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Influences of observer sex, facial masculinity, and gender role identification on first impressions of men's faces

Kathryn R. Macapagal, M.Ed.^{1,2,3}, Heather A. Rupp, Ph.D.², and Julia R. Heiman, Ph.D.^{1,2}

¹Department of Psychological and Brain Sciences, Indiana University, Bloomington, Indiana, USA

²The Kinsey Institute for Research in Sex, Gender, and Reproduction, Bloomington, Indiana, USA

Abstract

Evaluations of male faces depend on attributes of the observer and target and may influence future social and sexual decisions. However, it is unknown whether adherence to hypertraditional gender roles may shape women's evaluations of potential sexual partners or men's evaluations of potential competitors. Using a photo task, we tested participants' judgments of attractiveness, trustworthiness, aggressiveness, and masculinity of male faces altered to appear more masculine or feminine. Findings revealed that higher hypermasculinity scores in male observers were correlated with higher attractiveness and trustworthiness ratings of the male faces; conversely, higher hyperfemininity scores in female observers were associated with lower ratings on those traits. Male observers also rated the faces as more aggressive than did female observers. Regarding ratings by face type, masculinized faces were rated more aggressive than feminized faces, and women's ratings did not discriminate between altered faces better than men's ratings. These results suggest that first impressions of men can be explained in part by socioculturally- and evolutionarily-relevant factors such as the observer's sex and gender role adherence, as well as the target's facial masculinity.

Keywords

Face perception; hypermasculinity; hyperfemininity; sex differences

INTRODUCTION

First impressions based on physical appearance can provide enough information for a person to decide to approach or avoid someone unfamiliar. In time-limited social and sexual situations characterized by uncertainty and risk, facial cues are used to evaluate potential competitors and partners rapidly and accurately. Evaluations of trustworthiness, attractiveness, likeability, competence, and aggressiveness in response to a person's face can take less than a second, remain constant even after much longer exposures (Willis & Todorov, 2006), and may even reflect the target individual's true personality (Penton-Voak, Pound, Little, & Perrett, 2006). These assessments can have significant consequences; for example, one study demonstrated that inferences of competence from 1-second exposure to faces of U.S. congressional candidates predicted election outcomes (Todorov, Mandisodza, Goren, & Hall, 2005). While physical and psychological attributes can be inferred from the target's facial architecture alone (e.g., Dion, Berscheid, & Walster, 1972; Langlois & Roggman, 1990; Thornhill & Gangestad, 1999), observer characteristics (e.g., hormonal

³To whom correspondence should be addressed at the Department of Psychological and Brain Sciences, Indiana University, 1101 East Tenth Street, Bloomington, Indiana 47401. Phone: 812-856-7216; Fax: 812-856-4544; karmacap@indiana.edu.

states, sexual partner status; Macrae, Alnwich, Milne, & Schloerscheidt, 2002; Rupp et al., 2009) can explain individual differences in appraisals of the target on socially and sexually relevant traits. Together, these studies suggest that first impressions of faces are made quickly and intuitively, are influenced by complex factors, and can have important social or sexual implications.

Research demonstrates that men and women infer behavioral or reproductive strategies from male facial masculinity (e.g., Kruger, 2006; Waynforth, Delwadia, & Camm, 2005). For heterosexual women, facial cues are particularly salient when determining a man's potential as a sexual partner. From an evolutionary perspective, female reproductive success relies on the ability to identify sexual partners with high genetic quality or traits indicative of long-term paternal investment, which can be inferred from certain facial cues (e.g., square jaw; Rhodes, Chan, Zebrowitz, & Simmons, 2003; Thornhill & Gangestad, 1999). These characteristics are dependent upon testosterone, an immunosuppressant. Compared to men more feminine in appearance, men with pronounced masculine facial features are presumed to have higher genetic quality, as this display of masculinity demonstrates the ability to overcome health costs associated with higher testosterone levels (Thornhill & Gangestad, 1999). Hence, females adept at identifying and inferring mate value from men's facial appearance may have a greater chance of securing a superior partner than females less sensitive to these cues. Heterosexual men, on the other hand, use facial characteristics to determine whether other men are threats to their social status or sexual relationships (Buss, 1998; Kruger, 2006). For example, a man with more masculine facial characteristics may signal his social position over a less masculine observer. In turn, the observer can use this information to protect or accrue resources, status, or mates successfully. Masculine male faces are viewed as more dominant, less honest and cooperative (Boothroyd, Jones, Burt, & Perrett, 2007; Johnston, Hagel, Franklin, Fink, & Grammer, 2001; Perrett et al., 1998), whereas feminine male faces are perceived as more friendly and trustworthy (Kruger, 2006), which may inform decisions to protect mates or assert social status.

In addition to features of the target, individual differences among male and female observers impact first impressions of men's faces and help explain within- and between-sex variability in face perception studies. Factors relevant to sexual motivation are associated with women's preferences for male faces. For instance, women who endorsed liberal attitudes about casual sex rated male faces as more attractive than women with more conservative ones (Provost, Kormos, Kosakoski, & Quinsey, 2006), suggesting that women open to casual sexual encounters may be less selective when selecting short-term sexual partners. Moreover, women demonstrate greater preference for facial masculinization in potential sexual partners when considering a short-term relationship (Little, Jones, Penton-Voak, Burt, & Perrett, 2002) and during the fertile follicular phase of the menstrual cycle (Penton-Voak & Perrett, 2000). A recent study (Rupp et al., 2009) found that women not currently in sexual relationships spent more time evaluating male faces on a number of traits than did women with sexual partners, implying that having a sexual partner may suppress interest in other men. Although there is less research focused on men's same-sex evaluations, variables relevant to social behavior and mate choice provide a partial account for within-sex differences in face perception. Jones et al. (2007) revealed that the propensity for risky behavior and sensation seeking in men – an indicator of better physical health and thus higher mate value – was associated with a preference for feminized female faces, but not feminized male faces, suggesting that face preference is condition-dependent. Additionally, in comparison to taller, more dominant men, Watkins et al. (2010) found that shorter males were more sensitive to dominance in masculinized male faces, a mechanism that may be adaptive for quickly determining the social position of potential rivals.

Apart from biological and psychological factors, sociocultural factors – namely, adherence to traditional gender roles – may influence socially and sexually relevant impressions of male faces. Some evidence indicates that adherence to a masculine or feminine gender role is associated with preferences for particular qualities in social and sexual partners.

Hyperfemininity is a strong adherence to traditionally feminine attitudes and beliefs believed to result from gender role socialization and learning (McKelvie & Gold, 1994; Murnen & Byrne, 1994). Hyperfemininity comprises stereotypically feminine beliefs about the nature of romantic heterosexual relationships and is, in part, characterized by a marked preference for traditional, masculine behavior in potential sexual partners and higher tolerance for male sexual aggression and coercion (Maybach & Gold, 1994). One study determined that women high in hyperfemininity preferred written descriptions of hypothetical men with many stereotypically masculine attributes, compared to men with fewer (Smith, Byrne, & Fielding, 1995). Gender role adherence may not only produce biases for particular character traits, but certain facial phenotypes as well: women who identified as more masculine on the Bem Sex Role Inventory rated images of masculine men as more attractive than did women low in masculinity (Johnston et al., 2001). However, it is unknown whether the dimension of *hyperfemininity* specifically impacts perceptions of men's faces. When obtaining visual information about potential mates, hyperfeminine women may favor masculine facial cues more than less feminine women, which may lead to different first impressions of men's personality and physical characteristics.

Strong endorsement of traditional male gender attitudes, also known as *hypermasculinity* (Mosher & Sirkin, 1984) also influences how men process socially and sexually salient information (Bartolucci & Zeichner, 2003). Hypermasculinity results from social and cultural influences that favor stereotypically masculine actions and attitudes (Mosher & Tomkins, 1988). Men high in hypermasculinity espouse traditional macho beliefs regarding competition, women, and sex, among other areas, and are thought to interpret social and sexual cues differently from less hypermasculine men (Bartolucci & Zeichner, 2003). Although research is clear regarding how hypermasculine men view potential female partners (e.g., Smith et al., 1995), how it impacts perceptions of individuals of the same sex is rather equivocal. For instance, while hypermasculine men have been described as homophobic (Barron, Struckman-Johnson, Quevillon, & Banka, 2008; Parrott, Adams, & Zeichner, 2002) and competitive and suspicious of other men (Bartolucci & Zeichner, 2003), one study found that hypermasculine men actually rated written descriptions of masculine men more favorably than less masculine men, indicating that men prefer social partners who are similar to themselves (Smith et al., 1995). Thus, it is unclear how men's gender role adherence may be related to first impressions of male faces varying in masculine and feminine characteristics, and further examination of this relationship may augment our understanding of how individual differences shape or predict male social behavior.

The present study examined influences of observer sex and gender role adherence on ratings of masculinized and feminized male faces on attributes relevant to sociosexual evaluations (i.e., attractive, aggressive, masculine, and trustworthy). Although prior research has examined differences in men's and women's evaluations of male faces (e.g., Buckingham et al., 2006; Jones et al., 2007; Rennels et al., 2008), few have attempted to investigate how these ratings may vary by hypermasculine or hyperfeminine gender role adherence. Knowing how hypertraditional gender role identification is associated with male face evaluation could further illuminate how socialized or enculturated propensities influence first impressions of social or sexual partners. A secondary goal of this study was to test observers' ability to detect slight variations in facial architecture by examining ratings attributed to masculinized and feminized versions of the same face. Sensitivity to variations in facial masculinity and femininity is thought to reflect men's and women's different social and sexual goals (Perrett et al., 1998).

Hypotheses

Gender role identification was expected to influence observers' trait ratings of male faces on a face perception task. Because hyperfemininity is associated with a marked preference for masculine men, women high in gender role identification were expected to rate the masculinized photos more positively overall than women low in gender role identification. Furthermore, since research is conflicting regarding hypermasculine men's view of other men (Bartolucci & Zeichner, 2003; Parrott et al., 2002; Smith et al., 1995), we made no predictions for how men would rate the images.

Regarding sex differences in male face ratings, compared to male observers, female observers were predicted to rate the faces as more attractive and their ratings were expected to show better discrimination between the feminized and masculinized faces, which would replicate results from a previous study (Kruger, 2006). Heterosexual women and men have different social and sexual goals when evaluating men – women may view them as potential mates, whereas men may view them as potential competitors, which is likely to influence their evaluations. The face manipulation itself was predicted to yield different trait ratings. We expected that both sexes would view masculinized faces as more aggressive, while feminized faces would be viewed as more trustworthy. Finally, as a manipulation check, the masculinized faces were expected to be rated as more masculine in appearance than feminized male faces.

METHOD

Participants

Participants were 45 women and 32 men recruited from the undergraduate psychology subject pool at a large Midwestern university. The mean age of participants was 19.4 years ($SD = 1.6$ years, range = 18–27), and the majority (84.4%) were of European American descent. The remaining participants were of Asian/Pacific-Islander (9.1%), African-American (2.6%) or other (3.9%) backgrounds. Participants self-reported as heterosexual and not on hormonal contraception (women), and all received partial course credit for their participation. All procedures were approved by the university's institutional review board.

Measures

Demographics and Sexual History Questionnaire (DSHQ)—This questionnaire was adapted from Bancroft et al. (2003) to assess variables potentially influencing the participants' responses to the experiment. This questionnaire covers demographic information, sexual orientation, romantic relationships, and frequency of different types of sexual activity. Other questions addressed whether or not participants had a current romantic partner, and whether or not participants had a current sexual partner. Forty-three participants endorsed that they did not have a romantic partner, and 34 participants reported they were currently in a romantic relationship. Thirty-nine participants reported not being in a sexual relationship, and 38 participants indicated that they had a current sexual partner. Romantic and sexual partner status, number of lifetime sexual partners, and age did not influence any of the dependent variables and will not be discussed further.

Hypermasculinity Inventory (HI; Mosher & Sirkin, 1984)—The HI is a 30-item questionnaire intended to assess the degree to which an individual espouses attitudes toward calloused sexual relations and violent or dangerous behaviors stereotypically associated with masculinity. The HI's three subscales, Calloused Sex Attitudes, Violence as Manly, and Danger as Exciting, are comprised of 10 questions each and are added to form a composite score. Items have a forced-choice format, and endorsement in the criterion-keyed direction is worth one point. Scores range from 0–30, with higher scores denoting a “macho

personality syndrome”, and the normative mean is $M = 11.0$, $SD = 6.8$. The HI demonstrated good internal consistency ($\alpha = .89$), and internal consistency of the individual subscales ranged from .82–.88 (Mosher & Sirkin, 1984). Cronbach’s alpha for the HI in the present study was .81.

Hyperfemininity Scale (HS; Murnen & Byrne, 1991)—The HS is a 26-item scale parallel in nature to the HI. The HS assesses the degree to which an individual adheres to a socialized female gender role. Hyperfemininity is characterized by an emphasis on the importance of romantic relationships with men and the use of sexuality to maintain the relationship, as well as a preference for traditionally masculine men and more tolerant attitudes toward sexually aggressive male behavior. Similar to the HI, the scale has a forced-choice format, and endorsement in the criterion-keyed direction is worth one point. Scores on this scale range from 0–26; higher scores denote traditional attitudes and beliefs regarding women’s gender roles. Normative means on the HS are $M = 8.5$, $SD = 3.6$, and the scale demonstrates good internal consistency ($\alpha = .76$) and test-retest reliability ($r = .89$; Murnen & Byrne, 1991). Cronbach’s alpha for this scale in the present study was .61.

Stimuli

The task stimuli, used in previous work (Rupp et al., 2009), consisted of 20 original male faces and their corresponding 30% masculine and 30% feminine manipulations for a total of 60 photos. For each of the images, an original version of the face was altered to appear more masculine and feminine using Psychomorph software (Rowland & Perrett, 1995). Unlike previous studies that compared the masculine and feminine versions only, all three versions of the faces were used (see Rennels, Bronstad, & Langlois, 2008). The photos in this stimulus set were black and white in color and depicted frontal views of faces of one Hispanic, five Black, and 14 White men approximately the same age as the participants with neutral facial expressions. All photos were taken from the public domain and scaled to the same dimension (640×480 pixels). The task was presented using MediaLab2004 Research Software (Empirisoft Corporation, 2004) on a Dell CRT monitor with moderate brightness and contrast settings.

Procedure

Participants were invited to the laboratory to take part in a study examining men’s and women’s responses to male faces. The experimenter provided a brief overview of the study, after which participants were given adequate time to review the consent form and ask clarifying questions. After obtaining participants’ signed consent, the experimenter provided the participants with a questionnaire packet to be completed by hand and exited the testing room. Following the self-report measures, participants were seated in front of a computer in the testing room to complete a practice version of the photo task, followed by the actual photo task. Photos on the practice task were not used in the actual task.

The computer displayed the instructions, “Please rate the following photos by clicking on a number on the rating scale. Please answer as quickly and honestly as possible.” The task involved the serial presentation of photos of male faces. The face was located in the center of the screen, and beneath the photo was one of four traits (i.e., attractive, aggressive, trustworthy, or masculine). Participants rated the photo for this trait on a 7-point Likert scale, ranging from *not at all* (1) to *extremely* (7), as in Kruger (2006). Participants indicated their rating by clicking the mouse on a numbered button on the computer screen, after which the computer displayed the next trait of four for the same face. After rating one face on all four traits, the computer screen advanced to another face to be rated on the four traits. Participants rated all four traits for each of the 60 faces for a total of 240 trials. Photos were presented in random order, and for each photo, the four traits also were presented in random

order to avoid priming or carryover effects. Participants were never informed that they were viewing three different versions of the same face, or that the images varied in masculinity and femininity. Following the computer task, participants completed a brief exit questionnaire about their experiences during the study.

Data analysis

Data were analyzed using SPSS (Version 16.0, SPSS, Inc.) As in Smith et al. (1995), hypermasculinity and hyperfemininity scores were divided by median split into high and low groups with roughly equal numbers of participants. Bivariate correlations were computed to determine associations between hypermasculinity and hyperfemininity scores and trait ratings collapsed across the three face manipulations. High and low group assignments based on hypermasculinity and hyperfemininity were then combined and treated as a single gender role identification factor for further analysis. To test influences of the within-subjects variables of face manipulation and the between-subjects variables of sex and gender role identification on participants' trait ratings, we performed a 3 (face manipulation: masculinized, original, feminized) $\times$ 4 (trait: attractive, aggressive, masculine, trustworthy) $\times$ 2 (participant sex: male/female) $\times$ 2 (gender role identification: high/low) mixed-factor analysis of variance (ANOVA). Significant effects were explored with pairwise comparisons using Bonferroni corrections.

RESULTS

Women's mean score on the Hyperfemininity Scale was $M = 7.5$, $SD = 3.3$, ranged from 1–15, with a median of 7.0. Men's mean score on the Hypermasculinity Inventory was $M = 9.5$, $SD = 5.1$, ranged from 2–20, with a median of 9.5. Bivariate correlations showed that higher hyperfemininity scores, but not higher hypermasculinity scores, were associated with more lifetime sexual partners, $r(43) = .43$, $p = .003$. Furthermore, correlations between gender role identification scores and trait ratings collapsed across all face types revealed that higher hypermasculinity scores were associated with significantly higher trustworthiness ratings, $r(30) = .38$, $p = .032$, and marginally higher attractiveness ratings, $r(30) = .34$, $p = .056$, attributed to the faces. Conversely, in female participants, higher hyperfemininity scores were associated with significantly lower trustworthiness, $r(43) = -.32$, $p = .025$, and attractiveness ratings, $r(43) = -.33$, $p = .03$. There were no significant correlations with hypermasculinity, hyperfemininity, and ratings of aggressiveness or masculinity. Dividing the scale scores by median split for the ANOVA resulted in the assignment of 16 men and 23 women in the low gender role identification group, and 16 men and 22 women in the high gender role identification group.

The 3 (face manipulation) $\times$ 4 (trait) $\times$ 2 (participant sex) $\times$ 2 (gender role identification) ANOVA revealed a main effect of trait, $F(3, 219) = 23.270$, $p < .001$, and a main effect of face manipulation, $F(2, 146) = 5.066$, $p = .007$. These effects were qualified by an interaction between trait and face manipulation, $F(6, 438) = 4.133$, $p < .001$. Follow-up tests on this significant interaction revealed that the masculinized faces were rated as more masculine ($M = 4.03$, $SE = .07$) than both the feminized faces ($M = 3.88$, $SE = .08$; $p < .001$) and original faces ($M = 3.95$, $SE = .08$; $p = .012$), and that the original faces were rated as more masculine than the feminized faces ($p = .039$; Figure 1). These results supported our initial prediction, indicating that participants accurately discriminated between the types of faces despite not being told of the facial manipulations.

Additional tests showed that the masculinized faces were rated as marginally more aggressive ($M = 3.56$, $SE = .06$) than the feminized faces ($M = 3.49$, $SE = .07$; $p = .055$) but not the original faces ($p = .30$, ns), partially supporting our hypothesis that participants would judge male faces more masculine in appearance to be more aggressive as well. The

original faces were also rated as more attractive ($M = 3.51$, $SE = .09$) than the feminized photos ($M = 3.46$, $SE = .08$; $p = .037$). However, contrary to our prediction that feminized faces would be judged as more trustworthy than the masculinized faces, the analysis did not yield any significant differences in trustworthiness ratings between the different types of male faces.

Finally, the ANOVA showed a significant interaction between trait and sex, $F(3, 219) = 3.347$, $p = .02$. Follow-up tests revealed that men rated the faces as significantly more aggressive ($M = 3.68$, $SE = .10$) than did women ($M = 3.38$, $SE = .10$; $p = .02$; Figure 2), although no other sex differences in ratings of attractiveness, masculinity, or trustworthiness emerged. The ANOVA did not yield any significant effects with gender role identification.

DISCUSSION

This study examined whether gender role adherence and participant sex influenced first impressions of masculinized, feminized, and unaltered male faces. Findings from our correlational analyses suggest that, overall, hypermasculinity and hyperfemininity are associated with differences in initial evaluations of male faces on sociosexually relevant attributes. Higher hypermasculinity scores were associated with higher ratings of attractiveness and trustworthiness in male faces, whereas higher hyperfemininity scores were linked with lower ratings of these traits. However, when taking into account the different face types, subtle facial masculinization and feminization influenced men's and women's ratings of socially and sexually relevant traits independently of gender role identification. As predicted, participants viewed masculinized faces as more masculine than the original or feminized photos and more aggressive than the feminized faces. Interestingly, the masculinized faces were not significantly different in ratings of trustworthiness compared to the original or feminized faces. Furthermore, men judged the faces as generally more aggressive than did women, which indicated a sex difference in trait ratings, but not in the expected direction.

This study is one of few that examines potential gender role biases in the social evaluation of male faces and contributes to the growing literature comparing men's and women's ratings of the same set of feminized and masculinized male faces on physical attributes and personality traits. The current findings are consistent with previous studies that demonstrate an effect of facial manipulation on character judgments of male faces (e.g., Kruger, 2006; Perrett et al., 1998). However, while other studies have shown links between observer ratings of facial masculinity and high testosterone levels in the target male (Penton-Voak & Chen, 2004) or high testosterone levels and self-reports of aggression in men (Harris, Rushton, Hampson, & Jackson, 1996), our study bridges these literatures by directly demonstrating that men and women attribute higher ratings of aggression to more masculine male faces. The link between masculine facial appearance and observer ratings of aggression in the present study provides additional support for the notion that first impressions of men with more masculine faces may be more negative than those of men with a more feminine facial appearance. This finding is related to that of Johnston et al. (2001) and Perrett et al. (1998) who found that masculinized male faces were rated higher in dominance than feminized faces.

Additionally, contrary to prior studies which indicate women are more adept at inferring information from male facial cues than are men (e.g., Macrae et al., 2002), the present investigation showed that men perceived the faces to be significantly more aggressive than did women. It may be that the ability to identify aggression from facial appearance alone represents an evolved mechanism specific to men's success in a variety of domains, as sensitivity to aggression in other men may be helpful in judging competition for resources,

social status, or sexual partners. For example, ascertaining cues indicative of aggression could facilitate a man's ability to determine whether he can compete successfully for a particular mate or resource against a more or less aggressive adversary. Further, sensitivity to aggressive facial cues could help men quickly adapt, modify, or improve strategies used in certain contexts, such as protecting a mate from an aggressor, in combat, or in other physical situations such as athletic competitions. Alternatively, women may be more sensitive to certain male facial cues signaling aggression when presented with a potentially threatening sexual scenario involving the target male face, but not necessarily when engaged in a relatively neutral laboratory task.

Men and women have been shown to prefer more feminine male faces and rate them as more trustworthy, friendly, and attractive (e.g., Kruger, 2006; Rhodes, Hickford, & Jeffery, 2000) except during cyclic and hormonal variations in which women preferred faces more masculine in appearance (e.g., Welling et al., 2007). However, we found that the original images were rated as more attractive than the feminized faces, but not significantly different in attractiveness from the masculinized faces. This may be explained by the 'beauty-in-averageness' effect, in which people find prototypical facial structures close to the 'average', or the population mean, more attractive than those with more extreme facial structures (Langlois & Roggman, 1990; Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). Furthermore, faces that are not extremely masculine or feminine are viewed as more attractive because they are thought to signal genetic diversity and developmental stability, which would have implications for female partner choice (Thornhill & Gangestad, 1999). Inconsistent with previous research findings, we did not observe differences in trustworthiness ratings across the types of faces (e.g., Kruger, 2006), but did find that trustworthiness ratings were correlated positively with hypermasculinity and negatively with hyperfemininity scores. Although we controlled for hormonal contraception in women, we did not control for women's menstrual cycle phase, which may account for some of these differences from previous studies.

Our correlational analysis revealed an association between the observers' scores on our gender role identification measures and their first impressions of the faces. We did not make predictions for hypermasculinity scores and trait ratings due to mixed findings in previous research (Barron et al., 2008; Parrott et al., 2002), although our results indicate that in this case, hypermasculinity may be associated with more positive evaluations of male counterparts, particularly on attractiveness and trustworthiness. This finding may indicate that hypermasculine men may not necessarily have negative first impressions of other men, contrary to previous assertions (Barron et al., 2008; Bartolucci & Zeichner, 2003; Parrott et al., 2002). Additionally, we expected women higher in gender role identification would find the masculinized photos to be more trustworthy, attractive, and less aggressive; instead, higher hyperfemininity scores were associated with lower ratings of trustworthiness and attractiveness of the faces in general. It may be that hyperfemininity is linked with a tendency to be more selective about potential male partners, which could explain these correlations.

Compared to previous face perception studies, the methodology of the current study is unique for several reasons. First, we used 30% masculinized and 30% feminized versions of male faces in order to examine whether individuals' trait ratings could discriminate between subtly manipulated photos; many other studies have employed the 50% manipulations (e.g., Kruger, 2006; Perrett et al., 1999; Welling et al., 2007). Our trait rating data showed that observers can indeed differentiate between subtle differences in facial masculinity and femininity although the participants were never told of the photo manipulation. Second, the results from the current study demonstrate that the 7-point Likert scale (e.g., Kruger, 2006) may provide a subtler assessment of traits. Face perception studies frequently use a forced-

choice response format to elicit observer ratings; for example, a rater must choose whether a single face presented fits into one of two categories, or must choose between two faces presented side by side (e.g., Welling et al., 2007). Future studies interested in investigating subtleties in ratings of physical and personality attributes could employ the 7-point scale. Lastly, to our knowledge, the current study was the first to examine gender role biases in face perception using the HI and HS.

Limitations of the current study should be considered in future research on gender roles and male face perception. The relatively small sample size and young age of the participants in this study may not have captured enough variability in hypermasculinity and hyperfemininity. A sample of participants that includes significantly older adults may have yielded different results. Providing participants with social or sexual scenarios in the lab – for example, asking men to imagine that the faces are potential competitors, and women to imagine they are potential sexual partners – may elicit stronger results associated with gender role adherence. Alternatively, although the original Hypermasculinity Inventory and Hyperfemininity Scale were developed using a university sample, mean scores and standard deviations from the present study are lower than those found in scale development. This may be a result of cultural or societal changes with regard to gender role adherence over the last two decades since these scales were created, as other studies also demonstrate lower mean scores on these scales (e.g., Bartolucci & Zeichner, 2003). Current college-aged men and women may be less likely to have hypertraditional views on sex, relationships, and appropriate male and female behavior than their predecessors. Furthermore, sensitivity to aggression or trustworthiness in male faces is likely to be acquired over time and may require more social or sexual experience with adult men than our young participants had.

In sum, the results of this study suggest that men and women infer slightly different information from male faces varying in masculinity and femininity, and that hypertraditional gender role identification is associated with differences in observers' first impressions of attractiveness and trustworthiness of men's faces. In the real world, men and women may use the same visual cues from male faces to achieve different, sex-specific goals such as deciding whether a man is a potential affiliate or competitor, or a suitable sexual or romantic partner. This study also added to the growing body of evidence showing that hypermasculinity and hyperfemininity bear on men's and women's perceptions of men. Consistent with previous literature, despite the participants' lack of awareness of the photo manipulation, subtle variations in male facial masculinity influenced observer attributions of physical traits and personality characteristics. Thus, subtle facial cues may be used implicitly and unconsciously when evaluating potential social and sexual partners.

While this study is an important first step in understanding how sex and gender role adherence may impact men's and women's perceptions of male faces, future studies should consider viewing gender role identification on a continuum instead of assigning participants into hyper-adherent or non-adherent gender role identification groups. Additionally, including older individuals in future studies of gender role identification and face perception might reveal more differences in men's and women's evaluation of male faces. These individuals may be more likely to subscribe to more traditional gender ideals that influence social judgments than are college students.

First impressions of men based on appearance alone may have significant implications on subsequent social and sexual interactions, signaling whether a person could be a suitable romantic partner or friend. The results from this study provide interesting new evidence that observers' judgments of male faces is related to not only the observer's sex and the target's facial architecture, but the observer's identification with hypertraditional gender roles as well.

Biographies

Kathryn R. Macapagal is a Ph.D. candidate in clinical psychology at Indiana University and is trained at The Kinsey Institute. Her current research uses cognitive, behavioral, psychophysiological, and personality measures to investigate college students' sexual decision making and sexual risk taking.

Heather A. Rupp is a research fellow at The Kinsey Institute. Dr. Rupp's current research investigates cognitive and neural processes underlying the evaluation and perception of social stimuli and biological and psychosocial influences on women's partner preferences and sexual behavior.

Julia R. Heiman is the director of The Kinsey Institute and a professor in the Department of Psychological and Brain Sciences and Department of Psychiatry at Indiana University. Dr. Heiman has devoted her career to achieving a better understanding of the physiological and emotional dimensions of sexuality and developing successful interventions to help people overcome sexual problems.

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Figure 1. Mean masculine ratings by face type. Masculinized faces were rated as significantly more masculine than both the original and feminized faces. Original faces were rated as significantly more masculine than the feminized faces. (* $p < .05$; ** $p = .01$; *** $p < .001$).

Figure 2. Mean trait ratings by participant sex. Men rated faces as significantly more aggressive than did women ($p = .05$).