The Effects of Hair Color and Gender on Judgments of Warmth and Competence

By

Taylor Welch

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Approved by:

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Dr. Kathryn Boucher, Faculty Advisor

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Dr. James B. Williams, Interim Executive Director, Strain Honors College

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First Reader

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Second Reader

Abstract

Hair color and gender are two factors that are seldom studied together in snap judgment research of impressions of others. However, past research suggests that women are more frequently stereotyped in regards to their hair color. Some of these stereotypes include the "dumb blonde" and "fiery redhead" stereotypes. In a mixed model design study, I expected there to be a difference between judgments of warmth and competence based on these gender stereotypes. While I expected warmth and competence differences between hair colors across genders, I expected these warmth and competence differences to be greater for pictured women than pictured men. I also predicted that judgments would be influenced by participants' own gender such that males would be more likely to judge according to stereotypes than females. To test these hypotheses, I presented participants with pictures of novel people of varying hair colors and different genders, and these individuals are people that the participants have never seen before and would likely never interact with. Participants gave their judgments of them. The results of this study show that gender and hair color do have an effect on people's judgments of warmth and competence, as well as intended behaviors toward individuals. Red-haired females were judged as warmer and more competent than the other hair colors. Males were overall judged significantly lower than females in terms of warmth, competence, and intended behaviors. All significant interactions between target hair color and target gender were driven by the red-haired group. Future research should look more closely at the differences between males and female participants' judgments.

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Statement of Purpose

The purpose of my project was to understand the different views that people hold about others based solely on their hair color and how gender of the people we are judging can affect that view. Through original research, I attempted to determine if others' hair color and gender affected people's judgments of them. This project included a survey where participants answered questions about warmth and competence based on photos of individuals that the participants have never seen before and would likely never interact with. I found that the results showed partial support for my hypotheses, such that there were interactions, but not always in the directions that I had predicted. The knowledge gained from this research contributes to a broader understanding of hair color and the effect it has on our judgments of others, which can impact relationships in social, personal, and professional settings. Knowing these stereotypes can lead to better relationships and a more open mindset when first meeting others, as individuals who know their pre-existing biases can work to avoid the thoughts and behaviors involved in forming judgments based on these biases. These findings can be applied to contexts where impressions are incredibly important, like in relationships, jobs, and everyday interactions, by sharing the results with other scientists.

Introduction

A large business owner is hiring for a secretary position at his office. The two final applicants he is contemplating for the job have similar applications in terms of experience and qualifications. Both are female and the same age. However, one has blonde hair, while the other applicant has brown hair. At the end of both of the interviews, the business owner wrote down his first impressions of the two women. He judged the blonde applicant as friendlier and more attractive. On the other hand, he saw the brunette applicant as more intelligent and capable of doing the job. This process that the business owner went through is similar to what we all do, all of the time. This process is what psychologists refer to as a snap judgment.

Snap judgments

A snap judgment is a determination formed in an instant, with very little conscious deliberation. It is the first thing you think when you see something or someone. Snap judgments affect how we view others and how we interact with them. In a major review of studies on snap judgments, Ambady and Rosenthal (1992) show the range of ways we can have snap judgments, the consequences of these snap judgments, how they are made, and their accuracy. This review shows that we can make snap judgments on many dimensions, including behavior, competence, attractiveness, and personality. These judgments can change people's behavior and are usually rather accurate at predicting important outcomes like someone's behavior or success. Specifically, the results from this meta-analysis found that judgments made on behavior viewed for less than five minutes are generally accurate, and our judgments do not become more accurate when given more time to form a judgment or when we have a different way of getting the information.

Snap judgments can also be predictive and can have an impact on people in important daily life matters. As an example, a study by Babad and Rosenthal (2004) on predicting teaching evaluations based on snap judgments of nonverbal communication demonstrated how snap judgments can effectively predict students' end of year teacher evaluations. Students who never had the professors watched video clips of their teaching and then made judgments of them in terms of the quality of their teaching. Their judgments were significant in predicting actual semester course evaluation ratings by actual students.

Furthermore, the study by Simpson and Ostrom (1975) on snap judgments versus thoughtful judgments demonstrates the prominence or staying power of snap judgments. Participants were asked to make either snap or thoughtful judgments of pictured individuals. The results indicated that there was not a significant difference between snap or thoughtful judgments, despite the significant time difference it takes to make them. This shows that snap judgments are rather accurate and stable pictures of an individual's perception of others even when more time and information becomes available.

The review by Ambady and Rosenthal (1992) also showcased the various ways that snap judgments are studied. Some studies show their participants images and ask them to make judgments from them, and others provide audio, video, or written vignettes. The predominant approach to studying snap judgments is seen in studies like Rule et al. (2010) where they have participants view a certain number of faces in a random order and rate them on scales of personality attributes like dominance and likeability. Participants are usually given no other information about the person other than their face on the screen. In this particular example study, Rule et al. (2010) asked participants to rate political candidates' faces, in order to determine if it

had a predictive relationship with the outcome of the election. Their results show that perceivers' judgments based on just the candidates' faces were indeed predictive of the percentage of votes that each candidate received in the actual election.

Another study further showing the power of snap judgments with a similar procedure, Rule, Ambady, and Adams (2009) studied people's judgments of faces on personality traits, including warmth and competence. As additional variables, this particular study was interested in the differences in rankings based on the angle at which the face was presented as well as time. Participants in this study viewed images in random order and made judgments of each target on five aspects of personality (i.e., aggressiveness, competence, dominance, likeability, and trustworthiness). There were three angle conditions (i.e., 0 degrees, 45 degrees, and 90 degrees). The findings showed that perceptions of full faces led to relatively similar inferences across both viewing angle and time. They also found that judgments of personality were not affected when given less time to make a judgment, meaning that the judgments did not change between snap judgments and self-paced ones. This information supports the notion that snap judgments are made quickly and are relatively stable despite how the information is presented.

Snap judgments can occur in many important contexts such as the workplace and with important people such as CEOs. A study by Rule and Ambady (2009) involved examining whether male and female CEOs were perceived differently. They used the same traits as before (i.e., aggressiveness, competence, dominance, likeability, and trustworthiness). The participants were shown faces of male and female CEOs on a screen and asked to rate them on a series of these personality traits. Ratings of competence and leadership predicted the amount of profits that the CEOs' companies made, and ratings of dominance predicted the individual

compensation amounts that the CEOs' received. Higher ratings of competence and dominance based on facial appearance correlated to the companies that acquired more profit. Interestingly, no significant gender differences were found for the CEOs' and for the participants making the snap judgments.

A limitation of the reviewed snap judgment work is that when researchers select the stimuli for these studies, they try to control for many differences among individuals such as age, gender, attractiveness, and race. Much of the work on snap judgments has not varied hair color or has chosen to eliminate it as a potential variable. It is sometimes held constant or is cropped out. This leads me to believe that researchers expect there to be variation in how people judge others' by their hair color. Because different aspects like hair color are controlled in these experiments, it is possible that the researchers believe that variation would impact people's judgments of the pictured individuals. My study extended the work on snap judgments by being one of the first to explore hair color and how it interacts with our judgments of people of different genders. This focus allowed me to more directly test hair color stereotypes and how they relate to gender in a way that previous work has not.

Judgments of people based on their hair color

It is important to note first what the range of natural hair color is in the world. Approximately 75-80% of the world's population has black hair, while the remaining people have brown (15%), blonde (9%), and red (only 1%) hair, according to the 2016 American Board of Certified Hair Colorists. Given that this is an estimation worldwide, the hair color distribution for North America is expected to be different from that of the global population, with fewer people with black hair and more people with other hair colors given the demographic breakdown

for North American countries. Despite the differences in frequencies, people are likely aware of different hair colors and may judge people differently based upon them.

There have been very few studies on snap judgments of hair color. One of these studies is by Takeda, Helms, and Romanova (2006), where they focused on hair color stereotypes in a job context. The methods that they used were gathering statistics about the percentage of different hair colors of CEOs. The researchers found the frequency of different hair colors in the workplace and the positions that they held. Their findings supported the hair color distribution previously mentioned, as most of the CEOs had brown hair (68.2%) and the least amount had red hair (4%). These results suggest, somewhat indirectly, that who becomes a leader in the workplace could be tied to different hair colors, such that we have different ideas of what someone who leads companies should look like. There were no gender differences found.

When hair color differences are explored in snap judgment research, it is often paired with other cues of an individual, including body size. In Clayson and Klassen (1989), White male and female college students were asked to rate men and women on their attractiveness after the pictured individuals' hair color and weight had been manipulated. The results showed that blondes were judged as most attractive, followed by brunettes and then people with black hair; redheads were rated as being the least attractive. Obese individuals were judged as less attractive than non-obese individuals. Hair color and obesity did not significantly interact with one another in this study. There were no significant gender differences in the judgments of the pictured individuals or by the participants who judged them.

The raters' characteristics can also make a difference in their judgments of others. A study by Lawson (1971) about hair color and personality had male and female participants rate

others based on their hair color. The main results indicated that individuals rated their own hair color higher on personality traits. Also, both men and women rated darker hair as being more dominant, and red hair as the least dominant.

Several studies have explicitly assessed the content of hair color stereotypes. In a study by Heckert (1997), he looked at the stigmatization of redheads. In this article, he presented a few stereotypes associated with redheads. These stereotypes include the "weird redhead," the "flaring temper," the "clown," and the "wild redhead." These stereotypes came from past research and also interviews with redheads. Another related study found that men and women viewed brunettes as more capable than red-haired individuals or blondes (Kyle & Mahler, 1996). Also, in the same study, the authors found that there was not much difference between opinions of redheads and blondes in terms of capability. No gender differences were noted. This research shows that hair color stereotypes do in fact exist and that there is somewhat of a consensus of what those stereotypes are.

However, some hair color stereotypes likely differ based on context. White/grey hair stereotypes are one example of this. When we think about someone who we know, perhaps our grandparents, we think of them as warmer and possibly less capable. A study by de Paula Couto and Koller (2012) asked participants to rate elderly individuals on their warmth and competence. The participants were instructed to answer a questionnaire at home about their views of elderly people. The results showed that the participants judged the elderly as more warm than competent. It is probable that the participants all thought of someone who they knew while answering the questions. They were not shown pictures, leaving them nothing on which to base their answers other than their own experience and knowledge. This result supports the idea that

when asked to think about someone with grey/white hair (i.e., the elderly), you will more likely see him or her as more warm than competent. However, when thinking about professionals, especially pictures of them, it is possible that we may judge them as having more competence and less warmth.

Hair color stereotypes can impact important outcomes such as performance. Bry et al. (2008) presented male and female participants with several tasks to complete, one of those being an encyclopedic knowledge test. The participants' hair colors were black, blonde, red, or brown. The first group had been primed prior to completing the tasks with the dumb blonde stereotype. The results showed that the individuals who had been primed with the dumb blonde stereotype performed worse than the participants who had not. This finding did not depend on the participants' own hair color, and no gender differences were noted. This indicates that stereotypes can affect individuals, even if the stereotype does not apply to them.

As the research reviewed above about snap judgments of hair color suggests, we do use this aspect as an important cue in our judgments of many characteristics like attractiveness, competence, and intelligence. Several of these studies show that these snap judgments are similar when the people being rated are male and female or the people providing the ratings are male and female, while other studies just focus on judgments of one gender. This is problematic because this past work may be obscuring the role of gender in our judgments of hair color. We can hold stereotypes of different hair colors, and these stereotypes may be gendered.

Gender stereotypes as they relate to hair color

A stereotype is a thought or belief about a group, where that thought or belief is applied to everyone belonging to that group. Although stereotyping makes it easier on our brains to

process information faster (Macrae, Milne, & Bodenhausen, 1994), it can be harmful to others, and it need not be true to be impactful. Our stereotypes can take many forms including stereotyping people based on their social class, race, gender, and sexual orientation. What many of these stereotypes involve are two key dimensions of human judgment: warmth and competence. Warmth is the degree of someone's likeability or kindness, and competence is the degree that someone is intelligent or capable.

In a seminal paper, Fiske, Cuddy, Glick, and Xu (2002) demonstrated how many of our stereotypes relate to warmth and competence. Stereotype content is considered in terms of in-groups and out-groups. An in-group is the group making the judgment, and the out-group is the group being judged in their studies. In their work, they found that competence and warmth are differently related to different out-groups, many particular out-groups were rated highly on one dimension but low on the other, and out-groups are perceived as either competent or warm depending on their status. This stereotype content model provides a framework for what the content of stereotypes are, especially for women. They found that participants, irrespective of their own gender, rated women as high in warmth, but low in competence.

The importance of warmth and competence in judgments of people can be extended to hair color and its interaction with gendered views. This study did not look at gender interactions between participants and the target. Beddow, Hymes, and McAuslan (2011) had participants rate individuals on a projector screen. The goal of this study was to determine the effects of stereotypes with respect to hair color and setting. Participants were asked to pretend that they had visited a social networking page to find out some information about a male or female target model. On the site, the participant saw a short profile about the model as well as a photo. The

profile was gender neutral, meaning that they did not lean toward one gender or the other in appearance, and described the model, including favorite activities and that the model was single and recently unemployed. Participants viewed the profile twice: once in a work-related setting in which the participant was to review job candidates, and a second in a dating setting in which the participant was asked to review prospective dates for a friend. Participants then rated these individuals with blonde, red, and brown hair on characteristics such as attractiveness, intelligence, work ethic, maturity, emotional level, success level, aggressiveness, and femininity/masculinity. The results showed that hair color stereotypes are affected by the setting. Brunettes were judged as having a higher work ethic and more maturity in a work setting, pointing to them as being higher in competence. Blondes were judged as more emotional and the least mature, suggesting that they are often seen as warmer rather than more competent. This shows how the judgment context and gender can affect how people interact with one another.

Other aspects of hair, in addition to color, can also affect judgments. In a study by Roll and Verinis (1971), the researchers looked at hair color, hair length, and quantity, quality, and amount of facial hair in males. Male and female students were shown slides of male faces. The slides were designed to test the variables of hair color (i.e., blonde, black, red), hair length (i.e., crew cut, regular, and Beatle cut), amount of scalp hair (i.e., regular, balding, bald), hair quality (i.e., straight, wavy, curly), and facial hair (i.e., clean, mustachioed, bearded). The same face was used for each and was modified accordingly. Participants judged the pictures on dimensions of warmth, attractiveness, femininity, and dominance. Regular amount of hair was judged as valued and high on strength and being active. Bald-headed people were judged as the opposite. No facial hair was also rated the highest on the same scales, and bearded individuals were rated as

lowest on dimensions of attractiveness and warmth. Blonde hair was rated as most valued, and red hair was least valued. These results show that men, too, can be judged negatively or positively based on their hair. These judgments also relate to age and possibly grey hair because of the inclusion of balding and bald-headed individuals.

Men and women of the same hair color are often judged very differently. Clayson and Maughan (1986) studied stereotypes of both redheads and blondes and for both genders. Male and female individuals were instructed to move hair colors toward adjectives and nouns such as "feminine" and "doctor." It was found that the concept of blonde female was placed 5.3 times closer to the concept of feminine as the concept of redhead female. However, the concept of blonde male was placed 1.23 times farther from feminine than a redheaded male. Both male and female redheads were closer to neutral than male and female blondes. These results show the differences between stereotypes of blonde and redheaded individuals and how they are gendered.

Gendered hair color stereotypes and gender differences in perceptions

While some research includes both genders and shows that hair color stereotypes are applied to both groups, much of the research on hair color stereotypes seems to demonstrate the impact of the content of hair color stereotypes and how they are applied to judgments of women only. In particular, outside of the work and leadership context, we see that people's hair color preferences impact their judgments and behaviors. An example of this is a study by Swami and Barrett (2011), who studied British men's hair color preferences. They studied courtship solicitations of men in a nightclub setting of three women with different hair colors (i.e., brown, blonde, and brunette). They found that out of the three hair colors, the woman with blonde hair was approached the most and the redhead the least. The second method they used was a paper

and pencil questionnaire to rate individuals of different hair colors on ten different characteristics. The notable results found that brunettes were rated the most competent and intelligent, with blondes being last in competency and second in intelligence compared to redheads. This study more clearly demonstrates the role that hair color and particularly hair color stereotypes play in our views of others, especially for women.

Hair color plays a strong role in snap judgments, even when studied along with other variables. Kyle and Mahler (1996) studied hair color in a similar way as Swami and Barrett (2011), but this experiment examined whether a female applicant's hair color and use of cosmetics affected perceptions of her ability for a professional position. Male and female participants were asked to complete a questionnaire, look at a picture, and examine a resume. They then were asked to rate the applicant's capability and assign them a beginning salary. Both male and female participants rated the female applicant both more capable and assigned her a higher beginning salary when she was not wearing cosmetics and even more so when she had brown hair rather than with blonde or red hair.

As further evidence of the gendered nature of hair color stereotypes, a study by Gueguen (2012) looked at women's hair color and others' spontaneous helping behavior toward them. In the study, women wore three different colors of wigs (i.e., blonde, brown, and dark). They then walked ahead of someone and dropped a glove, pretending not to have noticed. Observers recorded whether the participant warned the woman within seconds of the loss of the glove. They found that men helped the blonde women 75.5% of the time, the most of all hair colors. They only helped the brunettes 59% of the time, and those with dark hair 56.5% of the time. These results perhaps show that men perceived blondes as warmer. On the other hand, women more

frequently helped brunettes (53.5%) compared to those with dark hair (48.55%) and blondes (47.5%). As the results show, there was an opposite effect for women and their behaviors, suggesting that there are differences in how men and women perceive hair colors and act based on them.

Another study by Gueguen (2012), using the same method, studied the amount of tips female waitresses received in relation to their hair color. Results found that blondes received the most tips, but only with male patrons. Hair color had no effect on female's tipping behavior. Also, in a similar fashion, Gueguen (2009) studied hitchhiking women's hair color and others' helping behavior toward them. Trained actors or research confederates (five women aged 19-22), who were rated as possessing average physical appearance, wore a wig of different colors (i.e., blonde, brown, and black) and were staged on the side of the road to pose as a hitchhiker. Only one research confederate was used at a time. The goal of the study was to determine if the hair color of the hitchhiker affected whether motorists stopped. The results showed that blonde confederates were helped the most at 18.9% compared to those with the brown hair wig (14.3%) and those with the black wig (13.1%). More male motorists stopped than female motorists. Taken together, these results suggest that women are more likely the target of hair color stereotypes and also the consequences of them. The judgments of women differ importantly based on the gender of who is making the snap judgment. A limitation of these studies is that there is no comparison group, specifically no comparison to male targets.

Rationale for my study

Extending on this past work, I explored hair color stereotypes in my research paper. In contrast to past work, my study looks at judgments of different hair colors for men and women,

and both men and women made the judgments. It also includes hair color along with gender. There are few past studies that have included these variables as a focus in their full design. Additionally, I am connecting these judgments to warmth and competence, which is a common theme in past snap judgment research. This study is a necessary addition to the existing literature on the subject of gender and hair color and snap judgments.

The three research questions that I am exploring are if there are any significant differences in perception between hair colors on warmth and competence, if there is an interaction between hair color and gender of photos on warmth and competence, and if there is a three-way interaction between hair color, photo gender, and participant gender on warmth and competence. I predicted that people with white/grey hair would be viewed as most competent, followed by brunettes and then blondes and redheads. For warmth, I predicted that blondes are seen as warmer than brunettes, who are warmer than redheads and those with white/grey hair. I also expected there to be a significant interaction between the hair color and the gender of the individuals in the photos because men and women's characteristics are sometimes judged very differently. Specifically, I expected there to be a difference between judgments of warmth and competence based on gender stereotypes. While I expected brunettes and blondes to be judged as warmer than the other hair colors across genders, I expected this pattern to be more obvious or accentuated for pictured women than pictured men. I also predicted that there would be gender differences for competence such that white-grey hair pictured men would be judged as more competent than women with the same hair color, and for blonde hair, pictured women would be judged as less competent than men with the same hair color. For the interaction with participant gender, I predicted that males would be more likely to judge according to stereotypes compared

to females. I thought this because females are more often the subjects of stereotypes, and knowing this could lead them to avoid doing the same. I included behavioral intentions to determine how judgments could affect a potential interaction between individuals. I predicted that women would have more positive behavioral intentions. I also predicted that blondes would have more positive intended behaviors, and redheads would be more negative.

Method

Participants

Undergraduate students (N=120) participated in this study. Female (n=111) and male (n=9) students received research credit for their participation. They were recruited through the psychology research pool, SONA. This gender distribution was not what I intended; I discuss this further below. They received 0.5 research credits for their participation. For the participants included in the sample, 69 indicated that they had brown hair, 35 blonde, 12 black, and 4 red. Not what I was expecting with gender dis. I discuss below

Procedure

At the beginning of the study, participants completed an informed consent form where they were told the purpose of the study as well as what the study would include, possible risks and benefits, and confidentiality. The purpose of this study was to determine how people form impressions of novel people. These are people that the participant had not seen before and would likely never interact with. The participants were shown pictures of individuals, followed by questions about each person in terms of their impressions of that person. They were then asked demographic questions, were thanked, and were debriefed.

Materials

I obtained the faces shown to participants from the Chicago Face Database that I had been given permission to access and utilize (see Appendix A for example images used in this study). All of the faces on the database were normed for attractiveness, meaning that they were all considered to be an average attractiveness level. I chose faces with neutral expressions so that their expressions could not distract from the variables I was focusing on. There were no red-headed males and also no grey haired males or females in this database. To fix this, I chose faces who would look the most natural with those hair colors and used Photoshop to change their hair colors.

In this study, there were equal numbers of pictures of the different hair colors and genders shown to the participants, 16 in total. The pictures were a headshot and were shown one by one in random order on the screen. The participant was shown one picture at a time, with questions under each picture. Because participants saw every combination of gender and hair color, these two independent variables were within subjects factors. This study utilized a mixed model design with these two within subjects factors and the between subjects factors of participant gender and participants' own hair color. Participant gender and participant hair color are between subject factors because people are categorized as belonging to only one of the potential categories.

The hair colors that I chose are brown, blonde, red, and white/grey. I chose to use these hair colors because I focused on gender in this study, and all of these hair colors have gender stereotypes based on the previous research I reviewed. To ensure that potential participants knew these gender stereotypes noted in past work, I pretested a separate group of students at the

University of Indianapolis before the study began. I asked a small group of students who did not participate in the full study about their awareness level and their perceptions of other people's awareness of hair color stereotypes tied to gender. Some examples of these stereotypes are that women with blonde hair are scatter-brained, women with red hair are fiery, and people with grey hair are less likeable, but have more wisdom.

For the pre-test, I distributed short surveys via email to 15 students at the University of Indianapolis. The purpose of this was to confirm that the population being tested was aware of the hair color stereotypes assumed in the study. The survey consisted of two short answer questions and three yes or no questions. The first question, which was short answer, asked, "What hair color stereotypes have you heard of?" The next three questions were yes or no response questions where the respondent was asked if they had heard of the following hair color stereotypes referring to hair color: they were: "Blonde women are unintelligent," "Redheads have a bad temper," and "People with grey hair have wisdom." The last question was a free response item that asked if the respondent thought that hair color stereotypes were gendered. Some common responses for the first short answer were that "blondes are not very smart," and "redheads have a bad temper." All 15 participants said that they have heard the stereotype that blonde women are unintelligent, 14 out of 15 said that they had heard of redheads having a bad temper, and all 15 said that they were familiar with the stereotype surrounding individuals with grey hair. Also, 14 out of 15 agreed that hair color stereotypes were gendered. These results showed that the stereotypes were present in the population I am testing.

In the study, I excluded black hair because it generally is found with those from certain racial minority groups (e.g., African Americans, Asians). I am not focusing on race because I did

not have the statistical power to look for additional group differences. It would also have been difficult to recruit equal numbers of participants from different races.

Measures

For my main dependent variables, I used a warmth and competence scale modified from past research on snap judgments (Fiske et al., 2002), and I also created some of my own questions for the survey. I used these two dimensions because Fiske et al. (2002) suggest that these two dimensions drive much of our judgments of others, and there are strong gender differences in them such that women are typically seen as warmer and less competent than men. While there has not been a previous direct link to these dimensions and gender differences in hair color stereotype endorsement, past snap judgment research suggests that this link possibly exists.

Warmth (α = .91) and competence (α =.85) of each individual. Asked below each presented picture were two questions about warmth and competence from the warmth and competence scale (i.e., How warm does this person seem?, How intelligent does this person seem?). There were questions not related to warmth and competence added so that participants were less aware of my key variables; these were five items assessing personality traits such as being outgoing, respectful, and trustworthy on a similar scale as the warmth and competence. These filler items were not analyzed. The response scale for all these items was from 1 (*not at all*) to 7 (*extremely*).

Behavioral intentions toward the pictured individual (α = .95). After the warmth and competence and other personality questions, there were three questions about behaviors toward each person. Participants were asked how likely they would be to: want to work in a group with this person, hire this person, and befriend this person. These items were included because they

helped understand the impact that the manipulations of hair color and target gender had on intended behaviors toward the pictured person. Participants answered each question on a scale from 1 (*not at all*) to 7 (*extremely*).

Demographic questions. At the end of the whole survey, I included demographic questions like the participant's age, gender, and hair color, and also included an attention check (i.e., What did I say the purpose of this study was?). An attention check was needed in order to spot participants who were not taking the survey seriously. This gave me the ability to exclude individuals who had not been paying attention during the course of the study. Only one person indicated that they were not paying much attention, and since it was only one, I decided to still include them in the data analyses.

In total, this study took on average about 13 minutes to complete, and participants received their research credit for participating. It is important to note that I collected contact information about participants in order to give them their research credit (i.e., name and UIndy email) via a second Qualtrics survey that is separate from the main survey that contains participants' responses to the pictures and my questions about them and the demographic questions. Therefore, the responses for my study were not identifiable, meaning that individuals' responses cannot be linked to them personally.

Results

Overview of the data analysis plan

After all of the data were gathered, I analyzed the responses and determined whether there was any statistical difference in the way in which participants viewed people with certain hair colors. I specifically determined if there were any trends in the way a certain hair color is

perceived based upon the pictured person's gender. Below, I analyzed my results in within-subjects factorial ANOVAs with target hair and target gender as my independent variables. An ANOVA is the appropriate test to use because I have three or more groups or conditions. Specifically, a within-subjects factorial ANOVA is the most appropriate test because there is more than one independent variable, and the independent variables are within-subjects variables.

A separate within-subjects factorial ANOVA was run for each of my three dependent variables: warmth, competence, and intended behaviors. If an effect was statistically significant, I then tested to see where there were any significant differences between hair colors on warmth, competence, and intended behaviors via post hoc tests. I also tested if there was an interaction between hair color and gender of photos on warmth, competence, and intended behaviors. If the interaction was significant, I decomposed the interaction. I planned to test if there was a three-way interaction between hair color, photo gender, and participant gender on warmth, competence, and intended behaviors in mixed model ANOVAs, but I had a major disparity between the number of male and female participants in my sample, making it inappropriate to run these analyses; therefore, these tests were not run. I had 111 female participants, and only 9 male participants. Lastly, I ran exploratory analyses, including participants' own hair color in similar mixed model ANOVA tests.

Target hair color and gender on judgments of warmth

First, I ran a within subjects factorial ANOVA with target hair color and target gender on judgments of their warmth. There were significant differences in warmth between hair colors, $F(3,357) = 4.391$, $p = .005$. In planned comparisons, the redheaded pictures ($M = 3.799$, $SD=0.991$) were judged higher in warmth than the brunette ($M = 3.517$, $SD=1.043$), blonde

(M=3.643, SD=1.066), and grey haired (M= 3.649, SD=1.149) pictures, ps < .07. Judgments of warmth for the brunette, blonde, and grey-haired individuals did not significantly differ from each other, ps>.09. There were also significant differences on judgments of warmth based on the gender of the pictured person, $F(1,119) = 35.724$, $p < .001$. Female ($M = 3.798$, SD=1.060) pictures were judged as warmer than male (M=3.506, SD=1.064) pictures.

There was also a significant interaction between target hair color and target gender, $F(3,357) = 90.519$, $p < .001$ (see Figure 1). For brunettes, men ($M = 3.717$, SD=1.086) were rated as significantly warmer than women ($M = 3.317$, SD=0.999), $p < .001$. For grey-haired individuals, men ($M = 3.735$, SD=1.102) were rated as marginally warmer than women ($M = 3.563$, SD=1.195), $p = .082$. For blondes, men ($M = 3.635$, SD=1.072) and women ($M = 3.650$, SD= 1.059) were not judged differently for warmth, p=.885. For redheads, women ($M = 4.663$, SD= 0.987) were rated as significantly warmer than men ($M = 2.935$, SD= 0.996), $p < .001$.

Target hair color and gender on judgments of competence

First, I ran a within subjects factorial ANOVA with target hair color and target gender on judgments of their competence. There were significant differences in competence between hair colors, $F(3,357) = 3.741$, $p = .011$. In planned comparisons, the redheaded pictures ($M = 4.090$, SD=1.003) were judged lower in competence than the brunette ($M = 4.265$, SD=1.017), blonde ($M =4.229$, SD=1.068), and grey haired (M= 4.346, SD=1.127) pictures, ps < .07. Judgments of competence for the brunette, blonde, and grey- haired individuals did not significantly differ from each other, ps>.159. There were also significant differences on judgments of competence based on the gender of the picture, $F(1,119) = 8.117$, $p = .005$. Female ($M = 4.307$, SD=1.041) pictures were judged as more competent than male (M=4.157, SD=1.067) pictures.

There was also a significant interaction between target hair color and target gender, $F(3,357) = 24.216$, $p < .001$ (see Figure 2). For brunettes, men ($M = 3.717$, $SD=1.047$) and women ($M = 3.317$, $SD=0.987$) were not significantly different in judgments of competence, $p = .710$. For grey haired individuals, men ($M = 4.392$, $SD=1.145$) and women ($M = 4.300$, $SD=1.108$) were not significantly different in judgments of competence, $p = .378$. For blondes, men ($M = 4.308$, $SD=1.089$) and women ($M = 4.150$, $SD=1.046$) were not significantly different in judgments of competence, $p = .137$. For redheads, women ($M = 4.533$, $SD=1.020$) were rated as significantly more competent than men ($M = 3.646$, $SD=0.986$), $p < .001$.

Target hair color and gender on intended behaviors

First, I ran a within subjects factorial ANOVA with target hair color and target gender on their intended behaviors toward the pictured people. There were no significant differences in intended behaviors between hair colors, $F(3,357) = 1.630$, $p = .182$. The redheaded ($M = 3.784$, $SD=1.033$), brunettes ($M = 3.766$, $SD=1.082$), blondes ($M =3.888$, $SD=1.158$), and grey-haired ($M= 3.735$, $SD=1.135$) pictures were rated similarly in intended behaviors toward them. There were significant differences on judgments of intended behaviors based on the gender of the picture, $F(1,119) = 41.766$, $p< .001$. Participants rated more positive behavioral intentions for female ($M = 3.996$, $SD=1.122$) pictures than male ($M=3.591$, $SD=1.082$) pictures.

There was also a significant interaction between target hair color and target gender, $F(3,357) = 57.494$, $p < .001$ (see Figure 3). For brunettes, men ($M = 3.836$, $SD=1.107$) and women ($M = 3.696$, $SD=1.058$) were not significantly different in intended behaviors, $p = .150$. For grey-haired individuals, men ($M = 3.651$, $SD=1.087$) and women ($M = 3.819$, $SD=1.182$) were not significantly different in intended behaviors, $p = .119$. For blondes, men ($M = 3.828$,

SD=1.151) and women (*M* = 3.949, *SD*=1.165) were not significantly different in intended

behaviors, *p* = .278. For redheads, women (*M* = 4.519, *SD*=0.982) were rated more positively in

terms of future interactions with them than men (*M* = 3.049, *SD*=1.085), *p* < .001.

Influence of participants' hair color

Mixed model ANOVAs were run including participants' own hair color with the target

gender and target hair color manipulations, and no significant interactions were found with

participants' hair color and these two factors, *p*s > .10.

Discussion

General trends in the results indicated that overall, women had the most positive

intended behaviors toward them and were seen as warmer and more competent than males.

This could be due to the participant pool being largely female. Females, often being the subject

of gender stereotypes, may have sought to mitigate this by judging fellow females more

positively in the study. Brown and grey hair trended in the opposite direction for warmth, in that

the men were seen as warmer than the women. Redheaded females were seen as warmer and also

more competent than redheaded males. Overall, redheads were warmer and also less competent

than the other hair colors. There was not a difference in warmth between blonde males and

females, but blonde males were seen as more competent that the blonde females. These findings

differ from my predictions because I expected blondes to be judged as warmest and least

competent, while redheads would be lower on warmth and high on competence. The findings for

red hair might be due to the hair color being a warm color, resulting in higher judgments of

warmth. Also, the participant pool was largely female, causing more positive judgments for

females.

Limitations

A limitation to this study is that the number of male participants was very low. Despite aiming for 60 male participants, I only got 9. This happened due to there being more female students at UIndy in general, especially in psychology, and a competing study on SONA that was recruiting only men. Despite wanting more males, this aspect of the study was out of my control. Changing my recruiting method halfway through the study would mean that my sample would have selection issues based on differences in recruitment methods. This is a limitation because it makes it difficult to compare differences between genders and does not provide enough data to make conclusions about males. However, when I ran these analyses without men, I still found all of the same effects reported above. This clearly shows how women make judgments of others. Women rate other women higher in both warmth and competence. Past research reviewed above shows mostly how men make judgments of women, where men especially judge women as high in warmth, but low in competence. This is why I wanted to look at how both men and women make judgments of others, but I was not able to get the participants for that comparison. Future work should look at how both men and women make judgments of others.

Another limitation is that all of the participants were recruited from the same place. Although any major was welcome to take the survey, the majority of students who access SONA are psychology students. Having a larger variety of participants could provide more accurate data that could be better generalized to a broader population. Thirdly, a possible limitation is that some of the images used as stimuli in the study were edited. Despite making the edits look as natural as possible, some of the individuals in the photos could have looked like their hair had

been edited or dyed. This is potentially problematic because these individuals could have been judged differently based on how natural their hair looked.

Future directions

Some ways that this study could be expanded in future research would be to recruit participants in a different manner in order to obtain more males and a wider variety of majors. It would be interesting to know how individuals of different majors perceived hair colors. This would address the issue that I had with few male participants as well. This variable could better portray how the general population viewed hair color and gender, rather than the homogenous participant group that I had. In addition, future research could examine differences in actual behaviors toward each hair color to see if they would remain the same or differ from behavioral intentions. A few behaviors that I would like to observe would be job hiring, making friends, or choosing members for a group project. This would be good to study because it would be important to know if hair color stereotypes affect individual's daily lives and potential life and career opportunities.

Exploring differences for the blonde and grey hair individuals would be a direction future research could take. This would be interesting to know, especially considering the stereotypes surrounding these hair colors. Lastly, including more hair colors is also one future direction that this research could take. Adding in dyed, or unnatural hair colors, as well as black hair, could provide more data to determine if the interactions would still be driven by red hair and would also make this research more applicable to an even broader population.

Judgments of others can affect them in real world scenarios. The interaction between hair color and intended behaviors could mean that being a redheaded male could put individuals at a

disadvantage when looking for jobs or when working in a group setting. This could have real effects for them in their personal and social well-being, as they could be potentially looked over for jobs or other opportunities. On the other hand, redheaded females may be at an advantage in the same scenarios. These results show how a snap judgment made about a person, given just a picture, can have such strong implications for that individual. Understanding if the intended behaviors judgment were acted upon could determine if snap judgments are predictive of actual behavior. These results also indicate that hair color stereotypes are still gendered toward women. Making others aware of this could reduce gender stereotyping. Applying the results of this study could change how individuals act on their judgments of others.

Reflection

Above, I discussed how this work adds to existing research, but I also learned a lot personally. Completing this project was a journey filled with many ups and downs. I am grateful for the opportunity to be able to do research at the undergraduate level at the capacity to which I was able. Through this project, I learned how to better set and meet goals, and I learned the importance of having a plan. This project required small goals along the way to complete, rather than tackling the whole thing at once. A detailed plan was necessary in order to meet deadlines and get things done in a timely manner. I gained skills that I otherwise would have never learned, including the proper process of data collection, how to create a proposal for the IRB, how to set up a study on Qualtrics, and then how to give credit to participants via SONA. It was amazing to see this project go from a simple idea into an actual study with participants and data.

I grew tremendously as an individual as a result of doing this project. The amount of dedication and time that I put into this project is unmatched by any other scholastic work I have

ever done. I also grew to appreciate and accept criticism. A few times, I felt discouraged but came to realize that the small setbacks that I had along the way were improving my final product. My love for research and psychology has grown throughout this process, and I hope to continue to do research as a part of my future career as an Occupational Therapist. I could not be more grateful for the opportunity to be an honors student at UIndy.

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Figure 1. Warmth score means for each hair color and gender combination
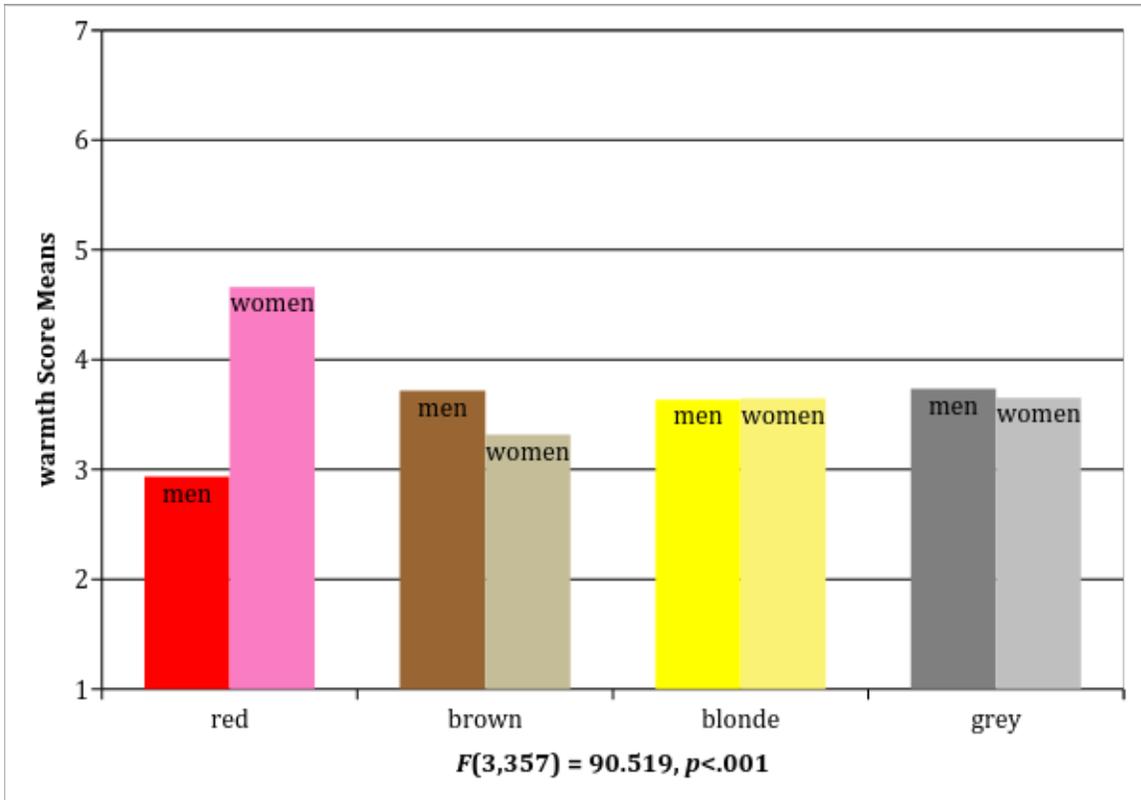
Figure 2. Competence score means for each hair color and gender combination

$F(3,357) = 24.216, p<.001$
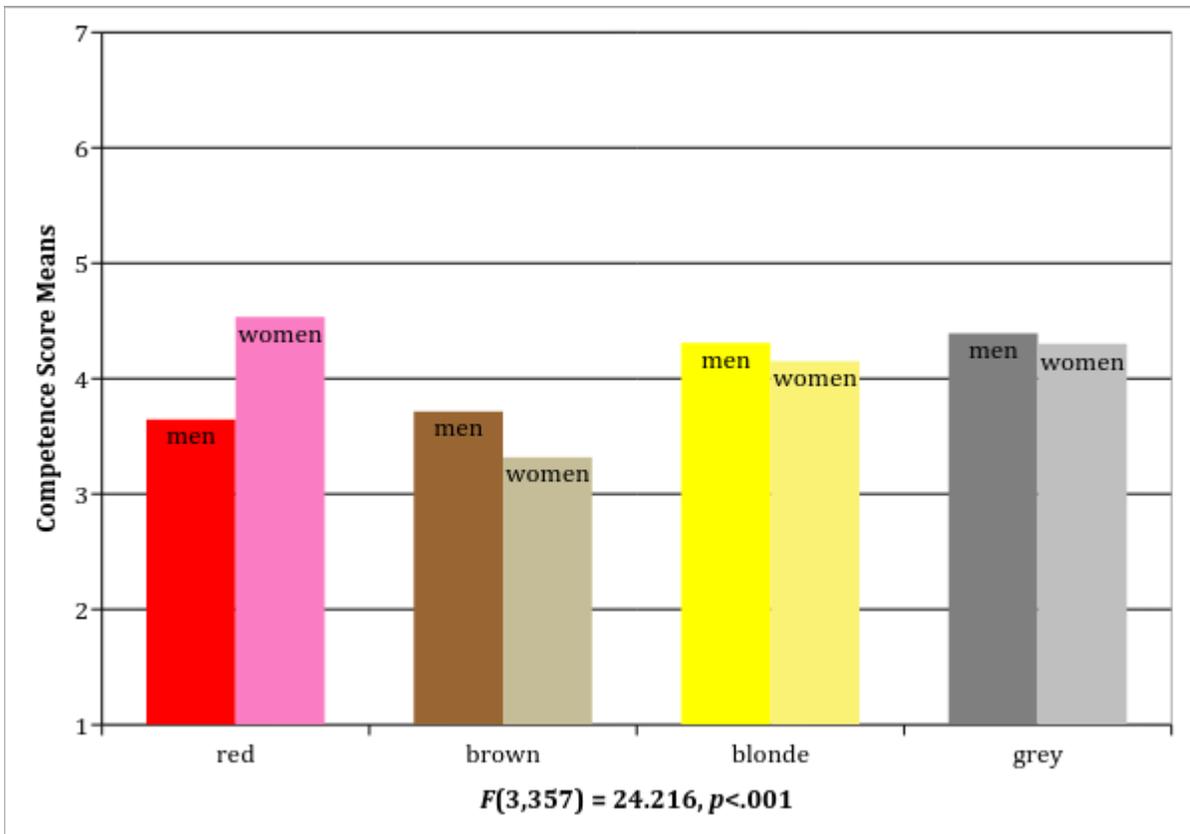
Figure 3. Intended behavior score means for each hair color and gender combination
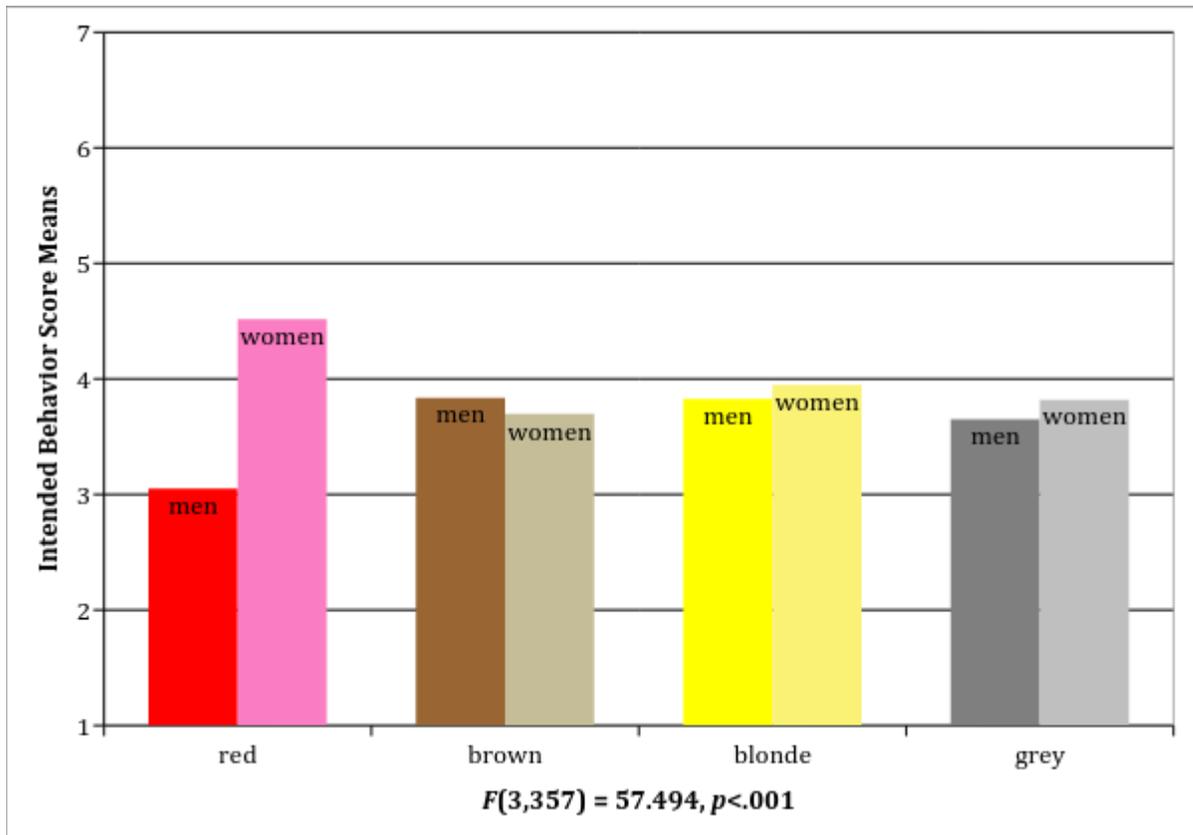
Appendices

Appendix A: Materials

Appendix B: CITI Training

~~Informed Consent - SBE (ID: 504)~~	02/24/16	5/5 (100%)	Yes
Internet-Based Research - SBE (ID: 510)	02/24/16	4/5 (80%)	Yes
Privacy and Confidentiality - SBE (ID: 505)	02/24/16	5/5 (100%)	Yes
The IRB Member Module - 'What Every New IRB Member Needs to Know' (ID: 816)	Optional	--	Yes
Records-Based Research (ID: 5)	Optional	--	Yes
Research with Prisoners - SBE (ID: 506)	02/24/16	5/5 (100%)	Yes
Research with Children - SBE (ID: 507)	02/24/16	5/5 (100%)	Yes
Research in Public Elementary and Secondary Schools - SBE (ID: 508)	02/24/16	2/5 (40%)	Yes
International Research - SBE (ID: 509)	Optional	--	Yes
Research and HIPAA Privacy Protections (ID: 14)	02/24/16	3/5 (60%)	Yes
Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)	Optional	--	Yes
Hot Topics (ID: 487)	Optional	--	
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	02/24/16	4/5 (80%)	Yes
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	02/24/16	5/5 (100%)	Yes

CE credits eligibility and purchase

Please check "Action" column for either of the two following options:

Apply Now - If multiple purchasing options appear for a same course, carefully select the number of credits you wish to purchase. Click the course title to view on the CE Information page the maximum number of credits designated for this course and your profession.

Complete Modules - Indicates the total number of CE certified modules you need to complete to earn CE credits. Please complete the needed additional CE certified modules to equal that number. **Be aware that test score of each and all completed modules must at least be 70%.**

CE Credit Status	Course	Category	Cost	Action
Eligible for 6 credits	Human Subjects Research Basic Course	AMA PRA Category 1 Credits™	$80.00	Apply Now
Eligible for 9 credits	Human Subjects Research Basic Course	AMA PRA Category 1 Credits™	$95.00	Complete 18 Modules
Eligible for 3 credits	Human Subjects Research Basic Course	AMA PRA Category 1 Credits™	$60.00	Apply Now

Appendix C: IRB Documents

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INDIANAPOLIS.

School of Psychological Sciences | (317) 788-3353
1400 East Hanna Avenue | Fax: (317) 788-2120
Indianapolis, Indiana 46227 | http://psych.uindy.edu

Principal Investigator: Kathryn Boucher, PhD
School/Department/Division: School of Psychological Sciences
Telephone: (317) 788-5003
Email: boucherk@uindy.edu

Co-Investigator(s): Taylor Welch

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES
Study Title: *Impressions of Novel People*

1. PURPOSE OF THIS RESEARCH STUDY

   I have been invited to participate in an online research study entitled "Impressions of Novel People." This research is being conducted by Kathryn Boucher, PhD, assistant professor in the School of Psychological Sciences at the University of Indianapolis. The purpose of this research study is to better understand how people form first impressions of novel individuals when having only a minimal amount of information about them. I have been informed that I will be one of approximately 130 people participating in the study. I have been asked to participate because I am a student at the University of Indianapolis. I have been informed that I must be at least 18 years of age to participate. My participation should take about 20 minutes.

2. WHAT WILL BE DONE / PROCEDURES

   I have been informed that my participation in the study will consist of one approximately 20 minute session in which I will view pictures of people and provide responses in an online survey. Specifically, while I am in this study, I will be asked to look at pictures of individuals and answer questions about my impressions of them in terms of personality and hypothetical behaviors. I will take approximately 16 minutes to complete the impression formation part of this study. Reading the introduction to the study, completing the demographic questions at the end of the study, and reading the conclusion to the study will take me approximately 4 minutes to complete. I have been told that I should try to answer all questions. I have been further informed that some questions might make me feel uncomfortable, and that I do not have to answer any questions that I wish to skip.

3. POSSIBLE BENEFITS

I have been informed that as a student of the University of Indianapolis, my decision to participate, refuse to participate, or decision to withdraw from the study will not adversely affect me in any way. I have been informed that my participation in this research will not benefit me directly. Potential benefit to others may result from the knowledge gained from my participation in this research study.

4. POSSIBLE RISKS AND DISCOMFORTS

I have been informed that the primary risks and discomforts of this study are possible eye strain, fatigue, or boredom from reading through the online study and possible uncomfortable feelings when providing demographic information. I have been told that I may take a break from the study, look away from the screen, skip a question, or withdraw from the study to minimize or reduce potential risks. Finally, I have been informed that if I experience any psychological or emotional discomfort that is connected to my participation in the study, then I can contact Dr. Kathryn Boucher, boucherk@uindy.edu or (317) 788-5003.

5. CONFIDENTIALITY OF RECORDS

My participation is anonymous. The investigators will not collect information allowing anyone to identify me, including information such as my computer's internet protocol (IP) number, my name or other individually identifiable information, or a combination of personal information (e.g., birth date AND physical characteristics AND sex). To ensure my anonymity, I should not add any information, which may identify me, such as my name, initials, etc. NOTE: Because my participation is anonymous, investigators cannot identify and remove my information if I choose to withdraw from the study after I submit my information.

All electronic data will be stored on password and/or encryption protected devices. Only the investigator and members of the research team will have access to these records. My privacy and the confidentiality of my information will be maintained to the degree permitted by the technology used. To further protect my privacy, I should complete the following research activity in a private location (e.g., home, personal office, etc.) using a private device and a secure transmission/communication system. My participation in this online research project involves risks similar to a person's everyday use of the Internet.

6. OFFER TO ANSWER QUESTIONS AND RESEARCH INJURY NOTIFICATION

I have been informed that if I have any questions or concerns about this study or my participation, then I can contact the Principal Investigator, Dr. Boucher at boucherk@uindy.edu or (317) 788-5003. If I want results of this study, then I may contact her.

7. COST TO THE SUBJECT / PAYMENT TO SUBJECT FOR PARTICIPATION

I have been informed that I may choose to receive research or extra credit in a course at the University of Indianapolis for my participation in this study. If I decide to stop participation in the study after starting it, then I will still be eligible to request research credit or extra credit. For research or extra credit, I have been told that my receipt of this credit is dependent on the specific course policy of my instructor.

8. VOLUNTARY PARTICIPATION WITH RIGHT OF REFUSAL

My choice to participate should be voluntary, without influence or threat from investigators or other individuals familiar with this research project. I am free to withdraw from this study at any time without penalty. To stop my participation and withdraw from the study before it has concluded, I have been informed that I can close my browser window. If I withdraw my participation, then the investigators will not use any information I provided before withdrawal. NOTE: Anonymous information cannot be identified and thus, cannot be removed from the study.

9. IRB REVIEW AND IMPARTIAL THIRD PARTY

This research project has been reviewed and approved by the University of Indianapolis Human Protections Administrator, who has the responsibility of protecting the rights and safety of research participants. If you have questions about your rights or protections as a participant in this research project, then contact the Human Protections Administrator, Dr. Greg E. Manship, at manshipg@uindy.edu or (317) 781-5774 or (800) 232-8634, x5774.

10. CONSENT

☐   By checking this box, I consent to be a research subject in this study.

☐   By checking this box, I DO NOT consent to be a research subject in this study.

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Institutional Review Board	800/232-8634 x5774
1400 East Hanna Avenue	317/781-5774
Health Pavilion, Room 261	http://irb.uindy.edu
Indianapolis, IN 46227	

Kathryn Boucher, Ph.D.
School of Psychological Sciences
University of Indianapolis
1400 East Hanna Avenue
Indianapolis, IN 46227

February 28, 2017

UIndy Study# 0802
Study Title; *Impressions of Novel People*

EXEMPTION APPROVAL DATE: February 28, 2017

Dear Dr. Boucher,
The University of Indianapolis Human Protections Administrator (HPA) has reviewed your
exemption determination application for the study titled, *Impressions of Novel People*. The HPA
finds the study meets the criteria for exemption from ongoing IRB review as set forth in the
federal regulations at 45 CFR 46.101(b). Therefore, the HPA has approved this study as exempt
from ongoing regulatory review.

Nevertheless, you must submit for HPA review and approval prior to implementation any
modifications in the study methodology, protocol, recruitment materials and/or consent form.
UIndy requires review and approval in order to confirm that changes do not alter the currently
approved exempt status. Submit via email proposed changes to the HPA, Dr. Greg E. Manship
(manshipg@uindy.edu). Please submit all changes via email, not through IRBManager.

Per UIndy policy, you must submit an update on the status of this study one calendar year from
date of approval. Please submit before or on February 28, 2018 and update to the HPA, Dr. Greg
E. Manship. You must submit an update/summary when notifying the HPA of study completion
and closure.

Sincerely,

Greg E. Manship, D.Bioethics, M.Div.
Certified IRB Professional (CIP)
Certified IRB Manager (CIM)
Director, Human Research Protections Program
Director, Institutional Review Board (IRB)