to influence these results (Langlois et al., 2000).

Hypothesis and Rationale

To delve into this issue, two studies were conducted. First, I sought to demonstrate that health care professionals hold appearance-based stereotypes (Study 1). Although unlikely, it could be possible that individuals in the healthcare industry are immune to attractiveness stereotypes, perhaps due to work-related training or personality characteristics such as increased empathy. Therefore, this study attempted to replicate previous work done on attractiveness stereotypes using a sample of individuals employed in the healthcare industry to address the prevalence and strength of attractiveness stereotyping within the domain of health care.

Second, I sought to demonstrate that these attractiveness stereotypes result in differences regarding the quality of health care provided, such that less attractive individuals receive poorer health care (Study 2). One small-scale study conducted with Greek physicians previously found attractiveness to predict diagnosis of nephrolithiasis, such that it was less likely to be diagnosed in unattractive patients (Tsiga, Panagopoulou, & Benos, 2016). This study had a number of limitations however, including a small number (n = 34) of male only participants examining female only patients, examining a very specific procedure. As the health care industry is a very

broad domain, study two focused on three aspects, pain management, diagnostic suggestions, and time spent with patient utilizing written scenarios interpreted by both current nurses and nurses in training. These three aspects have proven to be susceptible to stereotypes in previous work exploring different common stereotypes and affect health care quality received by the patient (Hamberg, Risberg, Johansson, & Westman, 2002; Hebl & Xu, 2001). Furthermore, pain management is a fundamental concern in the health care industry, as pain reduction produces a myriad of benefits for the patient, such as earlier healing, reduced stress response, and shorter hospital stays (Ahmadi, 2016). Despite the benefits of pain reduction, health care practitioners must also take into account the potential for addiction as well as possible side effects of the medication. As there are rarely standardized protocols for pain management, particularly in trauma settings, decisions are often left to the subjective opinion of the health care provider (Erickson, Brashers, Owen, Marks, J. & Thomas, 2016). Thus, pain management seems like an excellent area to explore the often subtle effects of stereotypes.

Chapter 4: Experiment One

Participants

One hundred eighty-six participants that indicated employment in some capacity in the health care industry (e.g., nurse, phlebotomist, physician) as persons that directly deliver care to the human body were recruited for the study. To acquire a wide range of participants from varied backgrounds, health care workers were recruited utilizing both the University of Nevada, Las Vegas (UNLV) subject pool and Amazon MTurk. The UNLV subject pool provided a convenient sample of individuals, however only a limited number of individuals that are currently employed in the health care industry expressed willingness to participate. Fortunately, MTurk provides an opportunity to not only reach a specialized population but has also demonstrated some favorable characteristics in comparison to data obtained through traditional recruitment methods. The findings obtained using internet studies have been consistent with the findings obtained through traditional laboratory methods, yet generally offer the benefit of responses from individuals from more varied backgrounds, such as age or socioeconomic status (Gosling, Vazire, Srivastava, & John, 2004). MTurk provides a method to match surveys with respondents willing to complete them in exchange for money. In short, researchers can post the work that they want done online and willing workers that match the researchers' requirements can participate. This allows researchers to conveniently sample hard-to-reach populations (Smith, Sabat, Martinez, Weaver, & Xu, 2015). Additionally, MTurk participants are more attentive to survey instructions and embedded manipulation checks that traditional subject pool participants (Hauser & Schwarz, 2016). Thus, by recruiting via MTurk and the subject pool, an appropriate sample was collected in a reasonable time-frame. Individuals recruited through MTurk received $2.50 as compensation for their time. To determine the minimum number of

participants needed, a power analysis was conducted. Assuming an alpha for the ANOVA of .05, power of .80, and a medium effect size ($f^2 = .25$), a sample size of 129 is required to detect a significant effect.

Only participants who completed the survey were included in the final analyses. In instances where one rating was left blank, it was replaced with the mean for that category. If the underlying assumption is that the response was left blank accidentally (rather than based on participant desire to avoid the question), then simple mean imputation produces results similar to other methods with the added benefit of simplicity (Cheung, Daniel, & Ng, 2006). Additionally, to screen for fraudulent responses, participants had to describe both the particular job within the health care industry that they are currently employed in, and also had to describe the training they received to work in this area. The responses were carefully read and as a result, 33 responses were nullified as the participants did not seem to work in the health care industry. This left 153 participants in the final analysis (69 females and 84 males). The participants mean age was 27 and ranged from 18 to 59. Forty-three percent of the participants were of European decent, 32% were of Asian descent, 13% were of Hispanic descent, 8% were of African descent and 4% were from other ethnic groups.

Materials

Stimuli consisted of a series of facial photographs depicting 24 Caucasian males and females that were taken from an online database. These pictures have been used in previous research and demonstrate a high degree of interrater reliability regarding physical attractiveness. Specifically, individuals rated the physical attractiveness of the stimuli photographs on a scale of 1 – 10. Reliability was measured using Cronbach's alpha, resulting in $\alpha = .832$ (Westfall, Millar, & Walsh, under review).

Individuals represented in the photographs depict a wide range of physical attractiveness, ranging from high attractive to average to low attractive (see appendix A for exemplars). There were eight exemplars of each attractiveness level, to reduce any potential confounds associated with one particular individual. The color photographs represented a range of adult ages, from roughly 25 to 45. These photographs depict only faces and upper shoulders, to reduce biases related to either clothing or body types. All individuals are smiling, Caucasian, and clean shaven. Finally, individuals wearing eyeglasses or jewelry were also omitted, as these may affect attractiveness ratings (Terry & Stockton,1993).

Procedure

The study was presented to participants via Qualtrics software package. When the participant logged in to the study (via either the UNLV recruitment site or MTurk), they were first presented with informed consent form. After choosing to participate, individuals next read the instructions and cover story. We informed participants that we were interested in learning about how different individuals rate the images of others. To explain the rationale for recruitment of medical professionals, participants were also informed that we were investigating regional differences in the responses of heath care professionals. That is to say, perhaps individuals from different areas of the world form impressions of others differently and we were interested in exploring how regional differences may influence health care. These instructions also assured in participants that there was not a 'right' or 'wrong' response, as we are only interested in their personal opinions.

Following the instructions, participants viewed the 24 stimuli faces. Of these faces, eight were high in attractiveness, eight were moderate in attractiveness, and eight were low in attractiveness. These faces were presented in a random order, utilizing Qualtrics software, to

eliminate any order effects. While viewing the stimuli faces, the participants rated each picture on 9 different dimensions (i.e., honest, responsible, intelligent, lazy, cheerful, polite, selfish, confident, and happy). These questions were answered by participants on a seven-point scale that is anchored by (1) 'Not at all', (4) 'Somewhat' and (7) 'Extremely'. As with the order of the pictures, the order of the trait queries was random as well.

Following completion of all tasks, participants provided demographic data including their gender (male, female, other), age, ethnicity, level of education (high school diploma, some college, college degree, advanced degree), and sexual orientation (heterosexual, homosexual, bisexual, rather not say/other).

Individual differences. To examine whether individual differences influence responses to physical attractiveness, participants completed additional scales (outlined below) assessing variables that could have moderated their results on the experimental task.

Belief in a Just World. The just world hypothesis is a common cognitive bias in which individuals believe that the world operates in a fair and just fashion. In short, it is the idea that people get what they deserve and deserve what they get (Lerner & Miller, 1978). One potential explanation for the development of attractiveness stereotypes is endorsement of the just world hypothesis (Callan, Powell, & Ellard, 2007; Dion & Dion, 1987). What these studies reveal is that the commonly held belief in a just world creates a situation in which more attractive lives are more valued by members of society. In short, humans that are more attractive are considered more worthy of life. Therefore, higher endorsement of just world beliefs is predicted to correlate with higher reliance on physical attractiveness stereotypes.

Participants completed the Global Belief in a Just World Scale (Lipkus, 1991). The questionnaire consists of 30 items designed to measure support for the notion that the world is a

fair and just place and contains items such as “I think that I deserve the reputation I have among the people who know me” and “Outward-going, sociable people deserve a happy life.” Participants indicated on a six-point scale the extent to which they agree with them, 1 representing “strong disagreement” and six representing “strong agreement”. (See Appendix B)

Need for Cognition. Need for Cognition has been previously defined as “an individual's tendency to engage in and enjoy effortful cognitive endeavors” **(**Cacioppo, Petty, Feinstein, & Jarvis, 1996). People scoring high in Need for Cognition (NFC) tend to focus less on peripheral cues, compared to individuals scoring lower (Haugtvedt & Petty, 1992). Additionally, previous work has suggested that NFC moderates appearance-based stereotypes. Individuals with low scores in NFC often exhibit stronger appearance-based biases compared with individuals higher in NFC (Perlini & Hansen, 2001). This could suggest that people high in NFC would be less influenced by physical appearance, particularly in the health care environment. This NFC scale contains 18 items that evaluate the extent to which an individual enjoys actively thinking and contains items such as “I find satisfaction in deliberating hard and for long hours.” and “I only think as hard as 1 have to.” Participants indicated on a 5-point scale how characteristic they considered each statement in reference to themselves, 1 being “extremely uncharacteristic” and 5 being “extremely characteristic”. Additionally, this NFC scale has excellent psychometric properties, including high internal consistency and excellent test-retest reliability (Sadowski & Gulgoz, 1992). (See Appendix C)

Rosenberg Self-Esteem Scale. When evaluating other adults based on physical appearance, one’s own self-esteem may play a pivotal role. Previous work has identified self-esteem as moderating variable when exploring the relationship attributions of personality traits and beauty (Agthe, Spörrle, & Maner, 2010). Therefore, the Rosenberg Self-Esteem scale

(Rosenberg, 1965) was completed by participants as well, to assess the potential influence of participant self-esteem on the trait inference task. The scale contains 10 questions designed to evaluate the current feelings of the participants and includes items such as "I feel that I have a number of good qualities" and "I am able to do things as well as most other people". Participants indicated on a 4-point scale their endorsement of each statement, ranging from "Strongly Agree" to "Strongly Disagree". Although several measures of self-esteem have been developed, the Rosenberg Self-Esteem scale has consistently demonstrated favorable psychometric qualities compared to other measures (Baker & Gallant, 1984). (See Appendix D)

Empathy. Empathy may also influence the evaluations made of others on the basis of physical characteristics. Therefore, participants also completed the Empathy Sub-Scale of the MiP-SR (Benning, Barchard, Westfall, Molina, Brouwers, in prep) to assess the impact of participant empathy on the procedure. This scale contains 15 items designed to measure the participant's current state and includes items such as "I feel other people's joy" and "When other people smile, it doesn't affect me." Participants indicated on a 4-point scale their endorsement of each item, ranging from "Strongly Agree" to "Strongly Disagree". (See Appendix E)

Manipulation check. At the end of the study the participants were asked to rate each of the pictures that they viewed on a 5-point scale with 1 being "extremely attractive" and 5 being "extremely unattractive."

Results

To test the main hypothesis, a composite score of positive attributes was summed and a composite sum of the negative attributes was created as well. Both were analyzed in separate 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) X 2(Male

vs. Female stimuli) analysis of variances (ANOVA) with the attractiveness of the stimuli and the gender of the stimuli being within subjects variables.

Positive Traits. For the positive attributes, Mauchly's test indicated that the assumption of sphericity had been violated, χ^2 (2) = 67.26, p = .003, therefore degrees of freedom were corrected using Greenhouse – Geisser estimates of sphericity (ε= .74). Gender of the participant or gender of the stimuli materials only had two levels, so sphericity was not a concern. Cronbach's alpha was computed for the positive traits on each of the three attractiveness levels, resulting in an $\alpha_{\text{High attractive}} = .923$, $\alpha_{\text{Average attractive}} = .932$, $\alpha_{\text{Low attractive}} = .950$, all indicating extremely high levels of interrater agreement. When positive attributes were examined in this modified analysis the predicted main effect of physical attractiveness was obtained, F (1.47, 221.84) = 172.98, $p < .001$, $\eta_p^2 = .53$. Subsequent post-hoc tests using the Bonferroni adjustment for multiple comparisons ($\alpha = .05$) revealed significant differences at $p < .001$ between all possible pairwise comparisons among the attractiveness levels, such that more attractive stimuli pictures received higher ratings on positive traits ($M_{HighAttractive} = 98.91$, SE = .803; $M_{AverageAttractive} = 89.04$, SE = .789; $M_{LowAttractieve} = 84.12$, SE = .965). In addition, there was a significant main effect of the gender of the stimuli pictures, F (1,151) = 9.06, p = .003, η_p^2 = .06 with females being rated significantly higher (M = 91.31, SE = .720) than males for the positive traits (M = 90.07, SE = .771). There was not a significant main effect of the gender of the participant, F (1,151) = 1.37, p = .243, η_p^2 = .009.

When the two-way interactions were examined, only a significant interaction between the attractiveness of the stimuli and the gender of the stimuli, F (1.99,300.2) = 6.83, p = .001, η_p^2 = .04. Males received lower ratings for positive traits at the unattractive (M = 83.62, SE = 1.430) and average levels (M = 87.05, SE = 1.169) than did females (M = 84.62, SE = 1.2.96; M =

91.03, *SE* = 1.060). However, in the high attractive group, males (*M* = 98.94, *SE* = 1.079) received higher ratings than did the females (*M* = 98.88, *SE* = 1.190). This interaction was then decomposed (see Howell & Lacroix, 2012 for a tutorial of this procedure), evaluating the simple main effects of attractiveness separately for female and male stimuli. This analysis of simple effects showed that the advantage of attractiveness was significant for both the male stimuli, $F(2,150) = 98.48$, $p < .001$, $\eta_p^2 = .57$ and for the female stimuli, $F(2,150) = 85.16$, $p < .001$, $\eta_p^2 = .53$. Additionally, this effect of stimuli gender was found for the at the low $F(1,151) = 13.98$, $p < .001$, $\eta_p^2 = .09$ and average $F(1,151) = 7.71$, $p = .006$, $\eta_p^2 = .05$ levels of attractiveness, but did not occur at the high attractive level $F(1,151) = 1.01$, $p = .317$, $\eta_p^2 = .01$.

Finally, there was a significant three-way interaction among the attractiveness of the stimuli, the gender of the stimuli, and the gender of the participant for the positive attributions, $F(1.98, 300.2) = 3.94$, $p = .02$, $\eta_p^2 = .025$. (See Figure 1) This effect indicates that when viewing pictures of female stimuli, male participants attributed higher ratings of positive traits to those of average (*M* = 91.64, *SE* = 1.041) or high attractiveness (*M* = 99.04, *SE* = 1.180) compared to female participants (*M* = 88.29, *SE* = 1.148; *M* = 98.12, *SE* = 1.302) and lower ratings to those low in attractiveness (*M* = 85.04, *SE* = 1.312) compared to female participants (*M* = 85.71, *SE* = 1.148). When viewing pictures of male participants, male participants attributed higher ratings of positive traits to those of average (*M* = 90.42, *SE* = 1.251) or low attractiveness (*M* = 84.19, *SE* = 1.431) compared to female participants (*M* = 85.79, *SE* = 1.380; *M* = 81.52, *SE* = 1.579) and lower ratings for those high in attractiveness (*M* = 98.84, *SE* = 1.150) compared to female participants (*M* = 99.64, *SE* = 1.269). The analysis of simple effects showed that the advantage of attractiveness was significant for male participants viewing both the male stimuli, $F(2,150) = 41.64$, $p < .001$, $\eta_p^2 = .36$ and the female stimuli, $F(2,150) = 51.71$, $p < .001$, $\eta_p^2 = .41$. Similar

results were found for the female participants viewing both the male stimuli, $F(2,150) = 60.22$, $p < .001$, $\eta_p^2 = .45$ and the female stimuli, $F(2,150) = 38.62$, $p < .001$, $\eta_p^2 = .34$. This effect of participant gender was found for female participants at the low $F(1,151) = 17.60$, $p < .001$, $\eta_p^2 = .10$ and average $F(1,151) = 6.38$, $p = .013$, $\eta_p^2 = .04$ levels of attractiveness, but did not occur at the high attractive level $F(1,151) = 2.45$, $p = .120$, $\eta_p^2 = .02$. The simple main effects in this interaction were not statistically significant for the male participants.

Negative Traits. For the negative attributes, Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2 (2) = 42.74$, $p = .001$, therefore degrees of freedom were corrected using Greenhouse – Geisser estimates of sphericity ($\varepsilon = .77$). Gender of the participant or gender of the stimuli materials only had two levels, so sphericity was not a concern. Cronbach's alpha was computed for the negative traits on each of the three attractiveness levels, resulting in an $\alpha_{\text{High attractive}} = .786$, $\alpha_{\text{Average attractive}} = .780$, $\alpha_{\text{Low attractive}} = .790$, all indicating high levels of interrater agreement. In this analysis the predicted main effect of physical attractiveness was found, $F(1.54, 189.88) = 27.85$, $p < .00$, $\eta_p^2 = .19$. This effect suggests that if we ignore the gender of the participant and the gender of the stimuli, that some individuals were rated significantly differently than the others. Subsequent post-hoc tests using the Bonferroni adjustment for multiple comparisons ($\alpha = .05$) revealed significant differences at $p < .001$ between all possible pairwise comparisons among the attractiveness levels, such that less attractive stimuli pictures received higher ratings on negative traits ($M_{HighAttractive} = 22.87$, SE = .310; $M_{AverageAttractive} = 23.85$, SE = .264; $M_{LowAttractieve} = 25.19$, SE = .335). There was not a significant main effect of the gender of the stimuli pictures, $F(1,123) = 1.33$, $p = .252$ $\eta_p^2 = .01$, nor for the gender of the participant, $F(1,123) = 1.13$, $p = .288$, $\eta_p^2 = .01$.

When the two-factor interactions were examined, the interaction between the gender of the participant and the attractiveness of the stimuli was statistically significant for the negative traits, F (1.54, 189.88) = 3.703, p = .037, η_p^2 = .03. This effect suggests that there was a difference in the negative attributions based on attractiveness for male and female participants. Specifically, male participants attributed higher levels of negative traits to the low attractive (M = 25.75, SE = .448) and average images (M = 24.31, SE = .354) compared to female participants (M = 24.64, SE = .498; M = 23.39, SE = .393), and higher levels of negative traits to low attractive images (M = 22.65, SE = .415), compared to female participants (M = 23.10, SE = .461). There was also a significant interaction between the attractiveness of the stimulus and the gender of the stimuli, F (1.98,244.18) = 7.173, $p < .001$ η_p^2 = .06. This effect suggests that there was a difference in the negative attributions based on attractiveness for picture of males and females at the three different attractiveness levels. Specifically, males received higher ratings for negative traits at the unattractive level (M = 25.49, SE = .355) than did females (M = 24.09, SE = .379). However, in the average and high attractive group, females received higher ratings (M = 24.04, SE = .276; M = 23.32, SE = .347), than did the males (M = 23.66, SE = .325; M = 22.42, SE = .352). The simple main effects in this interaction, however, were not statistically significant for the male participants.

The two-way interaction between the gender of the participant and the gender of the stimuli was not statistically significant for the negative traits, F (1,123) = .544, p = .462, η_p^2 = .004, nor was the three-way interaction among the attractiveness of the stimuli, the gender of the stimuli, and the gender of the participant for the negative attributions, F (1.98, 244.18) = .751, p = .47, η_p^2 = .004.

Manipulation check. To test whether the participants agreed with the attractiveness ratings of the stimulus materials, participants were asked to rate the attractiveness of each of the 24 stimuli pictures. A 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) X 2(Male vs. Female stimuli) analysis of variances (ANOVA) with the attractiveness of the stimuli and the gender of the stimuli being within subjects variables was conducted to compare the effect of condition on these ratings of attractiveness. For the attractiveness ratings, Mauchly's test indicated that the assumption of sphericity had been violated, χ^2 (2) = 65.12, $p < .05$, therefore degrees of freedom were corrected using Greenhouse – Geisser estimates of sphericity ($\varepsilon = .72$). Gender of the participant or gender of the stimuli materials only had two levels, so sphericity was not a concern.

In this analysis the predicted main effect for the participant attractiveness ratings was found, F (1.45, 196.72) = 186.88, $p < .001$, $\eta_p^2 = .58$. Subsequent post-hoc tests using the Bonferroni procedure ($\alpha = .05$) revealed significant differences at $p < .001$ between all possible pairwise comparisons among the attractiveness levels ($M_{HighAttractive} = 14.88$, $SE = .206$; $M_{AverageAttractive} = 12.44$, $SE = .230$; $M_{LowAttractieve} = 10.53$, $SE = .263$). In addition, a couple of unexpected effects were found. First, there was an effect of the gender of the stimuli picture, F (1, 136) = 23.685, $p < .001$, $\eta_p^2 = .15$, such the female pictures ($M = 12.99$, $SE = .183$) were rated as significantly more attractive than the males ($M = 12.24$, $SE = .233$).

Second, there was a significant 3-way interaction among the variables, F (1.783, 242.51) = 4.58, $p = .014$, $\eta_p^2 = .033$. This effect tells us that when viewing pictures of female stimuli, male participants higher ratings of attractiveness for those of average attractiveness ($M = 13.03$, $SE = .301$) compared to female participants ($M = 12.90$, $SE = .339$) and lower ratings for those both high ($M = 14.68$, $SE = .277$) and low in attractiveness ($M = 10.96$, $SE = .343$) compared to

female participants (*M* = 15.16, *SE* = .311; *M* = 11.20, *SE* = .386). When viewing pictures of male participants, male participants attributed higher ratings of attractiveness for those of average (*M* = 12.08, *SE* = .359) or low attractiveness (*M* = 10.36, *SE* = .401) compared to female participants (*M* = 11.74, *SE* = .403; *M* = 9.59, *SE* = .450) and lower ratings for those high in attractiveness (*M* = 14.39, *SE* = .345) compared to female participants (*M* = 15.28, *SE* = .387). Analysis of simple effects showed that the advantage of attractiveness was significant for when male participants viewed both male stimuli, $F(2,135) = 43.63$, $p < .001$, $\eta_p^2 = .39$ and female stimuli, $F(2,135) = 42.76$, $p < .001$, $\eta_p^2 = .39$. Results for female participants was similar for both male stimuli, $F(2,135) = 72.11$, $p < .001$, $\eta_p^2 = .52$ and female stimuli, $F(2,135) = 37.51$, $p < .001$, $\eta_p^2 = .36$.

Moderator Analyses. It was hypothesized that certain individual differences might moderate the relationship between trait inferences and physical attractiveness. To examine whether any of the individual differences (i.e., Global Just World, Need for Cognition, Rosenberg Self-Esteem Scale & Empathic Concern) moderate the explored relationship, moderator analyses were conducted using the general linear model (GLM). In these analyses, the variables were centered, and three models were constructed: the first model with only the attractiveness of the stimulus; the second model adding the moderating variable; and the third adding the interaction term (e.g., Furman & Buhrmester,1985). If the individual difference measures are moderating the relationship between attractiveness of the stimulus and the moderator variable, then the models containing the two-way interaction term should be associated with significant increases in R^2. In each case, the first model was significant, as it reflects the ANOVA analysis presented above.

When examining the Global Just World Scale (Lipkus, 1991), the Need for Cognition Scale (Cacioppo, & Petty, 1982), and the Rosenberg Self-Esteem Scale (Rosenberg, 1965) there were no significant results. When the Empathy Sub-Scale of the MiP-SR (Benning, Barchard, Westfall, Molina, Brouwers, in prep) was examined, however, significant results were discovered. For the positive traits, the R^2 change in step 2 was .052. This value is-significant (F (1, 125) = 13.310, $p < .001$, $\eta_p^2 = .096$), indicating that empathy explained a significant portion of the variance for the positive trait inferences, specifically that individuals higher in empathy ascribed more positive traits to the stimuli pictures regardless of their level of attractiveness. The addition of the interaction term did result in a significant increase in variance explained over the main effects model ($\Delta R^2 = .011$, F (2, 250) = 7.861, $p < .001$, $\eta_p^2 = .059$), indicating that empathy moderates the effect of physical attractiveness on positive trait inferences. For the negative traits, the R^2 change in step 2 was .045. This value is-significant (F (1, 102) = 8.149, $p = .005$, $\eta_p^2 = .074$), indicating that empathy explained a significant portion of the variance for the negative trait inferences, specifically that individuals higher in empathy ascribed less negativity to the stimuli pictures regardless of their level of attractiveness. The addition of the interaction term did not result in a significant increase in variance explained over the main effects model ($\Delta R^2 = .006$, F (2, 204) = 2.279, $p = .11$, $\eta_p^2 = .022$), indicating that empathy did not moderate the effect of physical attractiveness on negative trait inferences. Finally, internal consistency was high regarding the empathy sub-scale, $\alpha = .794$.

Ethnicity. As all of the stimuli pictures in the study represented Caucasians, it seemed worthwhile to examine whether there was a statistical difference in the trait attributions of participants from different ethnicities. Participants were coded as either Caucasian or non-Caucasian and the ratings for negative trait attributions was subtracted from the positive trait

attributions to provide a singular score of stereotypic responding. Next, a 3 (high attractive vs. average vs. low attractive stimuli) X 2(Caucasian vs. Non-Caucasian) ANOVA, with the attractiveness of the stimuli being a within subjects variable, was conducted to compare the effect of ethnicity on these ratings of attractiveness.

The two-way interaction between the attractiveness of the stimuli and the ethnicity of the participant was statistically significant, F (2, 246) = 8.224, p = .001, η_p^2 = .063. This effect indicates that for both low attractive individuals (M = 126.66, SE = 2.454) and those of average appearance (M = 133.57, SE = 2.136), Caucasian participants had stronger attractiveness-based trait inferences (i.e., more positive for attractive individuals, more negative for unattractive individuals) compared to non-Caucasian participants (M = 115.18, SE = 2.638; M = 126.46, SE = 2.296). For those highly attractive, there was not a statistical difference ($M_{\text{Caucasian}}$ = 147.01, SE = 2.170; $M_{\text{non-Caucasian}}$ = 147.51, SE = 2.332).

There was a significant main effect of physical attractiveness, F (2, 246) = 160.208, p < .001, η_p^2 = .566. This effect suggests that if we ignore the ethnicity of the participant that some individuals were rated significantly differently than the others in a pattern consistent with the attractiveness stereotype ($M_{HighAttractive}$ = 147.26, SE = 1.593; $M_{AverageAttractive}$ = 130.02, SE = 1.568; $M_{LowAttractieve}$ = 120.92, SE = 1.801). Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at p < .01 were found among all comparisons. There was also a significant main effect of the ethnicity of the participant on the ratings of the stimuli pictures, F (1,123) = 4.538, p = .035, η_p^2 = .036, such that Caucasians (M = 135.75, SE = 1.928) responded in a more stereotypical pattern, compared to non-Caucasian participants (M = 129.72, SE = 2.072).

Discussion

These results provide strong empirical support for the primary hypothesis, that health care providers provide differential care based on one's physical appearance. Specifically, they replicate previous work on attractiveness stereotypes that have been done in other domains, using a sample of health care providers. This suggests that health care providers are not different from the general public when it comes to creating trait attributions based on beauty. The lack of significant individual moderators (self-esteem, need for cognition, & just world beliefs) strengthens the view that these attributions are a human universal, however, the noted ethnic differences and the significant results regarding empathy do indicate that culture plays a role in the endorsement of attractiveness-based stereotypes.

Chapter 5: Experiment Two

Having demonstrated that health care professionals hold the attractiveness stereotype, the second study attempted to demonstrate that this stereotype influenced the quality of health care provided.

Participants

Two hundred eighteen participants that are either nursing students or currently employed as nurses were recruited for this study. To acquire a wide range of participants from varied backgrounds, qualified participants were recruited utilizing the University of Nevada, Las Vegas (UNLV) subject pool, word of mouth, and Amazon MTurk. Participants recruited through MTurk received $1.25 compensation for their participation. Only participants who completed the survey were included in the final analyses. Additionally, to screen for fraudulent responses, at the end of the survey participants were given the opportunity to indicate if they did not qualify for the study with the understanding that honesty would not affect their compensation. This left 172 participants in the final analysis (94 females and 78 males). The average age of the participants was 26.88 and the range of ages was 18 to 62. Fifty-three percent of the participants were of European decent, 24% were of Asian descent, 14% were of Hispanic descent, 9% were of African descent and 4% were from other ethnic groups. To determine the minimum number of participants needed, a power analysis was conducted. Assuming an alpha for the ANOVA of .05, power of .80, and a medium effect size ($f^2 = .25$), a sample size of 129 is required to detect a significant effect.

Materials and Procedure

The study was presented to participants using Qualtrics software package. When the participant logged in, they first saw the informed consent form. Assuming that they choose to

participate, the individual next read the instructions. Participants were told that we were interested in learning about regional differences in medical training. That is to say, that we were interested in exploring whether individuals that receive their training in different areas of the world may emphasize different aspects of medical care in their practice. The instructions assured participants that there was not a 'right' or 'wrong' response, as we are only interested in their personal opinions. Through random assignment, participants received one of six variations of a written scenario accompanied by a color photograph. The scenario is presented below, describing an individual experiencing chronic pain and is adapted from Bernardes and Lima, 2010.

> Three years ago, a 37-year-old **man/woman** suffered an accident sustaining injuries on his/her lumbar spine. Since that day this **man/woman** has been living with a constant and intense pain in **his/her** low back, which spreads to **his/her** right leg. **He/she** has trouble sleeping more than two hours straight. Sometimes pain is so intense that walking or even standing in an upright position becomes difficult. Pain has been seriously interfering with this **man/woman's** family, professional and social life.

The manipulation in the study was the variation of the photograph accompanying the written scenario. Gender was manipulated (male, female) as was as the attractiveness of the individual in the photograph (high-attractive, average attractiveness, low-attractiveness). Each participant read only one scenario associated with either a high, medium, or low attractive male or female person in the picture. These photographs have been obtained from an online database, were selected from the same photograph set used in study one and also have had high interrater agreement regarding attractiveness in previous work (Westfall et al., under review). Specifically,

individuals rated the physical attractiveness of the stimuli photographs on a scale of 1 – 10 and reliability was measured using Cronbach's alpha, resulting in $\alpha = .832$.

Following the scenario, participants completed two measures, adapted from Hebl and Xu, (2001). The first form, the *Medical Procedures Form* (See Appendix F), asked participants to indicate on a checklist which tests, procedures, or referrals they would recommend for the patient in the scenario. There were 41 procedures on the checklist, ranging in both severity and relevance. The second form, the *Patient Follow-Up Questionnaire* (See Appendix G), asked the participant to indicate the amount of time that they would spend with the patient. Additionally, this measure asked the participant 13 questions regarding their attitude towards the patient, such as the extent to which they thought seeing this patient would be a waste of their time, the extent to which the patient would be annoying, and how much personal desire they had to help the patient. These questions were answered by participants on a 9-point scale that is anchored by (1) 'Not at all,' (5) 'Somewhat,' and (9) 'Extremely' (See Appendix G).

Following completion of these tasks, participants completed the Global Belief in a Just World Scale (Lipkus, 1991) and provided demographic data consisting of their gender (male, female, other), age, level of education (high school diploma, some college, college degree, advanced degree), and sexual orientation (heterosexual, homosexual, bisexual, rather not say/other). Finally, at the end of the study the participants also rated the picture that they viewed on a 5-point scale with 1 being "extremely unattractive" and 5 being "highly attractive."

Results

Patient Follow-Up Questionnaire. The Patient Follow-Up Questionnaire asked participants 14 explicit questions regarding their potential interaction with the individual portrayed in the scenario. Cronbach's Alpha was computed on the first 13 items (time spent was

scaled differently) and was found to have an $\alpha = .735$. The scores on these 13 items were averaged and an ANOVA was conducted, however it failed to detect a significant result. Therefore, to determine whether their explicit responses were influenced by the attractiveness manipulation, each of the 14 ratings were analyzed in separate 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) X 2(Male vs. Female stimuli) analyses of variance (ANOVA), all as between-subjects variables. As this work is seen primarily as exploratory, a $p < .05$ was cautiously interpreted as significant and no adjustments for multiple comparisons were preformed to avoid the possibility of missing potentially important findings (Rothman, 1990), as such corrections greatly inflate the likelihood of Type II error.

Thus, a 3-way between groups ANOVA was used to examine the main effects and interactions of the Attractiveness of the stimuli picture, Gender of the stimuli picture, and Gender of the participant as they relate to levels of "Personal desire I have to help this patient." The only significant finding was a main effect of the Attractiveness of the stimuli picture, F (2, 159) = 6.852, $p = .001$, $\eta_p^2 = .081$, indicating that participants had more desire to help more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$ were found for all of the possible pairwise comparisons ($M_{HighAttractive} = 7.885$, $SE = .238$; $M_{AverageAttractive} = 6.952$, $SE = .240$; $M_{LowAttractieve} = 6.720$, $SE = .228$).

When the item on the "Amount of patience I would have with this patient" was analyzed in the standard ANOVA, there was a main effect of the Attractiveness of the stimuli picture, F (2, 163) = 3.399, $p = .036$, $\eta_p^2 = .037$, indicating that participants had more patience with more attractive patients, however when post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels, none of the pairwise comparisons

were significant at the .05 level ($M_{HighAttractive}$ = 7.568, *SE* = .235; $M_{AverageAttractive}$ = 6.763, *SE* = .236; $M_{LowAttractieve}$ = 6.998, *SE* = .225).

The item stating "Extent to which this patient would annoy me" produced a main effect of the Attractiveness of the stimuli picture F (2, 161) = 3.798, p = .025, η_p^2 = .046, indicating less annoyance with more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. A significant difference was found between high and average looking individuals, p = .021, however the difference between the average and low attractive individuals was not significant, nor was the difference between high and low attractive individuals. However, this was qualified by a significant 3-way interaction in this case, F (2, 161) = 3.662, p = .028 η_p^2 =.048, Female participants indicated that they would be more annoyed by unattractive male patients ($M_{HighAttractive}$ = 3.46, *SE* = .699; $M_{AverageAttractive}$ = 5.23, *SE* = .699; $M_{LowAttractieve}$ = 3.28, *SE* = .504), however for those of average or high attractiveness, they would be more annoyed by female patients ($M_{HighAttractive}$ = 2.00, *SE* = .797; $M_{AverageAttractive}$ = 4.33, *SE* = .594; $M_{LowAttractieve}$ = 5.27, *SE* = .651), Male participants indicated that they would be more annoyed by average looking males ($M_{HighAttractive}$ = 2.07, *SE* = .673; $M_{AverageAttractive}$ = 4.53, *SE* = .651; $M_{LowAttractieve}$ = 3.10, *SE* = .797), yet for both high attractive and low attractive individuals, they found the females more annoying ($M_{HighAttractive}$ = 3.71, *SE* = .673; $M_{AverageAttractive}$ = 3.67, *SE* = .840; $M_{LowAttractieve}$ = 3.92, *SE* = .699). Analysis of the simple main effects found that gender of the stimuli picture produced differential results for both male and female participants, such that male patients were seen as more annoying. When female participants viewed males, they were seen as significantly annoying F (2, 157) = 5.157, p = .007, η_p^2 =.062, whereas females where not F (2, 157) = 2.743, p = .067, η_p^2 =.034. When male participants viewed males, they were seen as significantly

annoying F (2, 157) = 3.491, p = .033, η_p^2 =.043, whereas females where not F (2, 157) = .035, p = .966, η_p^2 =.000.

When examining the item "My overall positivity toward the patient.", there was a main effect of the Attractiveness of the stimuli picture, F (2, 155) = 3.70, p = .027, η_p^2 =.046, indicating that participants had more overall positivity for more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$ were found when comparing the high attractive individuals to both the average and the low attractive individuals, however the comparison between the average and low attractive individuals was not statistically significant, p = .207 ($M_{HighAttractive}$ = 7.61, SE = .212 $M_{AverageAttractive}$ = 6.77, SE = .206; $M_{LowAttractieve}$ = 7.09, SE = .196).

The item "Level of strictness in the medical advice I'd give" was examined using the same ANOVA approach, revealing a significant 2-way interaction between Attractiveness of the stimuli picture and Gender of the stimuli picture, F (2, 162) = 5.009, p = .008, η_p^2 =.060, indicating that participants felt the need to respond more strictly to low attractive males (M = 7.024, SE = .304) compared to females (M = 5.733, SE = .289), however when dealing with average and high attractive patients then participants were stricter with female patients (M = 6.160, SE = .348; M = 6.700, SE = .329) than males (M = 6.024, SE = .286; M = 6.129, SE = .301). The simple main effects were not statistically significant in this interaction.

When analyzing the item "This sort of patient would make me like my job" the only significant finding was a main effect of the Attractiveness of the stimuli picture, F (2, 159) = 4.104, p = .018, η_p^2 =.050 indicating that participants would like their job more when dealing with more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$

were found were found when comparing the high attractive group to both the average or low attractive group, however ($M_{HighAttractive}$ = 6.77, SE = .245; $M_{AverageAttractive}$ = 5.892, SE = .241; $M_{LowAttractieve}$ = 5.982, SE = .224).

A 3-way between groups ANOVA was used to examine the item "Seeing this patient would feel like a waste of my time." There was significant 3-way interaction in this case, F (2, 160) = 4.873, p = .009, η_p^2 =.056. Female participants indicated that they would consider unattractive male patients a larger waste of their time ($M_{HighAttractive}$ = 1.44, SE = .752; $M_{AverageAttractive}$ = 3.22, SE = .560; $M_{LowAttractieve}$ = 4.21, SE = .614), however for those of average or high attractiveness, they would find female patients to be a larger waste of their time ($M_{HighAttractive}$ = 2.76, SE = .475; $M_{AverageAttractive}$ = 3.92, SE = .635; $M_{LowAttractieve}$ = 2.33, SE = .635). Male participants indicated that they would consider average looking males to be the larger waste of time ($M_{HighAttractive}$ = 2.64, SE = .635; $M_{AverageAttractive}$ = 3.87, SE = .614; $M_{LowAttractieve}$ = 2.63, SE = .717) , yet for both high attractive and low attractive individuals, they consider the females to be larger wastes of their time ($M_{HighAttractive}$ = 3.65, SE = .717; $M_{AverageAttractive}$ = 2.38, SE = .840; $M_{LowAttractieve}$ = 3.92, SE = .659). The simple main effects were not statistically significant in this interaction.

The remaining items did not produce any significant effects: "How healthy is the patient.", "Patient takes care of himself/herself.", "Patient is self-disciplined.", "Likelihood that the patient would follow my advice.", "Seriousness of the patient's health problem.". and "I believe that patient would benefit from counseling."

Medical Procedures Form. The Medical Procedures Form gave participants the option to recommend any of 41 medical procedures varying in type and severity for the faux patient in the written scenario. If a participant neglected to check either yes or no on any given test, their

response was recorded as a no. Additionally, if a participant did not recommend any of the available treatment options for the patient, their response was not included in the final analyses as this was interpreted as skipping this portion of the survey. A total score was computed for each participant by summing all 38 scores that could apply to either gender. Seven additional scores were created by summing the recommendations by type, for example whether the participant recommended prescribing medication or referral to a specialist. To determine whether their suggested behavioral responses were influenced by the attractiveness manipulation, each of the first seven were analyzed in separate 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) X 2(Male vs. Female stimuli) analyses of variance (ANOVA), all as between-subjects variables. Finally, the sum-score for recommendations that were only applicable to female patients was analyzed in a separate 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) ANOVA.

Thus, a 3-way between groups ANOVA was used to examine the main effects and interactions of the Attractiveness of the stimuli picture, Gender of the stimuli picture, and Gender of the participant as they relate to the sum of medical procedures suggested. The only significant finding was a main effect of the Attractiveness of the stimuli picture, F (2, 160) = 4.734, p = .01, η_p^2 =.056, indicating that participants had suggested more medical procedures overall for the more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$ were found between the high and low attractive groups, however the comparisons between the average attractiveness group and both the high and low attractiveness group were not statistically significant ($M_{HighAttractive}$ = 20.303, SE = 1.117; $M_{AverageAttractive}$ = 16.535, SE = 1.165; $M_{LowAttractieve}$ = 15.652, SE = 1.168).

Next, the sum of basic screening (e.g., body fat percentage, dietary intake info, etc.) medical procedures suggested was examined and again the only significant finding was a main effect of the Attractiveness of the stimuli picture, F (2, 160) = 7.644, p = .001, η_p^2 =.056, indicating that participants had suggested more routine screening procedures for the more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$ were again found between the high and low attractive groups, however the comparisons between the average attractiveness group and both the high and low attractiveness group were not statistically significant ($M_{HighAttractive}$ = 5.946, SE = .440; $M_{AverageAttractive}$ = 4.540, SE = .459; $M_{LowAttractieve}$ = 3.469, SE = .460).

When examining the recommendations for psychiatric/psychological services, there was a main effect of the Attractiveness of the stimuli picture, F (2, 160) = 3.180, p = .044, η_p^2 =.056 indicating that participants had suggested more psychological services for the more attractive patients however, post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels and none of the pairwise comparisons were statistically significant at the .05 level ($M_{HighAttractive}$ = 1.261, SE = .115; $M_{AverageAttractive}$ = .906, SE = .120; $M_{LowAttractieve}$ = .895, SE = .120).

Taking look at the recommendations for comprehensive screening measures, such as an MRI or CT scan, a main effect for the Attractiveness of the stimuli picture, F (2, 160) = 4.341, p = .015, η_p^2 =.056, was revealed indicating that participants had suggested more comprehensive screening services for the more attractive patients. Post-hoc testing was carried out using pairwise comparisons of estimated marginal means with Bonferroni adjusted levels. Significant differences at $p < .05$ were again found between the high and low attractive groups, however the

comparisons between the average attractiveness group and both the high and low attractiveness group were not statistically significant ($M_{HighAttractive}$ = 7.309, *SE* = .371; $M_{AverageAttractive}$ = 6.148, *SE* = .387; $M_{LowAttractieve}$ = 5.812, *SE* = .388).

The remaining categories did not produce any significant effects: recommendations for prescribed medications (e.g., pain pills, anti-depressants, and beta blockers), recommendations for consultations regarding specific issues (e.g., consult about exercise, consult about weight loss), recommendations for specialist referrals (e.g., neurologist, cardiologist, etc.), and recommendations for measures only applicable to female participants, such as a pregnancy test.

Additional Analyses.

Manipulation Check. To test whether the participants agreed with the attractiveness ratings of the stimulus materials, participants were asked to rate the attractiveness of the stimuli picture that the saw with the written scenario. A 3 (high attractive vs. average vs. low attractive stimuli) X 2(Male vs. Female participant) X 2(Male vs. Female stimuli) analysis of variances (ANOVA) with the attractiveness of the stimuli and the gender of the stimuli being within subjects variables was conducted to compare the effect of condition on these ratings of attractiveness. There was a not significant 3-way interaction among the variables, F (2, 160) = 1.038, p = .357, η_p^2 =.013. There was not a significant 2-way interaction between the attractiveness ratings and the gender of the participant, F (2, 160) = .113, p = .893, η_p^2 =.001, between the gender of the participant and the gender of the stimuli picture, F (1, 160) = .015, p = .901, η_p^2 <.001, nor between the attractive ratings and the gender of the stimuli picture, F (2, 160) = .970, p = .301, η_p^2 =.012.

There was a significant effect of participant attractiveness ratings. These results suggest that there was agreement among the participants on the relative attractiveness of the pictures

selected for use as stimuli ($M_{HighAttractive}$ = 2.992, *SE* = .129; $M_{AverageAttractive}$ = 3.172, *SE* = .129; $M_{LowAttractieve}$ = 3.531, *SE* = .124). The gender of the participant did not significantly affect the attractiveness ratings, *F* (1, 160) = 1.644, *p* = .202, η_p^2 =.010, nor was there an effect of the gender of the stimuli picture, *F* (1, 160) = .077, *p* = .781, η_p^2 <.001.

Moderation Analyses. To examine whether the Global Just World Scale (Lipkus, 1991) moderates the explored relationship, repeated measures multiple regression analyses was performed for both the Patient Follow-Up Questionnaire and the Medical Procedures Form. In these analyses, the first regression was a main effects model where the attractiveness of the stimulus and the moderating variable are regressed on rating. In the second step, the attractiveness of the stimulus, the moderating variable, and the interaction term were regressed on the ratings. To avoid the potential problem of high multicollinearity the interaction terms were created by centering the variable scores and multiplying by the initial variables (see Aiken and West [1991] for a description of this procedure). Interaction terms created by multiplying predictor variables will be highly correlated, making it difficult to interpret the *b* weights. To overcome this, the variables were centered and the *b* weights largely ignored. Instead, after performing a hierarchical regression and changes in R^2 were examined. If the Global Just World measure is moderating the relationship between attractiveness of the stimulus and the moderator variable, then the models containing the two-way interaction term should be associated with significant increases in R^2. Two-step hierarchical regression analyses were performed for each of the measures. In these analyses, the first regression was a main effects model where the attractiveness of the stimulus and the moderating variable are regressed on the measures responses. In the second step, the attractiveness of the stimulus, the moderating variable, and the

interaction term was regressed on the responses. There were no significant effects revealed through these analyses.

Ethnicity. Again, all of the stimuli pictures in the study represented Caucasian individuals, so participant ethnicity was examined. Participants were coded as either Caucasian or non-Caucasian. Next, a 3 (high attractive vs. average vs. low attractive stimuli) X 2(Caucasian vs. Non-Caucasian) ANOVA, with the attractiveness of the stimuli being a within subjects variable, was conducted to compare the effect of ethnicity on the Medical Procedures Form. There was a significant main effect of physical attractiveness, F (2, 166) = 4.231, p = .016, η_p^2 = .049. This effect suggests that if we ignore the ethnicity of the participant that some individuals were rated significantly differently than the others in a pattern consistent with the attractiveness stereotype ($M_{HighAttractive}$ = 20.221, SE = 1.091; $M_{AverageAttractive}$ = 16.931, SE = 1.101; $M_{LowAttractieve}$ = 15.957, SE = 1.074). There was also a significant main effect of the ethnicity of the participant on the ratings of the stimuli pictures, F (1,166) = 6.00, p = .015, η_p^2 = .035, such that Caucasians (M = 16.163, SE = .879) ordered fewer medical procedures, compared to non-Caucasian participants (M = 19.243, SE = .899). Finally, a 3 (high attractive vs. average vs. low attractive stimuli) X 2(Caucasian vs. Non-Caucasian) ANOVA, with the attractiveness of the stimuli being a within subjects variable, was conducted to compare the effect of ethnicity on the Patient Follow-Up Questionnaire. No significant effects were found.

Discussion

Physical attractiveness was found to have a statistically significant effect on some of the explicit questions asked on the Patient Follow-Up Questionnaire. This shows that health care providers are forming explicit attitudes regarding patients based on their physical appearance for some categories of thought. Furthermore, these explicit attitudes favor those that are more

attractive. Additionally, the pattern of results found on the Medical Procedures Form demonstrates that for some categories of medical care, practitioners are indicating that they would indeed recommend an extra level of precaution for those found to be more attractive.

Chapter 6: General Discussion

This dissertation was conducted to determine whether physical attractiveness might influence the quality of health care that an individual receives. Previous work has indicated that physical attractiveness is a form of privilege, often resulting in beneficial treatment in a variety of domains, therefore I hypothesized that more attractive patients would receive better care in a health care setting. As expected, when participants were exposed to photographs believed to be patients, a trend emerged such that the more attractive individuals received beneficial treatment. Additionally, as I hypothesized, participant gender would not play a significant role in this beneficial treatment. One unresolved question at the core of attractiveness research is whether attractiveness stereotypes are driven by mating related forces or if they are more global in nature. Clearly physical attractiveness is a key component in human mating behavior, yet this dissertation helps to illustrate that it is not a factor in the formation of trait inferences based on appearance, nor in the medical suggestions which appear to be based on those appearances.

Study one advances our knowledge of attractiveness-based stereotypes in two important ways. First, it replicates a corpus of previous findings demonstrating that humans form both positive and negative trait attributions of others based solely upon their physical appearance. Additionally, study one extends these findings to a unique population. It is easy to believe that perhaps those drawn into the medical field are above such petty biases as are held by most segments of society, yet this dissertation clearly demonstrates that these individuals are as human as the rest of us and as such are held captive to the same cognitive biases.

Study two extended on this base and found that those in the medical field formed explicit opinions of potential patients based solely on the experimental manipulation of attractiveness. It is worth noting that these explicit opinions were not found for every question asked of the

participants, however the crucial detail is that when an effect was found, it was unidirectional favoring those deemed more attractive. Building on the knowledge that participants based trait attributions on appearance and also formed explicit opinions of their patients based on appearance, it is unsurprising to find in the second part of study two that their recommendations for medical care procedures were influenced by the perceived appearance of the patient such that those that are more attractive received greater recommendations.

The lack of significant effect regarding most of the moderating variables (need for cognition, global just world beliefs, & self-esteem) to influence participant performance was unpredicted. That said, the literature regarding attractiveness makes it clear that it often holds overwhelming yet underrated power on human interaction. As such, these results may be unsurprising. The lack of evidence that these individual factors influence this relationship adds credence to the notion that the power of physical attractiveness to influence social interaction is a human universal. That said, the ethnic differences and differences in empathy noted in study one demonstrate that there are cultural or societal differences in the manner in which these effects manifest.

The health care industry is one domain in which virtually every American will have contact with during their lifetime. The precarious nature of that contact is due to the reality that these are often literal life and death decisions decided by frivolous factors, such as one's physical attractiveness. These data help make it startlingly clear that the American mythology of meritocracy is but an illusion, as many factors that will determine our future outcomes are decide nine months before we are born.

Chapter 7: Limitations and Future Directions

Despite the strong support for the hypothesis contained in this dissertation, a number of limitations remain. Chief among those is perhaps the sampling technique. Every effort was made to ensure that survey responses were valid, yet future researchers in this area will certainly want to investigate differing methods to adequately tap in to the desire population. Even if all respondents were as they represented themselves to be, it is possible that their actual behavior would differ from their survey responses. These studies did not measure actual behavior, only responses to scenarios. Explicit attitudes are generally very poor predictors of behavior, particularly behaviors related to health (Siegel, Navarro, Tan, & Hyde, 2014). However, social pressure often overpowers attitudes in dictating human behavior (Wallace, Paulson, Lord, & Bond, 2005). Thus, it may be possible that health care providers are able to set aside their personal biases when in the actual health care setting and responding alongside others.

Additionally, both studies involved lower-level health care providers. Future work is needed to see if these results would generalize to other types of health care providers, such as surgeons and neurologists. The health care industry involves a wide array of occupations and it is important to note that these occupations differ in the amount of social interaction that the provider has with the patient. As such, it would be of interest to discover if these effects of beauty covary with the amount of social interaction between the patient and health care provider.

One direction for future work would be to see if the attractiveness of the stimuli picture influenced the explicit memory of the participants in study two. That is to say, had the participants been given a memory test at the close of the study, would those exposed to the more attractive stimuli remember more details of the pain scenario. Previous work has found that physical attractiveness influences learning (Westfall et al.,2016)., yet the underlying mechanics

of this relationship are still being explored. The results favorable for more attractive patients discovered in study two could be driven by better memory for detail.

As this dissertation was intended to serve as an exploratory work, all stimuli photographs depicted Caucasian individuals. This was done to reduce confounds, however in doing so this does bring into question generalizability. Ethnic differences were noted in this dissertation, indicating that this is an area for much needed future research. Clearly it needs to be determined whether these attractiveness-based stereotypes will hold up for non-Caucasians in the health care industry. Additionally, the locale may play a role in the manifestation of these stereotypes. Primary data collection for this dissertation was conducted in a large urban setting, noted for diversity. These effects may be even stronger in areas with a more homogenous population.

Conclusion

Person perception is the subjective process through which we form an impression of others. Foundational to person perception is this process of inferring that others possess certain internal characteristics based on the observation of their external traits and behaviors (Bond & Forgas, 1984; Houser & Beckman, 1978; Todorov, Pakrashi, & Oosterhof, 2009). As referenced above, most current models posit that stereotypes operate on dual-processing levels. Stereotype activation does not always occur; as controlled processing *can* override these connections. There are situations, however, where individuals have diminished abilities in utilizing their controlled processing. A scenario where one is busy or distracted results in a reliance on automatic processes (Devine, 1989). Additionally, individuals with lower levels of glucose exhibit lower levels of self-control (Zheng, Zhang, & Sun, 2017). This would seem particularly relevant to stereotype activation by medical practitioners, as individuals in such careers are often extremely busy and face many distractions while working long hours without breaks. That would describe

precisely the types of conditions where individuals would be expected to rely heavily on automatic processing. Thus, there is a dire need for research into this area. Automatic stereotype activation is extremely difficult to prevent, yet more so when individuals are unaware of them. Although programs exist to help reduce race and gender based stereotypic behavior in fields such as medicine or law enforcement, attractiveness-based stereotypes are largely ignored. Attempts cannot be undertaken for education and corrective action until we have a larger body of substantial basic research supporting the power that attractiveness-based stereotypes have over health-related decision-making.

Appendix A: Exemplar Photos for Study One

Figure 1. Example of high attractive female

Figure 2. Example of average female

Figure 3. Example of unattractive male

Appendix B: Global Belief in a Just World Scale

Instructions: For each of the statements below, please indicate to what extent you agree with the statement. Please keep the following scale in mind as you rate each of the statements below: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

1. I think that I deserve the reputation I have among the people who know me.

2. When I get "lucky breaks" it is usually because I have earned them.

3.* When I take examinations I rarely seem to get the grade I deserve.

4.* As a child I was often punished for things that I had not done.

5. I am less likely to get hurt in traffic accidents if I drive with caution.

6.* I have found that people who work the hardest at their jobs are not always the ones who get promoted.

7. If I watch what I eat, I will live longer.

8. If I suffer a misfortune, I have usually brought it on myself in some way.

9.* Being nice to people will not necessarily brings me lots of friends.

10.* If I get mugged or raped, I am just plain unfortunate.

11.* In a job selection interview, the best applicant hardly ever gets the job.

12.* Parents who think of others before themselves seem to lose out in life.

13. Parents who form good relationships with their offspring bring up more successful children.

14. Friendly people have the best marriages.

15. People who make the effort to invite people into their homes deserve lots of friends.

16.* People who offer help in times of crisis rarely find their help is reciprocated when they are the one in need.

17.* Lonely people are just no good at making friends.

18. People who divorce have only themselves to blame for the unhappiness they may suffer.

19.* The group leader who prefers to solve group problems in democratic fashion is less successful.

20. Outward-going, sociable people deserve a happy life.

21.* The political candidate who sticks up for his principles rarely gets elected.

22. It is rare for an innocent man to be wrongly sent to jail.

23. Although evil men may hold political power for a while, in the general course of history good wins out.

24. Crime does not pay.

25. It is often impossible for a person to receive a fair trial in this country.

26.* In a free market economy, the only excuse for poverty can be laziness and lack of enterprise.

27.* Political representatives are more interested in getting into power than representing their constituency.

28. The federal government has ensured that every citizen has an acceptable standard of living.

29.* The forces of law and order discriminate against black people in this country.

30. Harsh as it may sound, mass unemployment has ensured that the people with work are the ones most deserving of employment.

Note. Lipkus, I. (1991). The construction and preliminary validation of a global belief in a just world scale and the exploratory analysis of the multidimensional belief in a just world scale. *Personality and Individual Differences, 12*(11), 1171-1178. doi:10.1016/0191-8869(91)90081-L

Appendix C: Need for Cognition Scale

Instructions: For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below: 1 = extremely uncharacteristic; 2 = somewhat uncharacteristic; 3 = uncertain; 4 = somewhat characteristic; 5 = extremely characteristic.

1. I would prefer complex to simple problems.
2. I like to have the responsibility of handling a situation that requires a lot of thinking.
3. Thinking is not my idea of fun. *
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. *
5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something. *
6. I find satisfaction in deliberating hard and for long hours.
7. I only think as hard as 1 have to. *
8. I prefer to think about small, daily projects to long-term ones. *
9. I like tasks that require little thought once I've learned them. *
10. The idea of relying on thought to make my way to the top appeals to me.
11. I really enjoy a task that involves coming up with new solutions to problems.

12. Learning new ways to think doesn't excite me very much. *

13. I prefer my life to be filled with puzzles that I must solve.

14. The notion of thinking abstractly is appealing to me.

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*

17. It's enough for me that something gets the job done; I don't care how or why it works. *

18. I usually end up deliberating about issues even when they do not affect me personally.

Note. From "'The Efficient Assessment of Need for Cognition," by J. T. Cacioppo, R. E. Petty, and C. F. Kao, 1984, *Journal of Personality Assessment, 48,* pp. 306-307.

* Reverse scored.

Appendix D: Rosenberg Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, mark SA. If you agree with the statement, mark A. If you disagree, mark D. If you strongly disagree, mark SD.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Note. Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

* Reverse scored.

Appendix E: Empathic Concern Scale

Next are a series of questions pertaining to the self. Please indicate your level of agreement with them regarding yourself. If you strongly agree, mark SA. If you agree with the statement, mark A. If you disagree, mark D. If you strongly disagree, mark SD.

1. I feel other people's joy.

2.* When other people smile, it doesn't affect me.

3. It makes me feel good to be around happy people.

4. When other people are upset, I get upset too.

5. Being around someone who is stressed makes me feel stressed.

6.* Other people's bad moods don't affect me.

7. I understand other people's perspectives.

8. I understand the points of view of people who I disagree with.

9. I think about things from other people's point of view.

10. I feel sympathy for those who are less fortunate than I am.

11. I feel sympathy when I see someone in pain.

12. I feel compassion for the poor.

13. I am good at telling what other people are feeling.

14.* I have trouble understanding what other people are feeling.

15. I can tell how someone is feeling by looking at their body language

Note. Benning, S. D., Barchard K.A., Westfall R. S., Molina S. M., Brouwers, V. P (In prep) Meanness as a coordinating construct in psychopathy: A theoretical review and quantitative model

Appendix F: Medical Procedures Form

Below are a series of medical procedures and referrals. Please indicate which ones you feel would be recommended for the patient described in the scenario that you just read.

Procedure	Yes	No
Cholesterol level (1)	❍	❍
Triglycerides level (2)	❍	❍
Body fat percentage (3)	❍	❍
Glucose level (4)	❍	❍
Dietary intake info (5)	❍	❍
Stress assessment (6)	❍	❍
Prescription of anti-depressants (7)	❍	❍
Consult about weight loss (8)	❍	❍
Consult about exercise (9)	❍	❍
Consult about nutrition (10)	❍	❍
Refer to psychologist (11)	❍	❍
Mental health evaluation (12)	❍	❍
Problem focused history (13)	❍	❍
Comprehensive history (14)	❍	❍
Problem focused exam (15)	❍	❍
Comprehensive physical (16)	❍	❍
Menstrual cycle info (17)	❍	❍
Pelvic exam (18)	❍	❍
Prescription of beta blockers (19)	❍	❍
Prescription of pain pills (20)	❍	❍
Reflex test (21)	❍	❍
Prophylactic therapy (22)	❍	❍
Hearing exam (23)	❍	❍
Visual screen (24)	❍	❍
Skin test (25)	❍	❍
Eye test (26)	❍	❍
MRI (27)	❍	❍
Beta strip (28)	❍	❍
Blood hormone levels (29)	❍	❍
CBC with diff (30)	❍	❍
Genetic counseling (31)	❍	❍
Pregnancy test (32)	❍	❍
Metabolic panel (33)	❍	❍
Blood typing (34)	❍	❍
X-ray (35)	❍	❍
Urinalysis (36)	❍	❍
Ultrasound (37)	❍	❍
CT Scan (38)	❍	❍
Refer to neurologist (39)	❍	❍
Refer to cardiologist (40)	❍	❍
Preventative medicine consultation (41)	❍	❍

Appendix G: Patient Follow-Up Questionnaire

Next, you will see a series of questions pertaining to the patient described in the scenario. Please rate each of these on a 9-point scale, keeping the following scale in mind as you rate: 1 = Not at all; 5 = Somewhat; 9 = Extremely.

1. How healthy is the patient?
2. Patient takes care of himself/herself?
3. Patient is self-disciplined?
4. Level of strictness in the medical advice I'd give?
5. Seriousness of the patient's health problem?
6. Seeing this patient would feel like a waste of my time.
7. This sort of patient would make me like my job.
8. Amount of patience I would have?
9. Extent to which this patient would annoy me?
10. Personal desire I have to help this patient?
11. Likelihood that the patient would follow my advice?
12. I believe that patient would benefit from counseling.
13. My overall positivity toward the patient.
14. Time I would spend with patient (in minutes)?

Appendix H: Interaction Among Attractiveness of the Stimuli, Gender of the Stimuli, Gender of the Participant for Positive Attributions

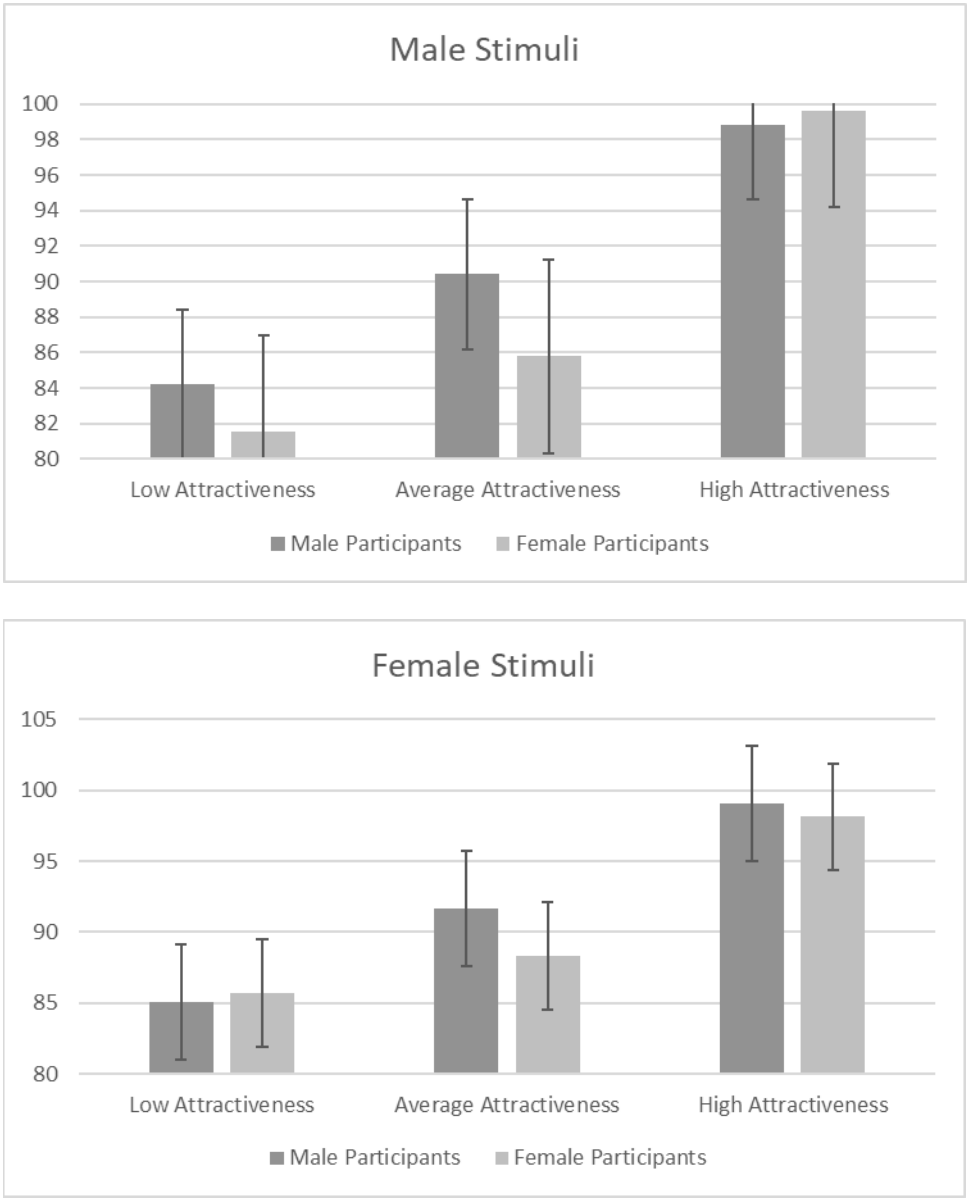

Figure 4. Interaction among attractiveness of the stimuli, gender of the stimuli, gender of the participant for positive attributions

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Curriculum Vitae

Richard Shane Westfall
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Education

Doctor of Philosophy in Psychology *Expected May 2018*
Experimental Psychology
Chair: Murray G. Millar, Ph.D. University of Nevada, Las Vegas

Master of Arts Degree *May 2015*
Experimental Psychology
Chair: Murray G. Millar, Ph.D. University of Nevada, Las Vegas

Bachelors of Arts Degree *May 2011*
Psychology, Texas Tech University

Research Interests

- Implicit Influences on Human Behavior
- Physical Attractiveness Stereotypes
- Evolutionary Theories of Human Mating
- Social Perception

Professional Membership

- Association for Psychological Science
- Rocky Mountain Psychological Association
- Society of Personality and Social Psychology
- Western Psychological Association

Teaching

2012- University of Nevada, Las Vegas

Research Methods	7 sections taught
History of Psychology	2 sections taught
Foundations of Cognitive Psychology	2 sections taught
Foundations of Social Psychology	11 sections taught
Introduction to Psychology	6 sections taught

Introduction to Statistical Methods (as teaching assistant)

Publications

Millar, M., **Westfall, R. S.**, & Lovitt, A. (in press). The Influence of Mate Value on Women's Desire for Long and Short-Term Mates: Implicit Responses. *Personality and Individual Differences*

Westfall, R. S., Millar, M., & Lovitt, A. (in press). The Influence of Physical Attractiveness on Belief in a Just World. *Psychological Reports*

Westfall , R. S. (in press). Self-esteem, theory of. In B. J. Carducci (Editor-in-Chief) & C. S. Nave (Vol. Ed.), *The Wiley-Blackwell encyclopedia of personality and individual differences: Vol. I. Models and theories.* Hoboken, NJ: John Wiley & Sons

Westfall , R. S. (in press). Self-monitoring, theory of. In B. J. Carducci (Editor-in-Chief) & C. S. Nave (Vol. Ed.), *The Wiley-Blackwell encyclopedia of personality and individual differences: Vol. I. Models and theories.* Hoboken, NJ: John Wiley & Sons

Walsh, M., Millar, M., & **Westfall, R. S**. (2016). The Effects of Gender and Cost on Suspicion in Initial Courtship Communications. *Evolutionary Psychological Science,* 2 (4), 262 - 267. doi:10.1007/s40806-016-0062-8

Westfall, R. S., Millar, M., & Walsh, M. (2016). Effects of Instructor Attractiveness on Classroom Learning. *Journal of General Psychology, 143* (3), 161 – 171. doi:10.1080/00221309.2016.1200530

Millar, M., & **Westfall, R. S.** (2015). The Effects of Implicit Anxiety on the Performance of Skin Self-Examinations. *Journal of Applied Social Psychology, 45*(10), 584-592. doi:10.1111/jasp.12321

Barchard, K. A., Hurlburt, R. T., **Westfall, R. S**., Ullman, J., & Day, T. (2012). *Item bank for Comprehending Behavioral Statistics* (5th edition) by Russell Hurlburt. Contains 1586 items for 20 quizzes. Available as part of *Personal Trainer 5.0* from Russell Hurlburt, russ@unlv.nevada.edu

Publications Under Review

Westfall, R. S., McAuley, A. J., & Millar, M. (in revision). The Influence of Implicit Anxiety of Math Achievement. *Journal of Experimental Education*

Walsh, M. Millar, M., & **Westfall, R. S.** (under review). Responses to Emotional and Sexual Infidelity in Dating Relationships. *Journal of Individual Differences*

Westfall, R. S., Millar, M., & Walsh, M. (under review). Effects of self-esteem threat on Physical Attractiveness Stereotypes. *International Journal of Social Psychology*

Publications in Preparation

Millar, M., **Westfall, R. S.,** & Walsh, M. (In prep) The Moderating Effects of Mate-Value on the Relationship between Perceived Sex Ratio and Mating Strategies.

Ullman, J., **Westfall, R. S.,** & Silver, N. C. (In prep) An Assessment of Warning Label Features for Edible Marijuana Products

Benning, S. D., Barchard K.A., **Westfall R. S.,** Molina S. M., Brouwers, V. P (In prep) Meanness as a coordinating construct in psychopathy: A theoretical review and quantitative model

Conference Presentations

National and International Conference Presentations

Westfall, R. S., Millar, M., & Lovitt, A. (2018, March). *Physical Attractiveness and Belief in a Just World: The Mediating Effects of Life Satisfaction.* Talk presented at the annual meeting of the Society of Personality and Social Psychologists, Atlanta, GA.

Benning, S. D., Barchard K.A., **Westfall R. S.,** Molina S. M., Brouwers, V. P. (2017, May) *What does it mean to be mean? Malice, Coldness, and Imperviousness in the Inventory of Psychopathic Meanness.* Talk presented at the annual meeting of the Society for the Scientific Study of Psychopathy, Antwerp, Belgium.

Westfall R. S., Benning, S. D., Barchard K.A., Molina S. M., Brouwers, V. P. (2017, January). *Differential personality correlates of three aspects of psychopathic Mmanness.* Poster presented at the annual meeting of the Society of Personality and Social Psychologists, San Antonio, TX.

Westfall, R. S. & Millar, M. G., (2016, January). *Effects of physical attractiveness on belief in a just world.* Poster presented at the annual meeting of the Society of Personality and Social Psychologists, San Diego, CA.

Molina, S. M., Barchard, K. A., Brouwers, V., **Westfall, R. S.,** Benning, S. D. (2015, June). *Convergent validity of the Inventory of Psychopathic Meanness.* Poster presented at the 6th Biennial Meeting of the Society for the Scientific Study of Psychopathy, Chicago, IL.

Benning, S. D., Barchard, K. A., **Westfall, R. S.,** & Brouwers, V. (2015). *Factor structure of the Inventory of Psychopathic Meanness.* Poster presented at the 6th biennial meeting of the Society for the Scientific Study of Psychopathy: Chicago, IL.

Westfall, R. S., Millar, M. G., & Tuttle, O. (2015, February). *Effects of perceived attractiveness on endorsement of the just world hypothesis.* Poster presented at the annual meeting of the Society of Personality and Social Psychologists, Long Beach, CA.

Westfall, R. S., & Millar, M. G. (2014, February). *Effects of implicit anxiety on performance of skin self-examinations*. Poster presented at the annual meeting of the Society of Personality and Social Psychologists, Austin, TX.

Westfall, R. S., & Millar, M. G. (2013, January). *Effects of instructor attractiveness on classroom learning*. Poster presented at the annual meeting of the Society of Personality and Social Psychologists, New Orleans, LA.

Regional Conference Presentations

Underlining represents supervised undergraduates

Delgado, M., **Westfall, R. S.,** & Millar, M. G. (2017, April). *Implicit associations regarding judgments of sexually transmitted infections based on physical attractiveness.* Poster presented at the Western Psychological Association annual convention, Sacramento, CA.

McAuley, A., **Westfall, R. S.,** Delgado, M., Millar, M. G. & Ashcraft, M. (2017, April). *Math anxiety: not as "explicit" as one would think*. Poster presented at the Western Psychological Association annual convention, Sacramento, CA.

Rodriquez, A., **Westfall, R. S.,** & Millar, M. G. (2017, April). *The relationship between physical aggression and sports participation.* Poster presented at the Western Psychological Association annual convention, Sacramento, CA.

Livngston, T. N., Delgado, M., & **Westfall, R. S.** (2016, April). *Correlations between attitudes regarding health behavior and self-perceived mate value.* Poster presented at the Western Psychological Association annual convention, Long Beach, CA.

Westfall, R. S. & Millar, M. G. (2015, April). *Instructor attractiveness and performance on a classroom learning task.* Talk presented at the annual meeting of the Rocky Mountain Psychological Association, Boise, ID.

Benning, S. D., **Westfall, R. S.,** Barchard, K. A., & Brouwers, V. (2015, April). *The intermediate psychopathy measure: Factor structure and criterion-related validity.* Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

Hughes, C. M., **Westfall, R. S.** &Millar, M. G. (2015, April). *Effects of physical attractiveness on learning tasks.* Poster presented at the Western Psychological Association annual convention, Las Vegas, NV

Westfall, R. S., Millar, M. G., & Tuttle, O. (2015, March). *Effects of perceived attractiveness on endorsement of the just world hypothesis*. Poster presented at the UNLV Graduate & Professional Student Research Forum, Las Vegas, NV**.**

Westfall, R.S., Kirsch, P.M, & Barchard, K.A. (2014, April). *Measuring emotional contagion: an examination of the responsive distress scale.* Poster presented at the annual meeting of the Western Psychological Association, Portland, OR.

Westfall, R. S., & Millar, M. G. (2014, March). *Effects of implicit anxiety on performance of skin self-examinations*. Poster presented at the UNLV Graduate & Professional Student Research Forum, Las Vegas, NV.

Westfall, R. S., Millar, M. G., & Page, S. (2013, April). *Effects of self-esteem threat on attractiveness stereotypes.* Poster presented at the annual meeting of the Western Psychological Association, Reno, NV.

Westfall, R. S., & Millar, M. G. (2012, April). *Menstrual cycle changes in implicit preferences for traits indicating good genes.* Poster presented at the annual meeting of the Western Psychological Association, San Francisco, CA.

Reviewing Activities

Ad Hoc reviewer for *Evolution and Human Behavior, Psychological Reports*

APSSC RISE Grant Competition	2013, 2014
APSSC RISE Student Research Award	2015
APS Student Grant Competition	2014, 2015, 2016, 2017
SPSP Student Poster Awards	2014, 2016
SPSP Outstanding Research Awards	2014, 2017

Service Activities

Honors Thesis Committee Membership

2017 Vickery, Ardennes

UNLV Graduate and Professional Student Association representative	2013 - 2015
UNLV Experimental Student Committee representative	2015 - 2016

Grants

UNLV COLA Summer Research Grant	2016	$3000
UNLV GPSA Travel Sponsorship	2016	$500

2015	$400
2014	$400