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Effects of Instructor Attractiveness on Classroom Learning

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EFFECTS OF INSTRUCTOR ATTRACTIVENESS ON

CLASSROOM LEARNING

By

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Abstract

Although there have been multiple studies examining the effects of physical attractiveness on a variety of human interactions, one domain has been largely overlooked. The current thesis examined the effect of teacher attractiveness on a learning task. Specifically participants were exposed to a photograph that they believed was their instructor while listening to an audio lecture. Upon completion of the lecture participants then completed a forced choice recognition task covering material from the lecture. I hypothesized that participants would perform significantly better on the learning task when they perceived their instructor to be high in physical attractiveness. Neither the gender of the instructor nor the participant was hypothesized to influence this effect. To test these hypotheses, one hundred and thirty seven participants completed measures to assess these hypotheses as well as their relationship with other variables (need for cognition, self-esteem, mate-value inventory). Consistent with my predictions, instructor attractiveness influenced participant's ability at a learning task. Additionally gender did not influence this effect. Finally I replicated previous findings demonstrating the role attractiveness plays in person perception. These results demonstrate that physical attractiveness not only influences person perception but creates tangible effects on human performance in real world situations.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

When encountering someone for the first time many factors influence people's initial impression of him or her. Variables such as race, gender, and facial expression may all impact this initial perception (Abreu, 1999; Chan, Rogers, Parisotto, & Biesanz, 2011; Trichas & Schyns, 2012). Certainly one of the first things that people notice when meeting someone new is how physically attractive they are (Zebrowitz & Montepare , 2008). If they are beautiful, this is a subjectively positive affective experience (Singh, 1974). The initial reinforcing value of beauty can influence one's decision whether to continue paying attention to them. (Lorenzo, Biesanz, & Human, 2010). Thus, the goal of this thesis is to explore the effect that instructor physical attractiveness plays within the classroom. Specifically I test whether or not attractiveness affects how well students learn.

Attractiveness Stereotypes

At the heart of person perception is the process of inferring that other individuals possess certain traits or dispositions. Thus the idea is that we come to know other persons by observing external traits and behavior and then inferring internal traits (Bond & Forgas, 1984; Houser & Beckman, 1978). Research within this theoretical context has found a number of external traits that often cause persons to infer other internal traits, such as race (Abreu, 1999) and gender (Chan, Rogers, Parisotto, & Biesanz, 2011; Trichas & Schyns, 2012). Physical beauty is a prominent example of a trait that beyond eliciting positive responses also has a dramatic impact on this inferential process.

The attractiveness stereotype is the tendency to infer that physically attractive people possess positive personality traits. For example, physically attractive people are perceived more positively and are often ascribed as having more positive personality traits (Dion, Berscheid, & Walster, 1972). Research suggests that attractive people tend to be judged as both more competent (Jackson, Hunter, & Hodge, 2005) and more intelligent (Eagly, Ashmore, Makhijani, & Longo, 1991). The initial work done by Dion and her associates (1972) has led to a large body of research indicating that physical appearance can have a profound impact on how one is perceived by others. For example, Webster and Driskell (1983) presented participants with pairs of photographs, each set consisting of a highly attractive individual and an unattractive individual. For each set of pictures participants were asked to compare the two individuals and indicate which one had higher levels of certain traits (e.g., intelligence, competence) as well as which one was better at certain skills (reading ability, flying a plane). As predicted the high attractive individuals were rated significantly higher than their less attractive counterparts. Furthermore, there was no significant effect for either sex of participant or for sex of the person in the photograph. Overall, this program of research has demonstrated that those found physically attractive are assumed to have many other positive traits, while individuals found unattractive are assumed to possess negative personality traits (see Feingold [1992] and Eagly et al. [1991] for a meta-analyses and Langlois et al. [2000] for a theoretical review).

There is also evidence that both adults and children apply the attractiveness stereotype to children. To evaluate whether these biases are already developed in preschoolers, Dion (1973) presented participants (ages 3-6) with photographs of children

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their own age who had been judged by adults as either attractive or unattractive. Researchers then asked the participants to pretend that the pictures depicted new children that would be attending their school. When evaluating the stimuli photographs, the children demonstrated a significant preference for attractive children as potential friends and demonstrated a dislike for unattractive children. Furthermore, the participants ascribed more positive personality traits to the beautiful children, inferring that the attractive children were more likely to behave prosaically whereas the unattractive children were more likely to exhibit antisocial behaviors.

To examine how the 'beauty-is-good" stereotype affects children's information processing, Ramsey and Langlois (2002) read vignettes to children (ages 3-7) in which there were two characters who varied in how attractive they were described as being. The stories also varied as to whether the character traits expressed were consistent with the attractiveness stereotype, that is sometimes the beautiful character was good (consistent) or sometimes the beautiful character was bad (inconsistent). Following the stories, the participants were shown photographs of the two characters and were asked to point to the character who displayed the positive traits in the vignette. The children made significantly more errors when the stories were inconsistent with attractiveness stereotypes, demonstrating the power that attractiveness biases hold over information processing and further illustrating that even at a young age, humans are using attractiveness as a criterion on which to evaluate others.

Not only do adults evaluate other adults based upon physical attractiveness, but adult evaluation of children is also heavily influenced by beauty. When confronted with a child who has committed a transgression, such as throwing rocks at a dog, adults tend to

judge the offense as much less severe when committed by an attractive child. Furthermore unattractive children who misbehaved were perceived as being more dishonest and more unpleasant than attractive children in the same scenario (Dion, 1972).

Although lay-theories generally posit that all mothers find their own children to be beautiful, research suggests that this is not always the case. Observational research indicates that mothers with more attractive infants are more playful and affectionate with their children compared with mothers of less attractive newborns. Additionally mothers with less attractive infants are more likely to be attentive to other people in their surroundings, rather than their own infant. Furthermore mothers with less attractive infants are more likely to endorse negative attitudes about parenthood compared with mothers of more attractive children (Langlois, Ritter, Casey & Swain, 1995). While many may find this surprising, it is consistent with the literature examining mothers whose children have congenital deformities. Several studies indicate that when children have facial abnormalities, their mothers tend to be less verbal with their children (Allen, Wasserman, & Seidman, 1990), less responsive to them (Field &Vega-Lahr, 1984), and behave in a less nurturing manner (Barden, Ford, Jensen, Rogers-Salyer & Salyer, 1989). Clearly, at even a young age, individuals are judged by their physical appearance even by those who are closest to them.

Development of Attractiveness Stereotypes

It is a commonly held belief that positive attributions in regard to physical attractiveness are a result of popular media or societal norms (Posavac, Posavac, & Posavac, 1998). For example, Smith, McIntosh and Bazzini (1999) analyzed a sample of popular American films covering a fifty year period to assess the extent to which beauty

is associated with positive traits. Initially they examined the role of physical attractiveness in U.S. films by obtaining a random sample of the top grossing movies from 1940 – 1990. Researchers then rated the movie characters on physical attractiveness as well as several personality traits, such as intelligence, sociability and morality. A robust relationship was found between beauty and all positive traits that were measured. Furthermore, this relationship held across time periods, character gender, and characters' centrality to the plot. To establish whether exposure to such films produces tangible effects, a second study was conducted in which participants viewed a film that was either highly biased or unbiased. Following the film, participants then rated a fictitious graduate school candidate that was either beautiful or unattractive. Participants who had watched the highly biased film showed significantly greater favoritism when evaluating the applicants, suggesting that exposure to biases presented in popular media may indeed influence human interaction.

However, a brief look at the developmental literature suggests that the attractiveness stereotype is not the sole product of socialization. As early as six months of age, infants already show a significant preference for looking at more attractive faces (Langlois et al., 1987). Beyond looking preferences, data suggest that infant behavior is also affected by physical attractiveness. It has been demonstrated that infants show a preference for playing with more attractive dolls when given a choice. Furthermore, when encountering a stranger in the laboratory environment, more positive affect is expressed when the stranger appears physically attractive. Infants also engage in more active involvement with attractive strangers (Langlois, Roggman, & Riesler-Danner, 1990). These studies suggest that by one year of age, humans are not only capable of

determining the difference between high and low attractiveness of others, but show an active preference for association with more attractive humans. Further, these positive attributions to attractiveness have also been demonstrated in a wide variety of cultures, such as Indonesia and South Korea (Singh, 2004; Wheeler & Kim, 1997).

While the media may certainly reinforce appearance based stereotyping, these data strongly suggest that the attributions are in place long before humans have extensive contact with the media and occur in locales with differing norms and values. It is possible that the trait inferences produced by the attractiveness stereotype serve an adaptive function. Features found attractive such as facial symmetry or signs of health are associated with high mate value (e.g., Jones, Little, Penton-Voak, Tiddeman, Burt, & Perrett, 2001; Rhodes et al., 2007; Thornhill & Gangestad, 1993). Perhaps inferring an association between these physical traits and positive personality traits serves to enhance their appeal.

Effects of Physical Appearance on Treatment

Viewing a beautiful person is both subjectively positive and often leads people to infer other positive traits about the individual. Not surprisingly, an individual's physical appearance has a profound impact on how a person is treated. Most directly related, physical attractiveness has a significant influence on mate selection. 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 study, researchers advertised a social event in which participants would have the opportunity to complete a variety of personality measures and then let a computer match them with a partner of similar

interests. In actuality, participants were randomly assigned their dance partner.

Following the social event, participants rated how much they enjoyed the experience. By

far the physical attractiveness of the partner was the largest determinant of how well they

were liked, how much the participant wanted to date the partner again and how often they

actually followed up and asked the partner out. This was found to be the case, regardless

of the participants own attractiveness (Walster, Aronson, Abrahams, & Rottman, 1966).

More recently, participants were asked to evaluate a variety of online personal

advertisements and predict their potential success. Physical attractiveness emerged as the

primary predictor of a favorable outcome, demonstrating an even more robust effect than

manipulation of the written content in the advertisements (Colwell, 2007).

Job-related outcomes. Beyond initial attraction and mate selection, physical

appearance has numerous other impacts on how a person is treated. For example, various

studies have suggested advantages for attractive job applicants during the hiring process.

In a seminal study Dipboye, Arvey, and Terpstra (1977) examined biases that influence

résumé evaluation. Participants rated a series of fictitious job applications that varied on

factors of applicant sex, attractiveness, and qualifications. A small photograph was

attached to each packet to serve as the manipulation for both sex and facial attractiveness.

Participants then rated each packet on their willingness to hire the applicant as well as

recommended starting salary for the applicant. Finally the attractiveness of the

participants was rated by two independent observers. Applicants that were highly

attractive scored significantly higher on both measures in comparison to average and

unattractive applicants. Additionally neither the attractiveness nor the sex of the

participant was indicated to affect this evaluation. Countless replications have been

performed in the literature, suggesting that high levels of physical beauty will often

overcome mediocre qualifications when hiring decisions are made (e.g., Przygodzki-

Lionet, Olivier, & Desrumaux, 2010; Tews, Stafford, & Zhu, 2009). In a recent meta-

analysis, researchers found that physical attractiveness accounted for 37% of the variance

in hiring and promotional decisions. Furthermore attractiveness biases did not differ

between studies that provided low versus high amounts of job-relevant information.

Likewise, this review found further evidence demonstrating that business professionals

are just as susceptible to attractiveness biases as college participants and that these effects

are as robust for males as they are for females (Hosoda, Stone-Romero, & Coats, 2003).

Legal outcomes. Even something as crucial as guilt or innocence in a criminal

trial may be affected by physical attractiveness. Various studies have suggested that

jurors are influenced by the physical attractiveness of the accused (see Mazzella &

Feingold, 1994 for a meta-analysis) as well as the attractiveness of the victim (Kerr,

1978). Furthermore this effect is not limited to Western cultures, as successful

replications have been performed utilizing mock juries in both China and India (Angira,

1987; Wuensch, Chia, Castellow, & Chuang, 1993). This lends further support to the

notion that attractiveness stereotypes are a human universal, rather than a media driven

effect. Although largely beyond personal control, it is clearly advantageous to be born

beautiful.

<center>**Physical Appearance and Learning**</center>

An important interaction in Western society is that between teachers and their

students. Given the large role of physical appearance in person perception it is important

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to explore how physical appearance influences the student teacher relationship. In this section I will review the literature pertaining to attractiveness and classroom learning.

Student Attractiveness and Learning

The benefits held by attractive students have been explored rather extensively in the literature, with attractive students judged as more intelligent, having greater academic potential, and possessing greater social skills than their less attractive peers (Clifford & Walster, 1973; Ritts, Paterson, & Tubbs, 1992). Research has also demonstrated that teachers judge attractive students to be more confident and to have greater leadership abilities. For example, Kenealy, Frude and Shaw (1988) obtained physical attractiveness ratings for over a thousand 11 and 12 year old school-children. The same children were rated by their primary teachers on a number of personality traits. Significant correlations were found between ratings of attractiveness and teacher evaluations for leadership potential, confidence, academic potential, popularity and sociability. Although the direct effect of teacher expectancies is still a matter of contention in the literature, it is clear that appearance based stereotyping occurs just as strongly in the educational environment as it does amongst the general public.

Instructor Attractiveness and Learning

A question that has received considerably less attention focuses on how the physical attractiveness of an instructor influences teaching effectiveness. Consistent with the attractiveness stereotypes in other domains, students rate high attractive teachers as more competent, better at motivating students, and better at stimulating learning (Chaikin, Gillen, Derlega, Heinen & Wilson, 1978). Research has also suggested that attractive college instructors score higher on student evaluations (Riniolo, Johnson,

Sherman & Misso, 2006). Riniolo and colleagues compiled archival data presented on

the website www.ratemyprofessors.com, a forum which allows students to offer

anonymous evaluations of college instructors. Student reviewers are given the

opportunity to evaluate instructors on the dimensions of "helpfulness" and "clarity"

which are averaged to provide an "overall quality" rating; in addition they are also given

the opportunity to indicate whether they found the instructor attractive or not. The four

universities with the largest number of reviews were selected for analysis and only

instructors with 25 or more reviews were included in the analyses. Professors perceived

as attractive scored nearly one point higher on a 5-point scale. Furthermore, consistent

with the literature on physical attractiveness stereotypes, there were no significant gender

differences in the study.

The correlation of attractiveness and teaching evaluations might suggest that

attractive instructors are more effective than unattractive instructors but it is important to

note that teaching evaluations are only slightly related to objective measures of instructor

effectiveness (Aleamoni, 1999; Stehle, Spinath, & Kadmon, 2012). In a recent meta-

analysis of 193 studies, Wright and Jenkins-Guarnieri (2012) found that teaching

evaluations only accounted for seven percent of the variance in student learning.

Furthermore, a review conducted by Neath (1996) identified 20 confounds that may

compromise the validity of instructor evaluations without affecting objective teaching

effectiveness. As examples, he cited evidence suggesting that factors such as class size

or even the sex ratio of students within the class may drastically alter student evaluations.

If teaching evaluations are only tangentially related to learning then the question remains

open: Are attractive instructors more effective? There are a couple of possible

mechanisms that might make attractive teachers more effective.

Beauty is Better

Although it is perhaps easy to discount the phenomena of attractiveness based attributions under the attractiveness stereotype (Eagly et al., 1991), other studies have suggested that attractive people do indeed perform better on job-related outcomes (Hosoda, Stone-Romero, & Coats, 2003). Furthermore, attractiveness was important for both male and female employees. Research has also demonstrated that attractive students actually have higher grade point averages (Zahr, 1985). Additionally, evidence suggests that humans are better at accurately judging the personality traits of those they consider attractive after only a brief initial meeting (Lorenzo et al., 2010). This would indicate that while there is certainly a bias in favor of those deemed attractive, the stereotype is not entirely without merit. It does seem clear that physical attractiveness produces tangible effects in the real world.

There are a couple of theoretical rationales for these correlations. First, Buss (1985) posits that personal traits are subject to the same forces of mate selection that apply to physical attractiveness. This suggests that females tend to prefer intelligent males due to the correlation with wealth and status. Additionally males tend to prefer physically attractive females, thus one would expect intelligence and attractiveness to covary. Beyond intelligence, it is certainly feasible that these same forces could be guiding other traits such as competence and leadership abilities.

Second, exposure to stereotypes held by others can have a profound impact on personal behavior and attitudes. Parental attitudes regarding gender exert a subtle influence that affects the toys that children prefer (Weinraub et. al., 1984) as well as their

occupations later in life (Barak, 1991). Within the classroom setting, gender based stereotype threat is a well-explored phenomenon (Keller, 2007). Random schoolchildren given preferential treatment by instructors have demonstrated increased academic performance as well as greater increases in IQ (Rosenthal & Jacobson, 1966). Given the cycle of self-fulfilling prophecy and the plethora of evidence supporting preferential treatment for high attractive individuals, one can conclude that attractive schoolchildren are not only treated as better students but often become better students. By extension, as physically attractive individuals enter the teaching profession it is likely that they become better instructors as well, both due to a lifetime of positive feedback and due to positive expectations from the pupils. In a longitudinal study, teacher expectancies of 6th graders could accurately predict academic performance in the 12th grade. Additionally, the 6th grade predictions also correlated with students' self-concepts of ability in later years, demonstrating that self-fulfilling prophesies are both stable and consistent over time (Smith, Jussim & Eccles, 1999). This pattern suggests that social reality often hinges on perceptions of expectations.

In developing a comprehensive model for the progression of self-fulfilling prophecies in the classroom, Jussim (1986) proposed three sequential stages. Initially teachers must develop expectancies for future behavior. This is then followed by differential treatment of the pupil. Finally, students react to this differential treatment through behavioral changes. Although this model was developed to account for the processes at work regarding teacher expectancies, the same stages occur in response to physical attractiveness. As discussed above, there is abundant evidence that humans develop differential expectations of others based upon physical appearance and that this

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influences their treatment of them. It is also clear that individuals adjust their behavior in response to perceptions of societal expectancies. Both males and females who report high self-perceptions of beauty also report using their appearance as a manipulative tactic, endorsing such items as "Sometimes, I rely on my looks too much to get what I want" and "I believe that my physical attractiveness gives me an advantage in my classes" (Garcia, Khersonsky & Stacey, 1997). Self-ratings of attractiveness also influence the importance that humans place on beauty when selecting long-term romantic partners (Jonason, 2009).

Social Learning Explanation

The social learning model advanced by Bandura posits four necessary requirements for social learning: attention, retention, reproduction and motivation (Bandura, 1977). Each of these is essential for social learning to occur and both attention and motivation are likely to be influenced by physical attractiveness. Thus social learning theory may offer a likely theoretical mechanism for attractiveness to influence learning.

Attention. Although many factors influence learning in the classroom setting, certain variables consistently correlate with improved academic performance. Greater levels of visual attention not only increase recall upon completion of a learning task but have been shown to increase retention in later weeks (Serbin, Geller & Geller, 1977). Beyond visual attention, sustained attention is a critical variable in the cognitive learning process (Zimmerman, 2001). A study of 6th grade students demonstrated that pupil attentiveness was the primary predictor of academic performance over a two-month observation period. Although the importance of attention may seem intuitive, the data

from this study suggest that it is even more predictive of academic success than either

student IQ or personal interest in scholastic endeavors (Lahaderne, 1968). Certainly

intelligence plays a crucial role in the learning process, but the correlation between

attention and school performance has become clearer in recent years. In a recent

examination of the relationship between academic achievement and eight behavioral

problems, such as anxiety, depression and delinquency, researchers found all eight to be

mediated by attentional problems (Barriga et al., 2002).

Many factors influence human performance on tasks requiring sustained attention.

Personality variables, such as levels of depression (Schlosser et al., 2011) or proneness

for boredom negatively affect capacity for attention (Malkovsky, Merrifield, Goldberg &

Danckert, 2012). Beyond characteristics unique to the perceiver, the object of attention

plays a pivotal role. Individuals pay considerably more attention to human faces than to

ordinary objects (Ro, Russel & Lavie, 2001). Furthermore, not all human faces are

treated equally. Aspects such as the emotional valence of the facial stimuli influence

attention (O'Toole, DeCicco, Hong & Dennis, 2011).

The effects of facial beauty on social interaction have a long history in the

literature (see Langlois et al., 2000 for a review). More recently, researchers have

demonstrated the influence of facial beauty on attentional factors. Individuals look

longer at attractive faces than they do unattractive ones (Aharon et al., 2001) and also pay

more attention to those deemed attractive (Sui & Liu, 2009). Additionally, attention may

be affected through multiple methods. Although more attention is intuitively given when

viewing attractive faces (Liu & Chen, 2012), as attractiveness stereotypes come into play,

individuals perceive a physically attractive model as possessing many positive traits such

as higher levels of expertise and trustworthiness (Patzer, 1983). This further increases

attentional bias, as the individual then considers them more worthy of attention.

Surprisingly, the effects of physical attractiveness do not only influence our initial

perception of others. The effects of beauty on our judgment of others remain just as

strong when we know someone quite well (Langlois et al., 2000).

  Motivation. Physical attractiveness may also impact motivation in the social

learning context. One potential explanation for the beautiful-is-good effect centers on

innate desires to form social bonds with those found attractive. This increase in

interpersonal motivation may lead to projection of interpersonal goals (Lemay, Clark &

Greenberg, 2010). The model advanced by Lemay and colleagues suggests that positive

attributions based on physical attractiveness occur primarily due to increased motivation

for interaction with attractive targets. Within the context of social learning, high-

attractive models should be expected to elicit higher levels of motivation in learners.

  Beyond intrinsic motivational factors, physical attractiveness plays a fundamental

role in external motivation via persuasion. Research has demonstrated the ability of

beauty to increase persuasive power on both verbal and behavioral measures.

Furthermore this effect occurs regardless of the sex of either the communicator or

perceiver (Chaiken, 1979). Outside of laboratory conditions, physical attractiveness

consistently demonstrates a significant impact on compliance in both marketing contexts

and charitable solicitations (Reingen & Kernan, 1993). Within the context of persuasion,

beauty appears to operate through the same processes as in other domains. When

communicators are perceived as high in physical attractiveness, they are regarded as

having greater expertise and trustworthiness (Praxmarer, 2011). The role of an

instructor's persuasive power not only influences motivation, but increases knowledge

retention, as well as influencing students' personal interests and beliefs about the subject

matter (Alexander, Fives, Buehl & Mulhern, 2002). This is unsurprising, given the

development of the "teaching as persuasion" pedagogical model (Fives, Alexander &

Buehl, 2001).

CHAPTER TWO

CURRENT STUDY AND METHODS

The purpose of this study was to answer a question largely ignored by the current

literature. If all else is equal, do students actually learn more from attractive teachers

than they do from those less attractive? If highly attractive teachers elicit greater

attention, higher levels of motivation, and exert greater persuasive power then we would

expect students instructed by highly attractive lectures to learn more than students

instructed by less attractive teachers. Further, because the attractiveness stereotypes

appear to occur regardless of gender I do not predict the sex of either the instructor or the

participant to influence performance (Langlois et al., 2000). To examine these

hypotheses we presented participants with an audio lecture delivered via computer. This

lecture was accompanied by a photograph that varies by both attractiveness and sex.

Researchers then led the participants to believe that this is the instructor delivering the

lecture. Following the lecture, participants completed a quiz over the lecture material, as

well as a variety of personality measures.

Methods

Participants

Eighty-six females and forty-five males were recruited from the University of

Nevada, Las Vegas subject pool. Participants were recruited using the electronic signup

procedure (SONA system) operated by the psychology department and were offered class

credit in exchange for participation. No monetary compensation was offered to

participants. Only participants who completed all tasks were included in the final

analyses. The average age of the participants was 20 and the range of ages was 18 to 42.

Thirty-nine percent of the participants were of European decent, 21% were of Asian

descent, 18% were of Hispanic descent, 8% were of African descent and 14% were from other ethnic groups. Participants on average had approximately one year of post-secondary education.

Materials

Manipulation stimuli consisted of facial photographs of Caucasian males and females taken from an online database. Only photographs that matched for race and hair color were used, and photographs containing either facial hair or spectacles were omitted. A group of six students (4 female, 2 male) who were not participants in the actual experiment rated forty-four photos on the dimension of physical attractiveness using a scale from 1 (extremely unattractive) to 10 (extremely attractive). Two photographs of males and two photos of females of above average physical attractiveness, and two males and two females of below average physical attractiveness were selected for use as exemplars in the study.

The male version of the audio lecture was obtained from the Massachusetts Institute of Technology (MIT) OpenCourseWare website. The audio lecture selected contains material from a college level introductory physics course and the first twenty minutes were used for experimental stimuli. All course materials on the website are under a Creative Commons License, permitting their use and distribution for non-commercial purposes. The particular physics lecture selected is close-captioned for the hearing impaired. This enabled a female assistant to easily create a replication that is identical in content. The female version of the audio lecture was created by a female assistant who first familiarized herself with the lecture and then recorded the identical version speaking by into a microphone. After recording the lecture, it was converted to an mp3 file for use on the lab computers.

Procedure

Upon arrival, participants were informed that the purpose of the study was to examine the impact that different lectures styles have on learning. According to the cover story, the study was an attempt to determine if students can learn as well from audio as from video lectures. Participants were then assured that their responses to all questionnaires would be completely anonymous. Thus the primary task for participants was to listen to a twenty minute audio lecture from an introductory physics course. Participants were forbidden to takes notes during the lecture portion of the experiment. The lecture was delivered via computer and was accompanied by a photograph that the participants were led to believe is the actual instructor. By random assignment, the lecture was spoken by either a male or female (which are identical in content) and the computer displayed a photograph of either a high-attractive individual or a low-attractive individual.

Following the audio lecture, participants completed a twenty-five item forced choice recognition task covering the material from the lecture. These items were written specifically for the current study. All items were in multiple-choice format with one correct option and three distracters. Items ranged in difficulty from the extremely simple ("What subject was this lecture about?") to ones that require greater attention by the participant ("Speed = Length/ _____"). Participants were each given a paper packet containing both the quiz items (see Appendix E for the complete list of quiz items) and the additional measures below. All participants were presented with the questions in the same order and participants were allowed to work at their own pace, independent of any time limit.

Manipulation check and demographic questionnaire. Additionally, participants were asked to complete an 8-item instructor evaluation to assess their opinion of the instructor's performance. The measure contains items such as "Rate the instructor's ability to present the material clearly" and "Rate the overall teaching ability of the instructor". These items were taken from a standard instructor's evaluation often administered in the university setting. These items were presented at once and answers were collected using a pen and paper questionnaire. Embedded in the teacher evaluation form was one additional item that asked participants to rate the physical attractiveness of the instructor. This was intended to serve as a manipulation check. The complete set of items is provided in Appendix D.

Following completion of all tasks, participants were asked to provide demographic data consisting of their gender, age, level of education, and sexual orientation. These items were measured via pen and paper questionnaire. These variables have previously been identified as potential moderators of physical attractiveness stereotypes and are therefore needed for analyses.

Individual differences. As individual differences may play a role in cognitive reactions to physical attractiveness, participants were then asked to complete a few short personality measures (described below) to assess variables that may have influenced their performance on the primary task.

Need for Cognition. Need for cognition (NFC) has been defined in the contemporary literature as "an individual's tendency to engage in and enjoy effortful cognitive endeavors" (Cacioppo, Petty, Feinstein, & Jarvis, 1996). Individuals who are high in NFC tend to be less likely to be persuaded by peripheral cues than those scoring

lower on such measures (Haugtvedt & Petty, 1992). Furthermore, NFC has emerged as moderating physical attractiveness stereotypes. Participants scoring low on NFC demonstrate much stronger attractiveness biases than those with higher NFC scores (Perlini & Hansen, 2001). This may suggest that humans high in need for cognition are less susceptible to the effects of physical attractiveness in the educational environment. The questionnaire contains 18 items designed to evaluate the degree to which one enjoys complex thought and contains items such as "The notion of thinking abstractly is appealing to me" and "I would prefer complex to simple problems". Participants were asked to indicate on a 5-point scale to what extent the statement is characteristic of them, 1 being "extremely uncharacteristic" and 5 being "extremely characteristic". Additionally, the NFC scale exhibits excellent internal consistency as well as test-retest reliability (Sadowski & Gulgoz, 1992). (See Appendix A).

   Rosenberg Self-Esteem Scale. It has been demonstrated that self-esteem plays an active role when adults evaluate others on the basis of physical attractiveness. In a pair of studies, self-esteem emerged as moderating the relationship between physical attractiveness and attributions of personality traits (Agthe, Spörrle, & Maner, 2010). Therefore participants also completed the Rosenberg Self-Esteem scale to assess the effect of participant self-esteem on the primary task (Rosenberg, 1965). The questionnaire contains 10 items designed to evaluate the current feelings of the participants and includes items such as "On the whole, I am satisfied with myself" and "I certainly feel useless at times". Participants are asked to indicate on a 4-point scale to what extent they agree with the statement, ranging from "Strongly Agree" to "Strongly Disagree". Many measures of self-esteem have been developed, yet the Rosenberg Self-

Esteem scale consistently demonstrates superiority to other measures, particularly in

regard to convergent and predictive validity (Baker & Gallant, 1984). (See Appendix B).

  Mate Value Inventory. Participants then completed Kirsner's Mate Value

Inventory. This inventory has 17 items that asks participants to assess their mate value

by indicating how high or low (1 "extremely low on this trait" to a 10 "extremely high on

this trait") they would score on a particular trait (Kirsner, Figuerdo, & Jacobs, 2003).

Examples of these traits include ambitiousness, attractiveness in face, generosity, health,

intelligence, responsibility, and social status. This measure could assist in identifying

whether personal perceptions of mate value moderate the effect of physical attractiveness

in learning situations (See Appendix C).

CHAPTER 4

RESULTS

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 instructor. A one-way between subjects ANOVA was conducted to compare the effect of condition on these ratings of attractiveness. There was a significant effect of condition on participant attractiveness ratings at the $p<.05$ level for the two conditions, $F (1, 135) = 48.39, p < .001$. Additionally, a Pearson product-moment correlation coefficient was computed to assess the relationship between the participant ratings of attractiveness and our internal ratings derived while selecting stimuli materials. There was a positive correlation between the two variables, $r (135) = .51, p < .001$. Taken together, these results suggest that was agreement among the participants on the relative attractiveness of the pictures selected for use as stimuli.

Main effect. To test the primary hypothesis, the number of correct responses on the multiple choice quiz was summed to provide a score of participant performance (higher numbers indicate better performance). These test scores were compared using a 2(Male vs. Female participant) X 2(Male vs. Female instructor) X 2(Attractive vs. Unattractive instructor) between subjects analysis of variance (ANOVA). As predicted there was a significant main effect of instructor attractiveness, $F (1, 123) = 8.34, p = .005, \eta^2 = .06$. Participants in the condition with a high attractive instructor recalled more items on the quiz ($M = 18.27, SD = 3.30$) than those with a low attractive instructor ($M = 16.68, SD = 3.22$). There was no main effects for either participant gender, $F (1, 123) = 3.16, p = .078, \eta^2 = .02$, or for instructor gender $F (1, 123) = 1.38, p = .242, \eta^2 = .01$.

Additionally, the interaction between participant gender and instructor gender did not demonstrate a significant relationship $F\,(1,\,123) = .53$, $p = .462$, $\eta^2 = .004$.

Moderator analyses. In order to test whether one's propensity for effortful thinking influences the relationship between test scores and physical attractiveness moderated multiple regression analysis was performed examining the association between scores on the need for cognition measure and scores on the multiple choice quiz. It was hypothesized that need for cognition would moderate the relationship between physical attractiveness and quiz performance. That is, individuals high in need for cognition would experience less influence from the attractiveness manipulation. To investigate this interaction hypothesis a three-step hierarchical regression analysis was performed in which Need for Cognition Scores, Instructor Attractiveness, and then the interaction of Need for Cognition Scores and Instructor Attractiveness were added into the equation. The interaction term was created by centering both the Need for Cognition Scores and the Instructor Attractiveness variables and then multiplying the variables (See Aiken and West (1991) for an explanation of procedure). The R^2 change in step 1 was .001. This value is non-significant ($F\,(1,\,134) = .932$, $p = .37$), indicating that need for cognition failed to explain a significant portion of the variance in quiz scores. The addition of the interaction term did not result in a significant increase in variance explained over the main effects model that contained need for cognition scores and instructor attractiveness ($\Delta R^2 = .00$, $F\,(1,\,132) = 0.01$, $p = .91$), indicating that need for cognition did not moderate the effect of teacher attractiveness on test performance

Additionally it was hypothesized that self-esteem would moderate the relationship between physical attractiveness and quiz scores. To investigate this interaction hypothesis

a three-step hierarchical regression analysis was performed in which Self-Esteem Scores, Instructor Attractiveness, and then the interaction of Instructor Attractiveness and Self-Esteem Scores were added into the equation. The interaction term was created by centering both the Self-Esteem Scores and the Instructor Attractiveness variables and then multiplying the variables. The R^2 change in step 1 was .002. This value is non-significant (F (1, 134) = .228, p = .63), indicating that self-esteem failed to explain a significant portion of the variance in quiz performance. The addition of the interaction term did not result in a significant increase in variance explained over the main effects model that contained cognition scores and instructor attractiveness (ΔR^2 = .01, F (1, 132) = 0.65, p = .42), indicating that self-esteem did not moderate the effect of teacher attractiveness on test performance.

It was also hypothesized that perceived mate value would moderate the relationship between physical attractiveness and quiz scores. Specifically, those individuals high in mate value would experience less effect of the physical attractiveness manipulation. To investigate this interaction hypothesis a three-step hierarchical regression analysis was performed in which Mate Value Scores, Instructor Attractiveness, and then the interaction of Mate Value Score and Physical Attractiveness were added into the equation. The interaction term was created by centering both the Mate Value Scores and the Instructor Attractiveness variables and then multiplying the variables. The R^2 change in step 1 was .014. This value is non-significant (F (1, 134) = 1.939, p = .17), indicating that mate value failed to explain a significant portion of the variance in quiz scores. The addition of the interaction term did not result in a significant increase in variance explained over the main effects model that contained cognition scores and

instructor attractiveness ($\Delta R^2 = .00$, $F(1, 132) = 0.079$, $p = .78$). This suggests that mate

value did not moderate the effect of teacher attractiveness on test performance.

Teaching evaluation. Additionally participants responded to a variety of

questions pertaining to the teaching ability of the instructor, such as ability to present the

material clearly and apparent knowledge of the subject matter. To evaluate the internal

consistency of these six items, Cronbach's Alpha was computed and found to be quite

high ($\alpha = .906$). These items were then correlated with participant ratings of

attractiveness. Strong relationships were found between these items and participant

ratings of attractiveness (see table 1), indicating that participants perceived a more

attractive instructor as a better instructor. A composite score was then computed by

summing the six variables. The composite score was the correlated with scores on the

learning task. This correlation was not statistically significant, $r(135) = .09$, $p = .31$,

suggesting that instructor evaluation was not a strong predictor of learning performance.

Attractiveness stereotype. Participants were also asked to rate the instructor on

a number of personality traits, such as intelligence and happiness. I then correlated each

of these scores with participant rating of attractiveness. Consistent with the literature

examining the attractiveness stereotype strong relationships were found between most

positive traits and perceptions of physical attractiveness (see table 2), such that the

instructors rated more attractive by participants were ascribed more positive personality

traits.

Predicted performance. Finally, upon completion of the forced choice

recognition task, participants were asked to indicate how well they felt that they had

performed. A Pearson product-moment correlation coefficient was computed to assess

the relationship between the participants predicted performance and their actual performance. There was a positive correlation between the two variables, $r(134) = .22$, $p < .01$, indicating that participants were able to accurately judge their performance on the task.

CHAPTER 4

DISCUSSION

This study was conducted to determine whether instructor physical attractiveness would have an effect on learning tasks, specifically tasks similar to tasks common within classroom learning. Based upon previous research indicating effects of physical attractiveness in a wide variety of domains I hypothesized that participants with a more attractive instructor would perform better at learning tasks. As expected, participants in the high physically attractive conditions outperformed participants in the low physically attractive conditions on a forced-choice recognition task. Additionally I hypothesized that gender would not play a role in this relationship. Examination of gender could help to isolate whether this effect was driven by human sexual attraction or by other cognitive forces. Although gender may influence attention in certain human social interactions, it was not expected to influence learning tasks. The failure of either instructor gender or participant gender to influence this relationship suggests that this effect is driven by processes independent from human sexual attraction, such as attention and motivation as I suggested in this thesis.

The manipulation of physical attractiveness did produce significant results in participant perception of instructor ability. This is consistent with the previous literature suggesting that attractive instructors receive more positive student evaluations (Felton, Koper, Mitchell & Stinson, 2008; Riniolo, Johnson, Sherman, & Misso, 2006). Independent of actual ability, physical attractiveness appears to create the impression of improved ability in the minds of students and that effect was replicated with the findings in this thesis. That said, participant evaluations of instructor ability failed to accurately

predict participant performance on the learning task. This also replicates previous research, finding that instructor evaluations are poor predictors of performance on multiple choice formats although accurately predict student performance on practical examinations (Stehle, Spinath, & Kadmon, 2012). The failure of the moderating variables (need for cognition, self-esteem, & mate value) to influence performance on the learning task was unpredicted. Given the overwhelming power of physical attractiveness in the literature, however, these may be unsurprising. Another potential interpretation could be the present study lacked sufficient power to detect the effects of the moderating variables.

Although many variables factor into student learning in the classroom, this study is the first to demonstrate that teacher attractiveness could play a previously overlooked role. This should not be taken to imply that unattractive humans cannot excel at classroom teaching. Qualities such as a sense of humor or empathy can also benefit teacher effectiveness (Bryant, Comisky, Crane & Zillmann, 1980). These data do suggest however that physical beauty is another element that plays a significant part in this common human interaction. Despite finding a relatively small effect size with this study, should future work replicate this effect it would suggest significant practical ramifications. These data suggest that half a letter grade may be determined for students simply by the physical attractiveness of their instructor, rather than by the intellectual abilities of either the student or the instructor. This would indicate that ratings of instructor attractiveness appearing on popular websites are far from frivolous. Students serious about improving their chances of future success would have a genuine academic interest in the physical appearance of potential future instructors. Given the future

lifetime ramifications for students that hinge upon academic performance, these findings are another challenge to the ethos of American meritocracy. Between the heritage of the Protestant work ethic and the mythology of Horatio Alger, America as a nation has a long history of collectively endorsing the just world hypothesis. These data should serve as yet another reminder that personal success or failure is rarely a never event, but a culmination of one's social encounters.

Limitations and Future Directions

The results of the present study provide strong support for the hypotheses, yet the current study does have a number of limitations. One concern that can arise when conducting a laboratory study such as this is the question of external validity. Specifically, can we generalize the effects of one lecture to the effects of an entire class that occurs over an entire semester? One might hypothesize that physical appearance may play a larger role over a short time period, however over a longer period one might be influenced by more subtle characteristics (such as IQ) that are not readily apparent from just one lecture. While this may be a tempting perspective, attractiveness has demonstrated stability over time, unaffected by familiarity (Langlois et al., 2000). This would suggest that although many factors affect teaching performance, the influence of beauty on teaching effectiveness should remain stable as well. Additionally, this does provide one direction for future research. Replication of this study utilizing time delays between the encoding task and the forced-recognition task would better replicate the type of learning employed in the classroom.

The lack of a control group in the present study leaves one theoretical question largely unanswered. Perhaps participants were simply distracted by the unattractive

instructor and no statistical difference would be found between high attractive instructors and those of average appearance. Despite the large body of literature suggesting positive evaluations of attractive others (Dion, Berscheid, & Walster, 1972; Eagly, Ashmore, Makhijani, & Longo, 1991) another perspective has emerged asserting that unattractive individuals are at a disadvantage rather than advantageous evaluations made regarding attractive others (Griffin, & Langlois, 2006). Future replication utilizing a control condition with instructors of average appearance would help to demonstrate the directionality of this effect.

Ever since "what-is-beautiful-is-good" (Dion, Berscheid, & Walster, 1972) entered the psychological lexicon, there have been many differing explanations for the phenomenon. Theoretical paradigms have included self-fulfilling prophecies (Snyder, Tanke, & Bercheid, 1977), cultural manifestations (Wheeler & Kim, 1997), and evolutionary theories of mate selection (Kanazawa & Kovar, 2004). Although it is hypothesized in this thesis that this effect is driven by increased attention and motivation, future studies will be necessary to isolate these factors. Should future replications confirm the results within this thesis then explanations centered on mate selection would be increasingly unlikely. The lack of gender effects for either the teacher or the learner indicates an effect more global in origin than procurement of future mates. Additionally, theoretical explanations driven by the positive correlation between intelligence and attractiveness would fail to explain the effect demonstrated in this thesis, as the lecturer was identical between conditions.

Additional research is also necessary to help explore the cognitive processes that underlie this effect. Although the human reaction to beauty has long been a hot-topic of

research, recent work in the field of cognitive neuroscience is finally starting to shed some light on the underlying mechanisms. A strong correlation between perceptions of attractiveness and the cognitive function of memory is starting to emerge. Furthermore both seem to involve the frontal regions of the brain (Marzi & Viggiano, 2010). Specifically, the orbitofrontal cortex (OFC) seems to be the key component in this process (O' Doherty et al., 2003). Research suggests that this region of the brain is affected by reinforcers such as winning money (Breiter, Aharon , Kahneman, Dale, & Shizgal, 2001) and also plays an active role in facial processing (Blair, Morris, Frith, Perrett, & Dolan,1999). Therefore it has been theoretically advanced that attractive faces act as a reward for human perceivers (Aharon et al., 2001). Beyond serving as a center for reward reinforcement as well as decision-making, the OFC also plays a role in regulating hippocampal activity. This interplay is crucial, as data suggest that reward-relevant stimuli more strongly activate the OFC, thus potentially becoming more strongly encoded in memory (Tsukira & Cabeza, 2011). Furthermore, hippocampal activity during encoding yields memories that are more concrete, which leads to better recall during the later retrieval process (Kim & Cabeza, 2007). This would seem to suggest that knowledge given by teachers that are more attractive would result in greater recall at a later date, particularly for exams. Recent research measuring event-related potential (ERP) while completing an old/new recognition task seems to confirm the role facial attractiveness can have on both encoding and retrieval. Specifically, it has been demonstrated that not only are the frontal regions employed in both memory encoding and judgments of attraction, but also the memories derived from attractive humans are encoded in a different fashion (Marzi & Viggiano, 2010).

Therefore one direction for future research is to build upon the existing work regarding the interaction of the OFC and the hippocampus and applying this towards learning tasks relevant to classroom learning. Research suggests that attractiveness affects how humans encode information into memory, with words that are spoken by an attractive human more likely to be considered "old" information (Marzi, & Viggiano, 2010). This is likely due to increased activity within the OFC. Future studies could demonstrate this effect within the context of learning by utilizing fMRI technology. Specifically, words paired with the attractive faces should generate greater accuracy in participant responses as well as faster participant reaction times. Additionally, stronger blood-oxygen-level dependent responses in the OFC during encoding would be expected when the pairings include a high-attractive face versus pairing with the low attractive faces.

Another direction for future research could involve videotaped lectures with manipulations of physical attractiveness. Previous work in the domain of physical attractiveness research has utilized realistic latex theatrical masks applied to research assistants blind to condition (Langlois, Roggman, & Riesler-Danner, 1990). Recording multiple lectures by the same individuals with manipulations of attractiveness would allow for increased ecological validity in future studies. These lectures would come closer to representing the channel of communication currently employed in most classrooms. Recordings of this type would easily allow future researchers to replicate the findings within this thesis, as well as extend these findings into exciting new areas. With the use of videotaped lectures, eye-tracking technology could be employed to quantitatively measure levels of participants' visual attention to the instructor.

Presentations with high attractive instructors should not only produce more visual attention from participants, but increased performance on learning tasks. Future research along these lines would not only replicate the finding within this thesis, but also help confirm the mechanisms at play.

Conclusion

In summary, this thesis found further support for the power that physical attractiveness has over human person perception. Beyond replication of human biases, this thesis also found that instructor physical attractiveness has the power to influence human ability at learning tasks. This indicates that physical attractiveness may actually play a previously overlooked role in classroom learning. Furthermore, the lack of significant gender effects in this thesis indicates that the effects of physical attractiveness are not driven by human attraction and mating behavior but is more global in origin. Multiple factors affect the outcome of any social interaction, and this is certainly true within the domain of teaching. Although there may be spurious factors at play, it is believed that multiple studies with differing methods can best isolate the role that attractiveness plays on classroom learning. Hopefully future research will further explore this question and provide more definitive data regarding the effects of teacher attractiveness as well as the underlying processes. Beyond understanding the mechanics of attractiveness on memory, the broader implications may come through empirical study of why the effect occurs by looking through the lens of evolutionary psychology. If we have come to understand what occurs and how it occurs, then the next breakthrough will come through the understanding of why.

Appendix A

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.

1 I. 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.

Rosenberg Self-Esteem Scale

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

Mate Value Inventory

Low on this attribute   High on this attribute

Attribute											
Ambitious	0	1	2	3	4	5	6	7	8	9	10
Attractive face	0	1	2	3	4	5	6	7	8	9	10
Desire children	0	1	2	3	4	5	6	7	8	9	10
Faithful/value fidelity	0	1	2	3	4	5	6	7	8	9	10
Generous	0	1	2	3	4	5	6	7	8	9	10
Good body	0	1	2	3	4	5	6	7	8	9	10
Have a good sense of humor	0	1	2	3	4	5	6	7	8	9	10
Healthy	0	1	2	3	4	5	6	7	8	9	10
Independent	0	1	2	3	4	5	6	7	8	9	10
Intelligent	0	1	2	3	4	5	6	7	8	9	10
Kind and understanding	0	1	2	3	4	5	6	7	8	9	10
Loyal	0	1	2	3	4	5	6	7	8	9	10
Financially secure	0	1	2	3	4	5	6	7	8	9	10
Responsible	0	1	2	3	4	5	6	7	8	9	10
Sexually adventurous	0	1	2	3	4	5	6	7	8	9	10
Social status	0	1	2	3	4	5	6	7	8	9	10
Stable personality	0	1	2	3	4	5	6	7	8	9	10

Appendix D

Instructor Evaluation

Rate the instructor's ability to present the material clearly.

     A = excellent B = very good C = good   D = fair   E = poor

Rate the instructor's organization of the material.

     A = excellent B = very good C = good   D = fair   E = poor

Rate the instructor's apparent knowledge of the subject matter.

     A = excellent B = very good C = good   D = fair   E = poor

Rate the instructor's concern for the student's progress in learning.

     A = excellent B = very good C = good   D = fair   E = poor

Rate the instructor's ability to make the subject matter interesting.

     A = excellent B = very good C = good   D = fair   E = poor

Rate the overall teaching ability of the instructor.

     A = excellent B = very good C = good   D = fair   E = poor

How physically attractive do you believe that this instructor is?

 A = very attractive   B = attractive C = average   D= unattractive   E = very

                      unattractive

How old do you believe that this instructor is?

     A = 20 – 30   B = 30 – 40   C = 40 – 50   D = 50 – 60   E = Over 60

How dominant do you believe that this instructor is?

 A = very dominant   B = dominant C = average   D= passive   E = very passive

How happy do you believe that this instructor is?

A = very happy   B = happy   C = average   D= unhappy   E = very

unhappy

How healthy do you believe that this instructor is?

A = very healthy   B = healthy   C = average   D = unhealthy E = Very

unhealthy

How intelligent do you believe that this instructor is?

A = very intelligent   B = intelligent C = average   D=unintelligent   E = very

unintelligent

How competent do you believe that this instructor is?

A = very competent   B = competent C = average   D=incompetent   E = very in

competent

The grade I expect to get on the quiz is

A   B   C   D   F

Lecture Questions

1. What subject was this lecture about?
   a. Chemistry
   b. Physics
   c. Astronomy
   d. Psychology

2. Which of these is a unit of mass?
   a. Meter
   b. Second
   c. Kilogram
   d. Inch

3. Which of these did the professor describe as a very uncivilized measurement?
   a. Meter
   b. Second
   c. Kilogram
   d. Inch

4. What was the name of the volunteer?
   a. Jeff
   b. Zach
   c. Rick
   d. Fred

5. What is the symbol for mass?
   a. L
   b. m
   c. M
   d. Ms

6. When writing the formulas described by the professor, the symbols are placed in
   _____.
   a. Parenthesis
   b. Brackets
   c. Quotation marks
   d. Ellipsis

7. The three fundamental quantities are
   a. Speed, time, and mass
   b. Speed, volume, and density
   c. Length, time, and acceleration
   d. Length, time, and mass

8. "Any measurement that you make without the knowledge of its uncertainty is_____."
   a. Valuable
   b. Void
   c. Meaningless
   d. Meaningful

9. Speed = Length/ _____
   a. Time
   b. Volume
   c. Mass
   d. Density

10. What instrument did the professor use at the start of the first experiment?
    a. A wooden rod
    b. An iron block
    c. A scale
    d. An aluminum rod

11. The professor conducted this experiment because of a story told by_____.
    a. His/her father
    b. His/her mother
    c. His/her grandfather
    d. His/her grandmother

12. Who asked himself the question about the mammals?
    a. Julio
    b. Galileo
    c. The volunteer
    d. The professor

13. What did he want to know about mammals?
    a. Why they cannot fly.
    b. Why they are not larger.
    c. Why they must sleep.
    d. Why they are called mammals.

14. In which condition was the volunteer longer?
    a. Standing up
    b. Laying down
    c. He was the same both ways
    d. Hanging upside down

15. According to the lecture, who uses the measurement of light years?
    a. Astrologers
    b. Astronomers
    c. Astronauts
    d. Archeologists

16. What is the thigh bone of an elephant known as?
    a. Fibula
    b. Lemur
    c. Femur
    d. Tibia

17. If the _____ is higher than a certain level, then the bones will break.
    a. Weight
    b. Pressure
    c. Height
    d. Length

18. Why was it believed that mammals could not be larger?
    a. Their bones would break
    b. Their lungs would collapse
    c. Their hearts would not be large enough
    d. They could not contain enough blood.

19. The discussion of elephants is used to explain _____ arguments.
    a. Proportional
    b. Breaking
    c. Dividing
    d. Scaling

20. The letter "d" is used to represent which aspect of the objects?
    a. Thickness
    b. Length
    c. Density
    d. Weight

21. Which school did the professor visit to examine animal bones?
    a. MIT
    b. Harvard
    c. Stanford
    d. Oxford

22. The mouse is _____ times smaller than the elephant.
    a. One hundred
    b. One thousand
    c. Five hundred
    d. Three thousand

23. Acceleration is _____ per time squared.
    a. Mass
    b. Speed
    c. Length
    d. Weight

24. After examining the bones, the professor concluded that _____ is proportional to L.
    a. Size
    b. Thickness
    c. Density
    d. Speed

25. Which of these is NOT an animal that the professor examined?
    a. Raccoon
    b. Horse
    c. Moose
    d. Goose

Table 1

Correlations between Attractiveness and Teaching Measures

	Clear	Organized	Knowledgeable	Persuasive	Motivated
Attractiveness	.364**	.264**	.169*	.327**	.332**

Note. *p<.05, **p<.01

Appendix G

Table 2

Correlations between Attractiveness and Traits

	Interesting	Happy	Healthy	Competent	Intelligent
Attractiveness	.360**	.184*	.396**	.246**	.146

Note. *p<.05, **p<.01

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Curriculum Vitae

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Education

2012-   **Doctoral candidate, University of Nevada, Las Vegas**
Experimental Psychology

2011   **BA, Texas Tech University**
Psychology, minor in Theatre Arts

Research Interests

- Physical attraction and attractiveness stereotypes
- Evolutionary theories of human mating
- The influence of social comparison on happiness and well-being

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**

Foundations of Social Psychology

Introduction to Psychology

Introduction to Statistical Methods (teaching assistant)

Publications

Millar, M. G. & **Westfall, R. S.** (In Press). The Effects of Implicit Anxiety on the Performance of Skin Self-Examinations. *Journal of Applied Social Psychology*.

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

Conference Presentations

National and International Conference Presentations

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, TX.

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

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., & 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

APSSC RISE Grant Competition   2013, 2014

APSSC RISE Student Research Award   2015

APS Student Grant Competition   2014, 2015

SPSS Student Poster Awards   2014

SPSS Outstanding Research Awards   2014

Service Activities

GPSA psychology representative   2013 – 2015

Grants

GPSA travel sponsorship   2014, 2015