PERSONALITY, INTELLIGENCE, AND ATTRACTIVENESS JUDGMENTS:
THE ACCURACY OF FIRST IMPRESSIONS

A Thesis
by
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FOREWORD

This thesis is written in accordance with the style of the
*Publication Manual of the American Psychological Association (6*th* Edition)* as required by the
Department of Psychology at Appalachian State University

Abstract

First impressions are prominent in our everyday interactions. The way that we perceive others, even if based only on physical appearance, can influence future interactions. The strength of first impressions has been demonstrated through interrater consensus of a target based on seconds of exposure (e.g., Albright, Kenny, & Malloy, 1988). However, we do not have sufficient evidence that trait inferences based on facial appearance are accurate. In the current study, we assessed the accuracy of these initial impressions about the personality and intelligence of others and the role appearance played in these impressions. Specifically, we examined overall attractiveness and three features of appearance that are often considered more attractive because they are thought to signal direct and indirect benefits (e.g., better genes, absence of disease): facial symmetry, averageness, and sexual dimorphism (femininity/masculinity). Targets self-reported their traits, but because self-reports are a less than ideal criterion for assessing the validity of personality judgments, friends of the targets were also asked to complete inventories rating the target. In addition, to control for prior acquaintance of the stranger and target, our study utilized a two-campus approach. We examined the convergence between the self-reported and stranger-reported ratings, and the convergence between the friend-reported and stranger-reported ratings. Results showed that targets' self-reported measures correlated with those of knowledgeable others on all traits, but strangers' ratings failed to converge with those of targets or friends for most traits. There were, however, associations between strangers' ratings of the targets' facial features and overall attractiveness and also strong associations between ratings of the targets' attractiveness and ratings of targets' traits. Targets whose faces were rated as more attractive were assumed to possess more desirable personality traits and higher intellect. We provide strong evidence that strangers use appearance to judge an individual's psychological traits, although it remains unclear specifically which facial aspects are included in their assessment.

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Personality, Intelligence, and Attractiveness Judgments: The Accuracy of First Impressions

Throughout our everyday interactions, it is customary to form first impressions of others. Depending on the context in which we build these initial judgments, they could have various social implications concerning future interactions. For example, according to evolutionary theory, the psychological and physiological cues we perceive in others could influence whether we pursue someone as a potential ally or mate (Sugiyama, 2005). Often times, when forming these first impressions, our judgments are based on a few minutes of interaction with a person. In other cases, it may be common to form judgments based only on a person's appearance.

Past research has examined various qualities of these first impressions, beginning with consensus at zero acquaintance: a situation where individuals make judgments about others with whom they have not previously interacted. The results have shown consistent agreement in observers' ratings of these unacquainted targets (Albright, Kenny, & Malloy, 1988; Albright et al., 1997; Kenny, Horner, Kashy, & Chu, 1992; Levesque & Kenny, 1993). Although several personality constructs have been examined, rating the target's degree of extroversion has led to the highest consensus (Kenny et al.; Levesque & Kenny).

Other researchers have explored the minimal exposure time for reliable trait inferences to occur. Willis and Todorov (2006) found strong correlations for judgments made after 100 milliseconds or after unlimited exposure. Bar, Neta, and Linz (2006) obtained a strong correlation for ratings by strangers who viewed faces for 36 ms or 1700 ms. When allowed longer exposure times, consistency among the observers did not significantly increase. In both studies, the facial features necessary to form first impressions of personality seemed to be extracted very quickly, and personality judgments seemed to rely upon information that was readily available.

Much research has supported the interrater consistency of first impressions after brief exposures (i.e., Bar et al., 2006; Willis & Todorov, 2006). Moreover, researchers have examined the accuracy of first impressions following brief interaction or observation of behavior. One such method of assessing accuracy at zero acquaintance has been to ask previously unacquainted individuals to rate the personality characteristics of one another after interacting for several minutes. The results of these studies have demonstrated that, following interaction, people are able to detect several individual differences in strangers with at least a moderate level of accuracy (Beer & Watson, 2008; Levesque & Kenny, 1993). However, this convergence does not seem to depend on verbal interactions between the previously unacquainted participants. For example, Passini and Norman (1966) found correlations between self and stranger ratings of extroversion, conscientiousness, and openness when participants sat in the same room for 15 minutes without any verbal interaction.

Moreover, accurate judgments may also be discerned vicariously through behavioral observation. This approach typically involves participants watching videotapes of the target individual interacting with another person for several minutes. Results have consistently shown that after exposure to videotapes of the target, stranger ratings of the target's personality traits correlate with self-ratings of those traits (Borkenau & Liebler, 1992; 1993). In a sound film condition, Borkenau and Liebler (1993) found consensus between self-ratings and stranger ratings to be $r = .45$ for extraversion and $r = .23$ for conscientiousness.

Finally, three studies have used photographs to assess accuracy in first impressions. Borkenau and Liebler (1992) found that even a still picture was sufficient for strangers to infer both the extroversion ($r = .33$) and the conscientiousness ($r = .32$) of targets with accuracy. Little and Perrett (2007) used composite images of individuals who rated themselves as high or low on

a trait and had others rate the images for those same traits to see whether consistent facial cues are used for attributing personality. They found that strangers were able to accurately infer personality traits, specifically extroversion and conscientiousness, based on these composite facial images. The results imply that individuals who score high or low on a trait must have similar facial appearances, since features that were common in the single faces were maintained and perceived in the composites, while individual variations that were not shared were averaged out (Little & Perrett). The most recent study to assess accuracy in personality judgments using photographs used aggregated self and peer reports as their criterion measures (Naumann, Vazire, Rentfrow, & Gosling, 2009). When observers viewed spontaneous/unposed photographs of the targets, they were able to accurately judge several personality traits including extroversion ($r =$ .42), openness ($r = .35$), and agreeableness ($r = .20$).

Other personal attributes may also be inferred from facial features which could, in turn, influence decisions about that person. Todorov, Mandisodza, Goren, and Hall (2005) showed that after a 1-second exposure to the faces of political candidates, subjects made competency inferences that predicted United States congressional election outcomes. In another study, inferences of leadership ability based on the faces of Chief Executive Officers (CEOs) predicted how much profit those CEOs' companies made (Rule & Ambady, 2008). Furthermore, Ambady and Rosenthal (1993) investigated consensus of teacher evaluations based on brief video clips. They found that strangers who viewed small video clips of teachers provided ratings that predicted ratings provided by people who had interacted with the same teachers for an entire semester.

In addition to exploring accuracy of personality judgments, the accuracy of perceived intelligence has also been researched. Many early studies have shown inconsistent results as to

whether or not this construct can be accurately judged from facial photographs. For example, a number of studies have demonstrated inaccuracy in strangers' judgments of intelligence (Cook, 1939; Gurnee, 1934; Laird & Remmers, 1924; Markey, 1934). Conversely, other research has documented that strangers can judge intelligence at levels significantly better than chance from exposure to a photograph, especially when using a group of targets that represent a wide range of intelligence (Anderson, 1921; Gaskill, Fenton, & Porter, 1927).

Interestingly, assessing the accuracy of intelligence judgments using photographs has been neglected since these early studies. Rather, short video or audio segments of targets have been used more recently for judging this construct. Reynolds and Gifford (2001) utilized three conditions (auditory plus visual, auditory only, and visual only) to assess how well outside judges could estimate the intelligence of strangers using different types of information. The results showed that both auditory and visual cues were important indicators of actual intelligence, although auditory cues appeared to be more imperative for significant accuracy. Borkenau and Liebler (1993) found that strangers in a sound-film condition were able to make accurate judgments of targets' intelligence, while strangers in a silent-film condition could not. Although both these studies demonstrated that acoustic cues aided the judgment process, they were inconsistent with regard to the value of visual cues alone.

Using data from previous longitudinal studies, Zebrowitz, Hall, Murphy, and Rhodes (2002) examined the role of physical appearance in the accuracy of intelligence judgments based on photographs. The researchers examined whether actual intelligence was correlated with perceived intelligence and whether attractiveness contributed to the accuracy in judgments across an individual's lifespan. They found that people were able to judge intelligence from facial photographs of strangers with above-chance accuracy in childhood and puberty, but not in later

adulthood. In addition, not only did attractiveness correlate with perceived intelligence, but when judged intelligence was accurate (all ages except adulthood), attractiveness correlated with IQ scores. When attractiveness was statistically controlled at these ages, the correlation between perceived intelligence and IQ scores was eliminated, suggesting that attractiveness contributed to the accuracy in judged intelligence.

One possible reason for the consensus among strangers in reference to personality and intelligence judgments might be shared stereotypes about that person's facial features. The research demonstrating accuracy in these judgments may indicate some validity of the stereotypes. A strongly supported explanation for the emergence of these shared perceptions is one's physical attractiveness. There is ample research documenting that attractive people are treated differently from unattractive people in a variety of contexts such as job selection, mate selection, altruism, and peer acceptance (Beehr & Gilmore, 1982; Cunningham, 1986; Dion, Berscheid, & Walster, 1972). However, it is not necessarily just the individual's outward appearance that is causing this differential treatment. Rather, because they appear more or less attractive, we are making additional inferences about personological attributes of people.

Evolutionary theories suggest that physical traits that we perceive as attractive may be considered signals for underlying qualities or conditions (Gangestad & Scheyd, 2005; Gaulin & McBurney, 2004). An individual's quality or condition describes his or her ability to interact with the environment by obtaining resources and using them effectively. Therefore, individuals in a superior condition are presumed to have more successful interactions and have greater resourcefulness (Gangestad & Scheyd). The ability to perceive and act upon these signals which indicate an individual's condition is considered imperative for personal interactions such as mate selection. There are several reasons why individuals in a superior condition may act as better

mates, but they are valued primarily because of the potential genetic and direct benefits they

provide. For example, individuals in a superior condition could have fitter genes to pass on to

offspring and a greater ability to provide material benefits, such as protection and food. In

addition, superior mates will have greater fertility and ability to reproduce and signal a relative

absence of disease (Gaulin & McBurney, 2004; Sugiyama, 2005).

Evolutionary psychology focuses on three facial features that contribute to an assessment

of mate value based on physical attractiveness: facial sexual dimorphism, averageness, and

symmetry (Fink & Penton-Voak, 2002; Gangestad & Scheyd, 2005; Thornhill & Gangestad,

1999). In reference to sexual dimorphism, men's and women's faces differ in several ways, and

certain features of each sex will reflect more or less femininity or masculinity. More feminine

faces are characterized by small chins, large eyes, high cheekbones, and full lips (Cunningham,

1986); whereas, masculine faces feature square jaws, thick brows, and small lips (Keating,

1985). Men tend to prefer women with more feminine faces; however, women do not necessarily

prefer men with more masculine faces. Although men with masculine faces may be perceived as

socially dominant and have high potential for reproductive success, they may also be viewed as

having negative attributes such as coldness and dishonesty (Perrett et al., 1998). Such men may

be less willing to invest exclusively in their mates and assist in caring for offspring (Penton-Voak

et al., 1999; Thornhill & Gangestad, 1999). Therefore, men with more feminine faces tend to be

perceived as warmer, more agreeable, and more honest than men with more masculine faces

(Fink & Penton-Voak). However, other research has shown that perceptions of masculinity in

men were significantly correlated with face attractiveness (Peters, Rhodes, & Simmons, 2007).

These differing results indicate that women may possess different motives when judging male

attractiveness. Different strategies may be adopted depending on whether a woman is giving

preference to characteristics associated with dominance and status or to characteristics more related to paternal investment.

There has also been a great deal of research documenting the attractiveness associated with average versus distinct faces. Natural selection suggests that average values of several population features should be preferred to extreme values. Individuals with qualities close to the mean for the population should be less likely to possess genetic mutations, chromosomal abnormalities, and disease (Grammer & Thornhill, 1994). There is some empirical support for this idea. For example, Langlois and Roggman (1990) digitized samples of faces and created composite images of each sex by averaging several same-sex faces together. For both sexes, the composite images were judged as more attractive than the individual images that comprised the composites. In addition, Peters et al. (2007) found that ratings of facial averageness correlated with ratings of attractiveness.

Finally, bilateral facial symmetry is considered another indicator of genetic quality and is theorized to represent an individual's general quality of development, including underlying heterozygosity and parasite resistance (Thornhill & Gangestad, 1993). Research which has studied this facial feature has shown differing results as to whether or not symmetry influences ratings of attractiveness. Peters et al. (2007) found that ratings of facial symmetry were correlated with ratings of attractiveness and Grammer and Thornhill (1994) found that actual measurements of facial symmetry correlated with attractiveness ratings in opposite-sex faces. Studies that have manipulated faces to be more symmetric have found increased attractiveness ratings of the faces (Perrett et al., 1998). Other studies suggest that the relationship between symmetry and facial attractiveness is more complex. Scheib, Gangestad, and Thornhill (1999) found a relationship between women's ratings of attractiveness for men's faces and measured

symmetry of the faces, but women were unable to rate symmetry accurately. Furthermore, when symmetry cues were removed and only half-faces were shown, half-face attractiveness covaried with measured symmetry just as highly as full-face attractiveness did. The results suggest that other features of appearance, besides actual symmetry, may be used in ratings of perceived symmetry.

Just as evolutionary theory supports judgment of attractiveness as a form of assessing mate value, it also strongly supports personality judgment when assessing an individual's social value. Humans are an extremely social species, and our interactions in cooperative and coalitional relationships are just as crucial for survival as in mating relationships. Throughout evolutionary life history, attraction towards individuals who demonstrated signals of high social value would result in more successful interactions (Sugiyama, 2005). Our ancestors, for example, would prefer traits such as good health, intelligence, and loyalty when choosing an ally. Therefore, the ability to accurately judge one's personality is considered crucial when forming a reciprocal alliance.

When studying personality, the most common way to reference individual differences uses the Five Factor Model (FFM). These five factors (neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness) were originally adopted because research showed that they captured the fundamental ways in which individuals differ (Digman, 1990). Buss (1991) proposed an evolutionarily based explanation suggesting that the five dimensions summarize the individual differences that best represent features of the social landscape to which humans have adapted. In other words, they are the most adaptively consequential individual differences (Larsen & Buss, 2005). Throughout life, we are faced with questions concerning the psychological characteristics of others ("On whom can I depend when I'm in need?" taps into

one's conscientiousness or "Who is likely to rise in the social hierarchy?" taps into one's level of extraversion). In order to effectively answer these questions, evolutionary theory suggests that humans have evolved to possess built-in psychological mechanisms that detect these key individual differences in others (Larsen & Buss).

Just as choosing an attractive mate serves evolved functions of increasing genetic and direct benefits, choosing an ally or mate who possesses certain positive personality traits serves to increase the likelihood of solving adaptive problems. The traits included in the FFM encompass those adaptively consequential individual differences that humans should notice and remember because they have the most relevance for solving social adaptive problems (Buss, 1995). Using factor analysis, Ellis, Simpson, and Campbell (2002), demonstrated how the FFM's traits were linked with solutions to such critical problems. For example, those high on conscientiousness were judged to be dependable in times of need, well-organized, and showed potential for future earnings. Such attributes are predictive of one's ability to obtain resources and status, a significant consideration when choosing someone as a potential ally or mate.

The question of whether personality can be inferred from physical appearance is not entirely clear. The fact that we have seen high consensus on certain traits, based only on photographs, suggests that perceivers are using elements of facial appearance as cues to personality. The research demonstrating accuracy in judgments indicates that perceivers are correct in their evaluations. While it is uncertain exactly which facial features are included in an assessment of personality, one aspect of appearance that people seem to be utilizing is an individual's level of physical attractiveness. Evidence for this reasoning comes from studies which show that physical attractiveness can be used to explain the variation in ratings of extraversion (Albright et al., 1988; Kenny et al., 1992). People judged as more attractive were

also judged to be more sociable, talkative, and good-natured (Albright et al.). Because attractive

people are usually perceived as having more socially desirable traits, there could be a stereotype

operating. But if individuals are accurate in their personality judgments, and if attractiveness

explains the variation in judgments, then attractiveness could be an indicator of one's actual

personality. It is possible that because attractive people are treated differently in a variety of

contexts (such as mate selection) and experience more success than unattractive people, these

experiences have an effect on their personality development.

A further linkage in this evolutionary framework of personality considers the dimensions

of personality found in non-humans. Gosling and John (1999) reviewed 19 different studies that

researched personality factors in non-humans species. Using the FFM, they reported traits

identified in each of 12 species and categorized these different qualities into the corresponding,

or related, human FFM dimension. Across a wide range of taxa, different species exhibited

individual differences which could be organized along these dimensions, suggesting that

biological mechanisms are responsible for the similar personality factors in humans and non-

humans.

Personality, intelligence, and attractiveness are all vital components in social interaction

and relationships. While attractiveness is an outward cue which signals genetic quality,

personality and intelligence are less apparent and need to be inferred. Our perception of these

constructs shows our assessment of others as potential resources (e.g., "What can this person do

for me?"; Gaulin & McBurney, 2004). It is relevant then to evaluate the accuracy of these

judgments because of their importance in predicting an individual's likelihood of engaging in an

interaction. Because each of these components may be used as measures of potential social and

mate value, it is possible that attractiveness, namely facial cues because of their prominent display, aids the process of making personality and intelligence inferences.

Overview of the Present Study

Past research has documented consistency among observers in their first impressions after seconds (or less) of exposure. In addition, we have seen accuracy from inferences made after several minutes of contact or from viewing thin slices of nonverbal behavior. This study attempts to extend the current research by intersecting these two areas of research. Few studies have shown that trait inferences from facial appearance alone are valid. In other words, although we have seen interrater consensus in first impressions based on seconds of exposure, we do not have sufficient evidence regarding the accuracy of those judgments. Do these initial inferences provide an impetus for our decisions about with whom to ally ourselves? This study examines the accuracy of these initial impressions about a person.

Although three other studies have assessed the accuracy of first impressions using only a still photograph (Borkenau & Lieber, 1992; Little & Perrett, 2007, Naumann et al., 2009), our study differs from these in several ways. First, studies which have assessed accuracy have relied primarily on self-stranger agreement. However, there is strong evidence which suggests that self-reports are a less than ideal criterion to evaluate the validity of personality judgments made by strangers (Funder & Sneed, 1993; Kolar, Funder, & Colvin, 1996). For example, Kolar et al. assessed the accuracy of personality judgments made by the self and close acquaintance by using videotapes of the targets as a behavioral criterion. Personality judgments made by a person's close peers had better predictive validity of that person's behavior than the person's own personality self-judgment. When providing self-reports, it is possible that people may present more positive characteristics than are actually true. Certainly, the perspective people have of

themselves could be biased because of the restrictive angle from which they view their behavior (Funder & Sneed). Therefore, when researching first impressions, it is important to move beyond comparisons of self and stranger ratings to comparisons of knowledgeable other and stranger ratings. In our study, we not only asked the target to complete self-reported measures, but also had the target indicate a close friend who rated the target's psychological and physiological characteristics.

In addition to assessing the accuracy of personality judgments, we also investigated the accuracy of perceived intelligence by examining self-reports of both Grade Point Average (GPA) and SAT scores. Frey and Detterman (2004) concluded that SAT scores are a sufficient measure for general intelligence by demonstrating a correlation of .82 between the two measures. Furthermore, past research has provided support for the use of self-reports of these tests for intelligence assessment. Cassady (2001) found significant correlations between students' self-reported SAT and their actual scores and also between self-reported GPA and their official record.

In addition to determining the accuracy of personality and intelligence judgments made by strangers, we also explored how physical attractiveness may factor into this general assessment. Although some past studies have focused on separate ratings of face and body to evaluate attractiveness, the results of recent research show that facial attractiveness is a better predictor of overall attractiveness than is body attractiveness (Currie & Little, 2009; Peters et al., 2007). These findings imply that facial attractiveness may be more important than body attractiveness in people's evaluations of overall attractiveness and valued more than body attractiveness in human mate choice decisions. Therefore, for the purposes of this study, we focused only on facial attractiveness as a measure of overall attractiveness.

Finally, prior studies have not sufficiently controlled for prior acquaintance of the judge and target. Especially on a university campus, it is likely that participants may have had some sort of interaction before the study. Although Borkenau and Liebler (1992) did recruit judges from outside and targets from inside the University of Bielefeld as a precaution against prior acquaintance, both groups were residents of the same larger community. Our study utilized a two-campus approach in which the strangers were students at another university in another state. We then examined the convergence between the friend-reported and stranger-reported ratings and the convergence between the self-reported and stranger-reported ratings.

Based on the literature reviewed above, we specified several direct hypotheses regarding the accuracy of strangers' judgments. There is ample support that observers consistently judge extraversion with a strong level of accuracy (e.g., Borkenau & Liebler, 1992; Little & Perrett, 2007; Naumann et al., 2009). In addition, Naumann et al. demonstrated moderate support for observers' accuracy in judging both openness and conscientiousness. Although research studying accuracy in intelligence judgments based on photographs has produced mixed results, more recent research led us to expect moderate accuracy in stranger ratings of intellect. Not only did Zebrowitz et al. (2002) find that strangers in their study were able to judge intelligence with above-chance accuracy, but they found an average accuracy correlation of .28 in a review of 12 previous studies. Therefore, based on this latest analysis, we hypothesized that strangers would be able to accurately judge extraversion, conscientiousness, openness, and intellect from the targets' photographs. Finally, there is strong support that the three facial features of sexual dimorphism, distinctiveness, and symmetry are instrumental in judging an individual's perceived level of attractiveness (Perrett et al., 1998; Peters et al., 2007). Therefore, we predicted that

ratings of these three facial features would strongly correlate with overall ratings of attractiveness.

The remaining analyses were more exploratory in nature. Although there is not sufficient evidence in the personality literature to support strong hypotheses regarding the accuracy of strangers' ratings of the other traits included in the FFM (neuroticism and agreeableness), we also examined these relationships. Additionally, the majority of research examining intelligence judgments has relied upon ratings of competence or general intelligence. We expanded this array of criteria by asking observers to report the target's estimated GPA and SAT scores.

Methods

Participants

To control for prior acquaintance between targets and judges, participants were recruited at two different locations: Targets and friends were recruited from Appalachian State University (ASU) in Boone, North Carolina, and the judges were recruited from the University of Wisconsin-Eau Claire (UWEC). Institutional Review Board (IRB) approval for this study was obtained from ASU on February 24, 2010 and extended on February 18, 2011 (see Appendices A and B). Additionally, IRB approval was obtained from UWEC on May 26, 2010.

Participants from ASU were recruited through the psychology subject pool. The pool consists of students enrolled in introductory and intermediate psychology classes who have elected to enter the psychology subject pool to fulfill a research requirement or extra credit for the course. On the day of the study, all participants were asked to bring a close friend with them whom they had known for at least one month. Participants from UWEC were also enrolled in undergraduate psychology courses.

A statistical power analysis indicated that a sample of at least 211 would be required to detect the correlational relationships found in previous research ($r = .2$, $\alpha = .05$, $\beta = .10$). Therefore, our goal was to recruit 211 target-friend pairs and 211 judges. The final sample consisted of 198 target-friend pairs who participated from ASU, and 197 judges who participated from UWEC.

Measures

Personality. We used the International Personality Item Pool (IPIP; Goldberg, 1999) version of Costa and McCrae's (1992) revised NEO Personality Inventory (NEO PI-R) to assess the target's personality. This IPIP scale was designed to measure constructs similar to the five major factors in the NEO PI-R. The scale includes 50 items with 10 items designated to each factor: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The answer format used a five-point Likert scale ranging from *very inaccurate* to *very accurate*. Cronbach's alphas for target, friend, and stranger reports on each scale are listed in Table 1.

Intellect. To measure the target's intellect, we used an IPIP scale that measured constructs similar to those in Gough's California Psychological Inventory (Johnson, 2000). The IPIP intellect scale consists of 11 items and uses a five-point Likert scale that ranges from *very inaccurate* to *very accurate*. Cronbach's alphas are listed in Table 1.

In addition to the IPIP intellect scale, we also asked for self-reports of the participants' GPA and SAT scores. Friends of the target were asked to estimate the target's GPA and SAT composite score. Strangers rating the photographs were asked to estimate the target's GPA and ACT test composite score. UWEC relies upon the ACT rather than the SAT for admission decisions; therefore, this test was more familiar to the judges.

Attractiveness. To measure attractiveness, we used an IPIP scale from Saucier (1997). The scale includes 10 items and uses a five point Likert scale that ranged from *very inaccurate* to *very accurate*. Cronbach's alphas are listed in Table 1.

In addition to the IPIP attractiveness scale, we also developed several other items to measure specific features of attractiveness. Faces were rated on various aspects of appearance, including facial symmetry, distinctiveness, and sexual dimorphism (masculinity/femininity). Each appearance variable used a seven-point Likert scale (e.g., *not at all symmetric* to *extremely symmetric*; *extremely feminine* to *extremely masculine*).

Procedure

Targets and their friends were each administered different versions of the instrument. Targets completed self-reported measures of the instrument (see Appendix C), while their friends completed an alternate version that asked them to rate the target on the various measures.

Upon completion of the instrument, the targets were taken to a separate room where their pictures were taken against a white background. Frontal head-shot photographs of the targets were taken using a Canon 6.0 megapixel digital camera. In order to control for the expression of behavioral components which might reveal personality, we asked participants to maintain a neutral expression and look directly at the camera.

Color photographs (size 4 inches x 6 inches) of the targets were then judged by UWEC undergraduate psychology students. Each judge rated only one target's photograph. The judges completed a version of the questionnaire similar to the targets' friends. Specifically, judges were asked to rate the photographs on the variables of interest (e.g., personality, attractiveness).

Results

Descriptive statistics for each of the variables of interest are listed in Table 2. Means and standard deviations are listed for each reporter by target sex. To compare similarity in targets' self-reported ratings with those of knowledgeable others (our primary criterion for assessing accuracy in strangers' judgments), we examined correlations between these two groups of respondents for each of the traits. The first column in Table 3 displays these results. Targets' self-reported traits were correlated with friends' ratings of targets' traits for all measures, demonstrating strong consensus between targets and friends on targets' traits. The mean correlation for the personality variables was .51, ranging from .44 for neuroticism to .59 for extraversion. Additionally, when comparing targets' self-reported GPAs, SAT scores, and scores on the intellect scale, with friends' estimates of such measures, we found that targets' self-reported scores were correlated with friends' estimates on all three measures.

To determine the accuracy of personality judgments, we examined the correlations between the strangers' ratings of the target's personality based on the photographs and the friends' ratings. We ran bivariate correlations for each of the five personality dimensions. No correlations between strangers' ratings and friends' ratings for each factor (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) were statistically significant (see Table 3). Additionally, strangers' ratings did not correlate with targets' self-reports for any of the personality factors except openness to experience, $r(197) = .16, p = .021$.

To examine the accuracy of intelligence judgments, we looked at the correlations between the stranger and friend estimates of the targets' intellect and between stranger-estimated and self-reported GRE and SAT scores. As shown in Table 3, strangers' estimates of targets' intellect correlated neither with friends' estimates, nor with targets' self-reported scores from the intellect

scale. Additionally, strangers' estimates of targets' academic achievement were not correlated with targets' self-reported scores and or with friends' estimates of targets' scores. All correlations between strangers' and friends' estimates and between strangers' estimates and targets' reports were nonsignificant.

After assessing the accuracy of both the personality and intelligence judgments, we honed in on the strangers' perceptions of the target. First, we examined the relationships among the strangers' ratings of the targets' appearance. Generally, strangers' overall attractiveness ratings correlated with each of the three facial markers: symmetry $r(193) = .24$, $p = .001$; distinctiveness, $r(193) = .14$, $p = .049$; and sexual dimorphism, $r(192) = -.24$, $p = .001$. There were no statistically significant intercorrelations among symmetry, distinctiveness, and sexual dimorphism when viewing ratings across target sex (all r's < .09). However, as displayed in Table 4, when the appearance ratings were examined within sex, strangers' ratings of female targets' overall attractiveness positively correlated with ratings of symmetry and distinctiveness, and negatively correlated with ratings of sexual dimorphism, such that more feminine faces were rated as more attractive. Strangers' ratings of male targets' overall attractiveness did not correlate with ratings for any of the facial markers, although sexual dimorphism was correlated with distinctiveness, such that more masculine faces were rated as being more distinct.

After examining bivariate correlations among the stranger rated appearance variables, we used the three markers of attractiveness in a multiple regression to predict overall ratings of stranger-rated attractiveness across target sex (see Table 5). When considered together, individuals' perceived symmetry, distinctiveness, and sexual dimorphism significantly predicted their overall attractiveness, $F(3, 191) = 10.01$, $p < .001$, $R = .37$. Additionally, each of the three facial markers independently contributed to overall ratings of attractiveness. Next, we examined

how the markers of attractiveness predicted overall attractiveness within each sex. For male

targets, perceived symmetry, distinctiveness, and sexual dimorphism did not significantly predict

their overall attractiveness $F(3, 72) = 1.10$, $p = .357$, $R = .05$. For female targets, perceived

symmetry, distinctiveness, and sexual dimorphism significantly predicted their overall

attractiveness, $F(3, 118) = 8.86$, $p < .001$, $R = .19$. Females' perceived symmetry and sexual

dimorphism independently contributed to their overall attractiveness but perceived

distinctiveness did not (see Table 5).

As a final component, we examined strangers' estimates of the targets' psychological

traits in light of their ratings of the targets' appearance. As shown in Table 6, strangers' overall

attractiveness ratings were strongly correlated with their ratings of the targets' personality and

intelligence such that more attractive targets were judged to possess more positive traits.

Relationships between the three major markers of attractiveness—symmetry, distinctiveness, and

sexual dimorphism—and the psychological traits were examined next (see Table 6). Symmetry

was positively correlated with extraversion, conscientiousness, agreeableness, integrity, and GPA

and negatively correlated with neuroticism. Distinctiveness was positively correlated with

openness, extraversion, and intellect and negatively correlated with neuroticism. Sexual

dimorphism was correlated with conscientiousness and GPA only, such that more feminine faces

were associated with higher conscientiousness and higher GPAs. However, when analyses were

run within sex, there were no statistically significant correlations between sexual dimorphism

and any of the examined traits.

Strangers' ratings of three facial markers and overall attractiveness were also used as

predictors in a multiple regression to evaluate whether these aspects of appearance predicted

strangers' ratings of targets' psychological traits. As shown in Table 7, the combined effect of the

four predictor appearance variables was statistically significant for all of the personality and intelligence ratings. With respect to independent contributions, overall attractiveness was a statistically significant predictor of each of the psychological traits. Symmetry was independently related to conscientiousness only, while distinctiveness made independent contributions to extraversion and neuroticism only. Sexual dimorphism was not independently related to any of the psychological traits neither when viewing the full sample nor when it was examined within target sex.

Discussion

Strangers Do Not Make Accurate Trait Judgments

Several studies have demonstrated accuracy from personality inferences made after several minutes of contact or from viewing thin slices of nonverbal behavior (e.g., Beer & Watson, 2008; Borkenau & Liebler, 1993). In our study we sought to extend these findings by exploring whether the information necessary to make accurate judgments is readily available in a person's facial appearance. We found that when strangers rated the personality of targets based only on still facial photographs, their judgments lacked accuracy. Ratings from the targets' friends were our primary criterion for assessing accuracy in stranger judgments, but we used targets' self-reports as a second criterion. A similar pattern of findings emerged for both criteria: Strangers' ratings failed to converge with both friends' ratings of targets' personality and targets' self-reported personality.

Our results also showed that strangers did not provide accurate judgments of the targets' intelligence based on photographs for both the objective (i.e., GPA and standardized test scores) and subjective (i.e., intellect) measures. As described prior, studies that have attempted to evaluate accuracy in intelligence judgments based only on appearance have produced mixed

results (Borkenau & Liebler, 1993; Reynolds & Gifford, 2001). Although there are potential

benefits to accurately inferring one's intelligence based on appearance, our findings suggest that

when facial features are the only cues available and when one must rely only on his or her

personal inference, the information may not be sufficient for making precise judgments. Again,

the pattern of findings was similar regardless of criterion variable examined: Strangers' ratings

failed to converge with friends' ratings of targets' intelligence or targets' self-reported

intelligence.

We propose two possible explanations for why strangers in our study were unable to

accurately judge personality and intelligence. First, a primary difference between our study and

the few studies that have shown accuracy in personality judgments based on still photographs

(Borkenau & Liebler, 1992; Naumann et al., 2009) is that each of these studies had multiple

observers rating each target. Relying upon aggregated observer ratings has a higher likelihood of

attaining accuracy because the specificity associated with any individual rater is diminished.

Indeed, Naumann et al. found that the accuracy of single observers was considerably lower than

the aggregated observers' ratings. It is likely that because our study involved only one stranger

rating each target, we lacked the necessary reliability for achieving accuracy in judgments.

Furthermore, we instructed our participants to maintain a neutral expression in their

photographs in order to control for the expression of behavioral components which might reveal

personality. When Naumann et al. (2009) had one group of observers rate standardized

photographs (targets were instructed to a maintain neutral expression) and another group rate

spontaneous photographs (targets not instructed on how to pose), observers in the standardized

condition failed to make accurate judgments for most traits (in fact, extraversion was the only

FFM trait that reached significance for both the aggregated and single observer ratings). In

combination with these findings, our results suggest that when individuals are restricted in their facial expression, observers may lack some of the required cues to detect personality.

Facial Features Predict Attractiveness in Women

We identified several relationships between the strangers' ratings of the targets' appearance. Consistent with past studies, we found that symmetry was positively correlated with ratings of overall attractiveness. Across sex, faces rated as more symmetric were rated as more attractive. Generally, an individual's level of facial symmetry should be indicative of phenotypic quality and overall health, thereby influencing perceptions of attractiveness. When viewing this relationship within target sex, the finding remained significant for women, but not for men. It appears that facial symmetry may be more strongly associated with female than male attractiveness.

Also consistent with previous research, our results showed that sexual dimorphism was negatively correlated with ratings of overall attractiveness. Little and Hancock (2002), along with Perrett et al. (1998) documented similar findings which demonstrate that feminine faces are generally perceived as more attractive than masculine faces. Similar to symmetry ratings in our study, this association held for female targets only. Because masculinity is typically associated with dominance, a preferred trait in males, it is possible that masculine faces may be perceived as attractive in some situations (e.g., short-term mating), while less masculine faces are perceived as attractive in other situations (e.g., long-term mating). This observation is similar to how men and women may be perceived in other domains, where men sometimes have more available routes to positive evaluations than women do. For example, although both male and female managers tend to be evaluated positively if they rely upon a transformational leadership style, men may rely on more transactional or laissez-faire styles without the detrimental effects on their

evaluations that women experience (Eagly, Johannessen-Schmidt, & van Engen, 2003). In the same respect, the current study suggests there may be more ways for men to be perceived attractive than there are for women.

Contrary to past research, ratings of distinctiveness were correlated with overall attractiveness, but not in the expected direction. The more distinct a face was rated, the more attractive it was rated, though the relationship was only marginally significant. As with symmetry and sexual dimorphism, this finding held for women, but not for men. Previous research has replicated the link between ratings of averageness (distinctiveness reversed) and overall attractiveness ratings (Langlois & Roggman, 1990; Peters et al., 2007). Evolutionary psychologists have proposed that individuals with average facial dimensions have characteristics that are close to the mean of the population which should signal an absence of disease or genetic mutations (Thornhill & Gangestad, 1993). Replicating the phrasing of past studies examining this construct (e.g., Rhodes, Sumich, & Byatt, 1999; Rhodes & Tremewan, 1996), we asked participants to rate how "distinct" the target's face was. This was meant to act as a precaution against raters interpreting "average" to mean average-looking (i.e., not very "good-looking"), instead of the intended meaning – having average values for spatial dimensions.

It is unclear as to why ratings of distinctiveness did not show a negative association with overall ratings of attractiveness. It is possible that there were ordering effects in place since most of the single-item Likert scales had the more positive ratings on the right side of the scale (see Appendix C). Perhaps strangers who were rating the target as more positive on the first few scales simply remained consistent as they continued to answer the items. Additionally, our clarifying statement ("To what extent is their face noticeably different from others?") may not have been as evocative as ones used in other studies where they clarified distinctiveness by

asking how "easy/difficult it would be to pick the targets' face out of a crowd at a busy railway station" (Rhodes & Tremewan, 1996).

Appearance Predicts Trait Judgments

Finally, our findings revealed several associations between strangers' ratings of the targets' appearance (i.e., the facial markers and overall attractiveness) and ratings of the targets' traits. Overall attractiveness was strongly correlated with all of the personality and intelligence measures. Furthermore, perceived attractiveness accounted for most of the explained variance in traits when using the four appearance variables in multiple regression. In no regression did an additional facial feature add more than 5% to the explained variance beyond overall attractiveness alone. Targets whose faces were rated as more attractive by strangers were assumed to possess more desirable personality traits and higher intellect.

The relationships between ratings of the different facial features and rating of the targets' traits were varied. Symmetry was related to the most psychological traits, including positive associations with conscientiousness, extroversion, agreeableness, and GPA and a negative association with neuroticism. If symmetry is indicative of genetic quality, then it is reasonable for strangers to judge individuals as having very symmetrical faces as also having preferred traits, such as intelligence and emotional stability. Although it is unclear why there was an association with GPA, and not with intellect or SAT. Ratings of distinctiveness were positively associated with openness, extraversion, and intellect and negatively associated with neuroticism. Similar to symmetry, if averageness acts as a cue to good genes, we should see relationships in the opposite direction. However, as with the positive relationship between distinctiveness and attractiveness, there were possibly methodological issues with how our study assessed distinctiveness. Sexual dimorphism was negatively associated with both conscientiousness and

GPA, such that more feminine faces were rated as being more conscientious and as having higher GPAs. However, both of these correlations were only marginally significant and did not hold when viewing the sample within sex. While sexual dimorphism may act as a facial marker of overall attractiveness, findings from this study suggest that it does not appear to act in the same way that symmetry (and possibly distinctiveness) does as a marker of preferred psychological traits.

Future Directions

We plan to address several methodological issues in future replications of the current study. First, in reference to examining accuracy of trait judgments, we plan to use multiple raters. Having a different stranger rate each target's photograph likely introduced many idiosyncratic differences in the ratings. Using multiple raters for each target's photograph will allow us to create an aggregated stranger rating that should have reduced specificity and increased reliability to use for comparisons with friend and target ratings.

Additionally, we plan two modifications for assessing the targets' distinctiveness. To eliminate possible order and carryover effects, we will counterbalance the order of the single-item appearance measures and reverse-scale the response options of some of the items. If strangers were relying on consistency with the Likert scales, manipulating the order of the items and response options should produce less biased responses. Also, we will use stronger clarification for defining distinctiveness in the questionnaire, striving for a balance between strangers understanding our intended meaning (i.e., how distinct is the target's face compared to the population) without being overly conspicuous or suggestive in describing the positive connotations associated with averageness.

Conclusions

The current study has provided strong evidence that people use facial cues for making trait judgments but failed to document accuracy in those judgments. Improved methods may illuminate the question of accuracy of judgments more completely, but the role appearance plays in those judgments is more evident. When examining the influence of the four appearance-related variables included in this study, overall attractiveness exhibited the strongest associations with trait inferences. Although our three facial markers were predictive of ratings of overall attractiveness, they did not add much incremental explanation to the strangers' trait inferences. There appears to be more to an observer's assessment of personality and intelligence than just relying on the three specific features examined here.

References

Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero

    acquaintance. *Journal of Personality and Social Psychology, 55,* 387-395.

Albright, L., Malloy, T. E., Dong, Q., Kenny, D. A., Fang, X., Winquist, L., & Yu, D. (1997).

    Cross-cultural consensus in personality judgments. *Journal of Personality and Social*

    Psychology, 72, 558-569.

Ambady, N., & Rosenthal, R. (1993). Half a minute: Predicting teacher evaluations from thin

    slices of nonverbal behavior and physical attractiveness. *Journal of Personality and*

    Social Psychology, 64, 431-441.

Anderson, L. D. (1921). Estimating intelligence by means of printed photographs. *Journal of*

    Applied Psychology, 5, 152-155.

Bar, M., Neta, M., & Linz, H. (2006). Very first impressions. *Emotion, 6,* 269-278.

    doi:10.1037/1528-3542.6.2.269

Beehr, T. A., & Gilmore, D. C. (1982). Applicant attractiveness as a perceived job-relevant

    variable in selection of management trainees. *Academy of Management Journal, 25,* 607-

    617.

Beer, A., & Watson, D. (2008). Personality judgment at zero acquaintance: Agreement, assumed

    similarity, and implicit simplicity. *Journal of Personality Assessment, 90,* 250-260.

    doi:10.1080/00223890701884970

Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero acquaintance.

    Journal of Personality and Social Psychology, 62, 645-657.

Borkenau, P., & Liebler, A. (1993). Convergence of stranger ratings of personality and intelligence with self-ratings, partner ratings, and measured intelligence. *Journal of Personality and Social Psychology, 65,* 546-553.

Buss, D. M. (1991). Evolutionary personality psychology. *Annual Review of Psychology, 42,* 459-491.

Buss, D. M. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry*, *6*, 1-30. doi:10.1207/s15327965pli0601

Cassady, J. C. (2001). Self-reported GPA and SAT: A methodological note. *Practical Assessment, Research & Evaluation*, 7. Retrieved from http://PAREonline.net/getvn.asp?v=7&n=12

Cook, S. W. (1939). The judgment of intelligence from photographs. *The Journal of Abnormal and Social Psychology, 34,* 384-389.

Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

Cunningham, M. R. (1986). Measuring the physical in physical attractiveness: Quasi-experiments on the sociobiology of female facial beauty. *Journal of Personality and Social Psychology, 50,* 925-935.

Currie, T. E., & Little, A. C. (2009). The relative importance of the face and body in judgments of human physical attractiveness. *Evolution and Human Behavior, 30,* 409-416. doi:10.1016/j.evolhumbehav.2009.06.005

Digman, J. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology*, *41,* 417-440.

Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, *24*, 285-290. doi:10.1037/h0033731

Eagly, A. H., Johannesen-Schmidt, M. C., & van Engen, M. L. (2003). Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin*, *129*, 569-591. doi:10.1037/0033-2909.129.4.569

Ellis, B., Simpson, J., & Campbell, L. (2002). Trait-specific dependence in romantic relationships. *Journal of Personality*, *70*, 611-659. doi:10.1111/1467-6494.05019

Fink, B., & Penton-Voak, I. (2002). Evolutionary psychology of facial attractiveness. *Current Directions in Psychological Science, 11,* 154-158.

Frey, M. C., & Detterman, D. K. (2004). Scholastic assessment or *g*? The relationship between the Scholastic Assessment Test and general cognitive ability. *Psychological Science, 15,* 373-378.

Funder, D. C., & Sneed, C. D. (1993). Behavioral manifestations of personality: An ecological approach to judgmental accuracy. *Journal of Personality and Social Psychology, 64,* 479-490.

Gangestad, S. W., & Scheyd, G. J. (2005). The evolution of human physical attractiveness. *Annual Review of Anthropology, 34,* 523-548. doi:10.1146/annurev.anthro.33.070203.143733

Gaskill, P. C., Fenton, N., & Porter, J. P. (1927). Judging the intelligence of boys from their photographs. *Journal of Applied Psychology, 11,* 394-403.

Gaulin, S., & McBurney, D. (2004). *Evolutionary Psychology* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the

    lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt, &

    F. Ostendorf (Eds.), *Personality Psychology in Europe* (Vol. 7, pp. 7-28). Tilburg, The

    Netherlands: Tilburg University Press.

Gosling, S., & John, O. (1999). Personality dimensions in nonhuman animals: A cross-species

    review. *Current Directions in Psychological Science*, *8*, 69-75. doi:10.1111/1467-

    8721.00017

Grammer, K., & Thornhill, R. (1994). Human (*Homo Sapiens*) facial attractiveness and sexual

    selection: The role of symmetry and averageness. *Journal of Comparative Psychology,*

    108, 233-242.

Gurnee, H. (1934). An analysis of the perception of intelligence in the face. *The Journal of*

    Social Psychology, 5, 82-90.

Johnson, J. A. (2000). Predicting observers' ratings of the Big Five from the CPI, HPI, and NEO-

    PI-R: A comparative validity study. *European Journal of Personality, 14*, 1-19.

Keating, C. (1985). Gender and the physiognomy of dominance and attractiveness. *Social*

    Psychology Quarterly, *48*, 61-70. doi:10.2307/3033782

Kenny, D. A., Horner, C., Kashy, D. A., & Chu, L. (1992). Consensus at zero acquaintance:

    Replication, behavioral cues, and stability. *Journal of Personality and Social Psychology*,

    62, 88-97.

Kolar, D. W., Funder, D. C., & Colvin, C. R. (1996). Comparing the accuracy of personality

    judgments by the self and knowledgeable others. *Journal of Personality, 64,* 311-337.

    doi:10.1348/000712606X109648

Laird, D. A., & Remmers, H. (1924). A study of estimates of intelligence from photographs. *Journal of Experimental Psychology, 7,* 429-446.

Langlois, J. H., & Roggman, L. A. (1990). Attractive faces are only average. *Psychological Science, 1,* 115-121.

Larsen, R. J., & Buss, D. M. (2005). *Personality psychology: Domains of knowledge about human nature*. Boston: McGraw-Hill.

Levesque, M. J., & Kenny, D. A. (1993). Accuracy of behavioral predictions at zero acquaintance: A social relations model. *Journal of Personality and Social Psychology, 65*, 1178-1187.

Little, A. C., & Hancock, P. B. (2002). The role of masculinity and distinctiveness in judgments of human male facial attractiveness. *British Journal of Psychology*, *93*, 451-464. doi:10.1348/000712602761381349

Little, A. C., & Perrett, D. I. (2007). Using composite images to assess accuracy in personality attribution to faces. *British Journal of Psychology, 98,* 111-126.

Markey, F. V. (1934). Variations in judgment. *Journal of Applied Psychology, 18,* 297-303.

Naumann, L. P., Vazire, S., Rentfrow, P. J., & Gosling, S. D. (2009). Personality judgments based on physical appearance. *Personality and Social Psychology Bulletin, 35,* 1661-1671.

Passini, F. T., & Norman, W. T. (1966). A universal conception of personality structure? *Journal of Personality and Social Psychology, 4,* 44-49.

Penton-Voak, I. S., Perrett, D. I., Castles, D. L., Koyabashi, T., Burt, D. M., Murray, L. K., & Minamisawa, R. (1999). Female preferences for male faces change cyclically. *Nature, 399,* 741-742.

Perrett, D. I., Lee, K. J., Penton-Voak, I. S., Rowland, D. R., Yoshikawa, S., Burt, D. M., …

    Akamatsu, S. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature, 394,*

    884-887.

Peters, M., Rhodes, G., & Simmons, L. W. (2007). Contributions of the face and body to overall

    attractiveness. *Animal Behaviour, 73,* 937-942.

Reynolds, D., & Gifford, R. (2001). The sounds and sights of intelligence: A lens model channel

    analysis. *Personality and Social Psychology Bulletin*, *27*, 187-200.

    doi:10.1177/0146167201272005

Rhodes, G., Sumich, A., & Byatt, G. (1999). Are average facial configurations attractive only

    because of their symmetry? *Psychological Science*, *10*, 52-58. doi:10.1111/1467-

    9280.00106

Rhodes, G., & Tremewan, T. (1996). Averageness, exaggeration, and facial attractiveness.

    Psychological Science, *7*, 105-110. doi:10.1111/j.1467-9280.1996.tb00338.x

Rule, N. O., & Ambady, N. (2008). The face of success: Inferences from chief executive officers'

    appearance predict company profits. *Psychological Science, 19,* 109-111.

Saucier, G. (1997). Effects of variable selection on the factor structure of person descriptors.

    Journal of Personality and Social Psychology, 73, 1296-1312.

Scheib, J. E., Gangestad, S. W., & Thornhill, R. (1999). Facial attractiveness, symmetry, and cues

    of good genes. *Proceedings of the Royal Society B: Biological Sciences, 266,* 1913-1917.

Sugiyama, L. S. (2005). Physical attractiveness in adaptationist perspective. In D. M. Buss (Ed.),

    The handbook of evolutionary psychology (1st ed., pp. 292-343). Hoboken, NJ: John

    Wiley & Sons.

Thornhill, R., & Gangestad, S. W. (1993). Human facial beauty: Averageness, symmetry, and

parasite resistance. *Human Nature, 4,* 237-269.

Thornhill, R., & Gangestad, S. W. (1999). Facial attractiveness. *Trends in Cognitive Sciences, 3,*

452-460.

Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from

faces predict election outcomes. *Science, 308*, 1623-1626. doi:10.1126/science.1110589

Willis, J., & Torodov, A. (2006). First impressions: Making up your mind after a 100-ms

exposure to a face. *Psychological Science, 17,* 592-598.

Zebrowitz, L. A., Hall, J. A., Murphy, N. A., & Rhodes, G. (2002). Looking smart and looking

good: Facial cues to intelligence and their origins. *Personality and Social Psychology

Bulletin, 28,* 238-249. doi:10.1177/0146167202282009

Appendix A

Subject: IRB Notice
From: IRB <irb@appstate.edu>
Date: Wed, 24 Feb 2010 15:11:16 -0500 (EST)
To: nelsonla@appstate.edu
CC: webbrm@appstate.edu

To: Lyndsay Nelson
Psychology
CAMPUS MAIL

From: Dr. Timothy Ludwig, Institutional Review Board

Date: 2/24/2010

RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)

Study #: 10-0156
Study Title: Rating personal characteristics
Submission Type: Initial
Expedited Category: (6) Collection of Data from Recordings made for Research Purposes,(7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.

Approval Date: 2/24/2010
Expiration Date of Approval: 2/23/2011

This submission has been approved by the Institutional Review Board for the period indicated. It has been determined that the risk involved in this research is no more than minimal.

Investigator's Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects occur it must be reported immediately to the IRB.

CC:
Rose Webb, Psychology

Appendix B

Subject: IRB Notice
From: IRB <irb@appstate.edu>
Date: Fri, Feb 18, 2011 at 4:38 PM
To: nelsonla@appstate.edu
CC: webbrm@appstate.edu

To: Lyndsay Nelson
Psychology
CAMPUS MAIL

From: Dr. Timothy Ludwig, Institutional Review Board

RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)

Date: 2/18/2011

Study #: 10-0156

Study Title: Rating personal characteristics

Submission Type: Renewal
Expedited Category: (6) Collection of Data from Recordings made for Research Purposes,(7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.

Renewal Date: 2/18/2011
Expiration Date of Approval: 2/17/2012

This request for renewal has been approved by the above Institutional Review Board for the period indicated.

Investigator's Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects occur it must be reported immediately to the IRB.

CC:
Rose Webb, Psychology

Appendix C

Use the following scale to rate the extent to which the following statements describe you and record your answers on the scantron provided.

A	**B**	**C**	**D**	**E**
Very Inaccurate	**Moderately Inaccurate**	**Neither**	**Moderately Accurate**	**Very Accurate**

1. Often feel blue	44. Don't see things through
2. Feel comfortable around people	45. Believe that I am important
3. Find political discussions interesting	46. Make people feel at ease
4. Have a sharp tongue	47. Seldom feel blue
5. Keep myself well-groomed	48. Can be trusted to keep my promises
6. Have a vivid imagination	49. Like to take responsibility for making decisions
7. Am skilled in handling situations	50. Tend to vote for liberal political candidates
8. Am very pleased with myself	51. Avoid difficult reading material
9. Lie to get myself out of trouble	52. Am always prepared
10. Waste my time	53. Accept people as they are
11. Enjoy thought-provoking movies	54. Pay no attention to my appearance
12. Just know that I will be a success	55. Am not easily bothered by others
13. Respect others	56. Feel like an imposter
14. Do not enjoy going to art museums	57. Make friends easily
15. Believe that honesty is the basis for trust	58. Question my ability to do work properly
16. Pay attention to details	59. Do not like art
17. Am not interested in abstract ideas	60. Find it difficult to get down to work
18. Don't talk a lot	61. Know that I am not a special person
19. Am less capable than most people	62. Insult people
20. Am often down in the dumps	63. Am trusted to keep secrets
21. Get back at others	64. Dislike myself
22. Like to tidy up	65. Have little to say
23. Shirk my duties	66. Know my strengths
24. Try to avoid complex people	67. Carry the conversation to a higher level
25. Avoid philosophical discussions	68. Carry out my plans
26. Keep improving myself	69. Believe that others have good intentions
27. Have a good word for everyone	70. Panic easily
28. Like to take responsibility for making decisions	71. Don't care about dressing nicely
29. Keep my promises.	72. Am the life of the party
30. Believe in the importance of art	73. Tend to vote for conservative political candidates
31. Avoid philosophical discussions	74. Do just enough work to get by
32. Don't like to draw attention to myself	75. Am true to my own values
33. Get chores done right away	76. Cut others to pieces
34. Am not highly motivated to succeed	77. Feel comfortable with myself
35. Suspect hidden motives in others	78. Get things done quickly
36. Rarely get irritated	79. Would describe my experiences as somewhat dull
37. Like to exaggerate my troubles	80. Enjoy hearing new ideas
38. Feel that my life lacks direction	81. Enjoy contemplation
39. Know how to captivate people	82. Make plans and stick to them
40. Have difficulty understanding abstract ideas	83. Keep in the background
41. Don't like to get dressed up	84. Am not interested in theoretical discussions
42. Am hard to understand	85. Prefer to stick with things that I know
43. Have frequent mood swings	86. Feel that I'm unable to deal with things

Please record your responses to the following items directly on this sheet.

87. Compared with other people your age and gender, how physically attractive do you think you are?

☐ ☐ ☐ ☐ ☐ ☐ ☐
Not at all   Average   Extremely
Attractive   Attractive

88. Compared with other people your age and gender, how sexy do you think you are?

☐ ☐ ☐ ☐ ☐ ☐ ☐
Not at all   Average   Extremely
Sexy   Sexy

89. How symmetrical do you think your face is? (Think of an imaginary, vertical line going down the center of your face; to what extent is one half an exact reflection/mirror image of the other?)

☐ ☐ ☐ ☐ ☐ ☐ ☐
Not at all   Average   Extremely
Symmetrical   Symmetrical

90. How feminine or masculine do you think your face is?

☐ ☐ ☐ ☐ ☐ ☐ ☐
Not at all   Average   Extremely
Feminine   Masculine

91. How distinct do you think your face is? (To what extent is your face noticeably different from others?)

☐ ☐ ☐ ☐ ☐ ☐ ☐
Not at all   Average   Extremely
Distinct   Distinct

92. Compared with other people your age and gender, how healthy do you think you are?

☐ ☐ ☐ ☐ ☐ ☐ ☐
Below   Average   Above
Average   Average

Please answer the following demographic questions:

93. Gender: ☐ Male   ☐ Female

94. Age: _____ years

95. Height: _____ (for ex. 5' 6")

96. Weight: _____ pounds

97. SAT composite score from high school:
        _____ (sum of all three subtests, range 600-2400)
            OR
        _____ (sum of math and critical reading, range 400-1600)

98. If you can recall your individual section scores from the SAT, please report them below:
        Mathematics: _____ (range 200-800)
        Critical Reading: _____ (range 200-800)
        Writing: _____ (range 200-800)

99. Current undergraduate cumulative GPA: _____

Table 1

Inter-Item Reliabilities (Alpha) of IPIP Scales for Target, Friend, and Stranger Reports

IPIP Scale	Targets[a]	Friends[a]	Strangers[b]
Openness	.82	.86	.84
Conscientiousness	.83	.85	.84
Extraversion	.81	.83	.84
Agreeableness	.80	.84	.86
Neuroticism	.85	.86	.89
Intellect	.65	.73	.83
Attractiveness	.72	.72	.88

Note. IPIP = International Personality Item Pool.
[a]$n = 198$. [b]$n = 197$.

Table 2

Descriptive Statistics for Personality, Intellect, and Appearance Measures

Measure	Males			Females		
	Targets *M (SD)*	Friends *M (SD)*	Strangers *M (SD)*	Targets *M (SD)*	Friends *M (SD)*	Strangers *M (SD)*
Openness[a]	3.62 (0.65)	3.39 (0.74)	2.93 (0.76)	3.60 (0.69)	3.46 (0.62)	3.19 (0.59)
Conscientiousness[a]	3.46 (0.63)	3.52 (0.73)	2.93 (0.71)	3.77 (0.59)	3.80 (0.68)	3.29 (0.69)
Extraversion[a]	3.66 (0.61)	3.69 (0.77)	3.02 (0.73)	3.74 (0.60)	3.83 (0.62)	3.14 (0.66)
Agreeableness[a]	3.60 (0.62)	3.68 (0.57)	3.27 (0.68)	3.85 (0.55)	3.84 (0.74)	3.32 (0.73)
Neuroticism[a]	2.24 (0.63)	2.16 (0.63)	2.72 (0.65)	2.45 (0.70)	2.43 (0.79)	2.88 (0.66)
Intellect[b]	3.76 (0.67)	3.52 (0.78)	2.91 (0.85)	3.53 (0.69)	3.36 (0.65)	3.07 (0.68)
GPA	2.90 (0.59)	2.94 (0.61)	3.02 (0.38)	3.19 (053)	3.39 (0.41)	3.20 (0.34)
SAT/ACT	1725.20 (229.89)	1683.07 (273.81)	24.47 (3.19)	1698.12 (240.78)	1722.18 (271.18)	25.02 (3.25)
Attractiveness[a]	3.81 (0.52)	3.83 (0.59)	3.05 (0.75)	4.12 (0.51)	4.08 (0.49)	3.48 (0.73)
Symmetry[c]	4.58 (1.04)	5.30 (1.16)	4.63 (1.24)	4.74 (1.19)	5.58 (1.15)	4.91 (1.22)
Distinctiveness[c]	4.99 (1.26)	5.53 (1.02)	3.70 (1.32)	4.56 (1.29)	5.43 (1.21)	3.52 (1.23)
Sexual Dimorphism[c]	5.28 (1.16)	5.55 (1.21)	4.95 (1.19)	2.70 (1.22)	2.33 (1.54)	3.23 (1.25)

Note. Targets (*n* = 198); Friends (*n* = 198); Strangers (*n* = 197). GPA = Grade Point Average. *M* = Mean. *SD* = Standard Deviation.
[a]10 item scales with 5-point Likert scales. [b]11 item scale with 5-point Likert scale. [c]Single items with 7-point Likert scales.

Table 3

Accuracy (Correlations) of Personality and Intelligence Ratings Among Targets, Friends, and Strangers

Trait	Target – Friend	Stranger – Target	Stranger – Friend
Openness to Experience	.56**	.16*	.07
Conscientiousness	.49**	.05	.14
Extraversion	.59**	.07	.07
Agreeableness	.47**	-.08	-.07
Neuroticism	.44**	-.01	.06
Intellect	.48**	-.02	-.02
SAT/ACT	.37**	-.09	-.12
GPA	.74**	.10	.09

Note. Targets ($n = 198$); Friends ($n = 198$); Strangers ($n = 197$). GPA = Grade Point Average.
*$p < .05$. **$p < .01$.

Table 4

Intercorrelations for Strangers' Ratings of Targets' Appearance as a Function of Targets' Sex

Measure	1	2	3	4
1. Overall Attractiveness	—	.35**	.14*	-.24**
2. Symmetry	.01	—	.03	.01
3. Distinctiveness	.21	.08	—	-.12
4. Sexual Dimorphism	.09	.19	.36**	—

Note. Intercorrelations for ratings of female targets ($n = 121$) are presented above the diagonal, and intercorrelations for ratings of male targets ($n = 76$) are presented below the diagonal.
*$p < .05$. **$p < .01$.

Table 5

Strangers' Ratings of Targets' Facial Features Predicting Their Ratings of Targets' Overall Attractiveness

	b	SEb	β	F	R^2
			Full Sample[a]		
Constant	2.81	.28		10.01***	.14
Symmetry	.14	.04	.23**		
Distinctiveness	.09	.04	.17*		
Sexual Dimorphism	-.13	.04	-.25***		
			Males[b]		
Constant	2.58	.48		1.10	.05
Symmetry	-.01	.07	-.01		
Distinctiveness	.12	.07	.20		
Sexual Dimorphism	.02	.08	.03		
			Females[c]		
Constant	2.69	.355		8.86***	.19
Symmetry	.21	.051	.35***		
Distinctiveness	.06	.050	.10		
Sexual Dimorphism	-.14	.050	-.23**		

Note. [a]$n = 197$. [b]$n = 121$. [c]$n = 76$.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 6

Correlations Between Strangers' Ratings of Targets' Appearance and Strangers' Ratings of Targets' Psychological Traits

Trait	Overall Attractiveness	Symmetry	Distinctiveness	Sexual Dimorphism	
Openness	.34**	.06	.17*	-.09	(.06, .02)
Conscientiousness	.68**	.29**	.13	-.16*	(-.00, -.05)
Extraversion	.55**	.19**	.21**	-.10	(.11, -.14)
Agreeableness	.49**	.21**	.11	-.08	(-.04, -.07)
Neuroticism	-.51**	-.22**	-.21**	-.00	(.00, .11)
Intellect	.35**	.12	.19**	-.05	(.03, .02)
SAT/ACT	.35**	.04	.13	-.06	(.17, -.11)
GPA	.50**	.19**	.14	-.16*	(.11, -.12)

Note. $N = 197$. GPA = Grade Point Average.
ªCorrelations in parentheses are strangers' ratings of targets' sexual dimorphism separated by targets' sex (Males, Females).
*$p < .05$, **$p < .01$.

Table 7

Combined Strangers' Ratings of Targets' Appearance Predicting Their Ratings of Targets' Psychological Traits

	Attract.	Symm.	Distinct.	Sex. Dimorph.		
Outcome Variable	β	β	β	β	F	R^2
Openness	.38***	-.04	.12	-.01	9.45***	.17
Conscientiousness	.63***	.13*	.04	-.01	41.79***	.47
Extraversion	.55***	.06	.13*	.02	25.58***	.35
Agreeableness	.47***	.10	.03	.03	15.66***	.25
Neuroticism	-.50***	-.10	-.13*	-.11	20.84***	.31
Intellect	.34***	.04	.14	.02	8.52***	.15
SAT/ACT	.36***	-.04	.08	.02	6.86***	.13
GPA	.45***	.08	.08	-.07	16.29***	.26

Note. N = 197. Attract. = Attractiveness; Symm. = Symmetry; Distinct. = Distinctiveness; Sex Dimorph. = Sexual Dimorphism; GPA = Grade Point Average.
*p < .05, ***p < .001.

VITA

Lyndsay Ann Nelson was born in Ashland, WI, on June 10, 1986. She attended Our Lady of the Lake Catholic School until 8th grade and graduated from Ashland High School in June 2004. The following autumn, she entered the University of Wisconsin-Eau Claire. While earning her Bachelor's degree from UWEC, Lyndsay was a student scholar in the McNair Program. Through her involvement with this program, she worked with Dr. April Bleske-Rechek to design studies which utilized the Trolley Problem. Lyndsay received a Bachelor of Arts degree with a major in Psychology in June 2009. That August, she enrolled in the General/Experimental Psychology Master's program at Appalachian State University where she worked under the guidance of Dr. Rose Mary Webb. The Master of Arts degree was awarded in May 2011. Lyndsay seeks admission to a Ph.D. program where she can continue both her education and research.