



Fruhen, L., Watkins, C. D., and Jones, B. C. (2015) Perceptions of facial attractiveness, dominance and trustworthiness predict managerial pay awarded in experimental tasks. *Leadership Quarterly*, 26(6), pp. 1005-1016. (doi:[10.1016/j.leaqua.2015.07.001](https://doi.org/10.1016/j.leaqua.2015.07.001))

This is the author's final accepted version.

There may be differences between this version and the published version. You are advised to consult the publisher's version if you wish to cite from it.

<http://eprints.gla.ac.uk/108187/>

Deposited on: 29 July 2015

Enlighten – Research publications by members of the University of Glasgow
<http://eprints.gla.ac.uk>

Perceptions of facial attractiveness, dominance and trustworthiness predict managerial pay awards in experimental tasks

Laura Fruhen (University of Western Australia)

Christopher D Watkins (Abertay University)

Benedict C Jones (University of Glasgow)

Abstract

Positive associations between physical attractiveness and employee reward are well-documented within the organizational literature. Although the impact of facial cues to trustworthiness and dominance on a number of social outcomes has been established outside of the workplace, the extent to which they affect *pay* at different managerial levels in addition to attractiveness is yet to be investigated. This paper presents research into this issue using a face payment task for shop floor managers (Retail Managers) and senior managers (Heads of Retail Operations). Evaluations indicated that all three facial cues were positively associated with awarded pay at both managerial levels. Moreover, attractiveness had a significantly stronger link with shop-floor managers' than senior managers' pay, whereas perceived trustworthiness and perceived dominance had significantly stronger links with pay for senior managers than shop-floor managers. It further emerged that women were paid more in this experimental task where pay was awarded solely based on facial features and that the facial features were more predictive of women's than men's pay. Awareness of the role of physical cues in pay awards can be considered by organizations to reduce biases in remuneration.

Keywords: level of management, face perception, pay, reward, contingency model of leadership

Perceptions of facial attractiveness, dominance and trustworthiness predict managerial pay awards in experimental tasks

1. Appearance and social interactions

Despite laws that attempt to rationalise decision-making processes in order to ensure equitable treatment of people, our social judgements of others often do not demonstrate such rational and deliberate processing (Todorov, Mandisodza, Goren & Hall, 2005). Stereotypes are a ubiquitous feature of human behaviour and interaction (Macrae & Bodenhausen, 2000; Wheeler & Petty, 2001). Indeed, the folk belief that appearance provides a valid guide to character is present even in relatively well-educated samples (Hassin & Trope, 2000). Judgements based on outward appearance can influence many important social outcomes related to how we treat and choose our social partners (see Langlois, Kalakanis, Rubenstein, Larson, Hallam & Smoot, 2000 for a review) and **select** our political leaders (see Ballew & Todorov, 2007; Little, Burriss, Jones & Roberts, 2007; Todorov et al., 2005). **Notably**, Antonakis and Dalgas (2009) **demonstrated** that children who are unfamiliar with election candidates can accurately predict election outcomes from facial photographs. In fact, the children **completed this task** with accuracy levels comparable to adults, which speaks to the implicit nature of leadership preferences (Antonakis & Dalgas, 2009). **This paper adds to this literature by investigating the extent to which salary awards are influenced by appearance cues that imply desirable traits in managers.**

Building on classic studies in social psychology of the suite of positive attributions that are afforded to physically-attractive individuals (e.g. Berscheid & Walster, 1974; Dion, Berscheid & Walster, 1972; reviewed in Langlois et al., 2000), the role of appearance-driven judgements in our social lives also applies to the

workplace (reviewed in Little & Roberts, 2012). For example, height is positively correlated with workplace success and income (see Judge & Cable, 2004 for a meta-analytic review) and is positively associated with judgements of charisma and perceived competency in leaders (Blaker, Rompa, Dessing, Vriend, Herscheberg & van Vugt, 2013; Hamstra, 2014). In addition, measures of physical attractiveness are positively **linked** with performance in mock and real job interviews (Chiu & Babcock, 2002; Marlowe, Schneider & Nelson, 1996), salesperson performance (Ahearne, Gruen & Jarvis, 1999) and income (Frieze, Olson & Russel, 1991; Judge, Hurst & Simon, 2009). Moreover, CEOs of financially-successful companies are more likely to have 'robust' facial features, as indexed by a higher facial-width-to-height ratio, than their relatively less successful peers (Wong, Ormiston & Haselhuhn, 2011). People have been found to infer **power-related** traits from pictures of German CEOs' faces, and these judgements are positively correlated with their companies' actual net profits (Rule & Tskhay, 2014). Other recent work has reported that perceived 'tallness' in the face and facial adiposity (i.e. fatness) are **associated** with judgements of leadership ability (Re, Dzhelyova, Holzleitner, Tigue, Feinberg & Perrett, 2012; Re, Hunter, Coetzee, Tiddeman, Xiao, DeBruine, Jones & Perrett, 2013; Re & Perrett, 2014). Collectively, these findings suggest that physical appearance plays a role in the workplace and particularly in our views of others' leadership abilities.

1.1. Facial cues, managerial roles and leadership theory

Information provided by the face has an important function in how we interact with others (Bruce & Young, 1986; Goldstein, Chance & Gilbert, 1984; Stangor & Schaller, 1996; Todorov, Said, Engel & Oosterhof, 2008) and categorise them (e.g. Hugenberg & Bodenhausen, 2003; Mason, Cloutier & Macrae, 2006; Todorov,

Olivola, Dotsch & Mendle-Siedlecki, 2015). **Facial cues are** thought to play a greater role in social judgements than other physical characteristics such as bodily appearance (Currie & Little, 2009; Furnham, Lavancy, & McClelland, 2001). Recent data-driven analyses demonstrate that our social judgements of faces can be modelled on two primary dimensions of perceived trustworthiness (**degree of perceived intent to inflict harm**) and perceived dominance (**degree of perceived ability to inflict harm**; Oosterhof & Todorov, 2008). **Studies have found general physical attractiveness to be associated with monetary reward of employees (e.g., Judge et al., 2009; Frieze et al., 1991), but this has not been studied for facial attractiveness. Further, the corresponding relationships between remuneration and perceived trustworthiness and dominance derived from physical cues are yet to be investigated.** In light of the role of these two dimensions in our assessment of others as social partners, **the critical function of facial cues for social interactions, and the association between other physical appearance cues and pay,** it is predicted here that perceived trustworthiness and dominance derived from facial cues, in addition to perceived physical attractiveness, will **also** affect managerial pay awards.

Although the current study is concerned with managerial rewards, it is relevant to leadership for two reasons. First, leadership and management represent distinct, yet related issues (Day, 2001). While leading and managing have been proposed as two different processes, leaders and managers are not necessarily different people (Bass, 1990; Kotter, 1990). Indeed, **managerial success requires good leadership (Yukl, 2006) and this is likely to be reflected in lay perceptions of leadership and management. Leadership is a critical part of managerial roles. However pay is awarded in consideration of the whole range of activities in which managers engage.**

Thus in the current study, the term manager is used as an occupational title, as this most accurately describes the organisational positions studied.

Second, although the current study refers to managerial pay for the above reasons, its theoretical assumptions are derived from **implicit and** biosocial perspectives on leadership. **Implicit leadership theories traditionally propose that naïve individuals develop personal assumptions of what traits and abilities are ideal in leaders through socialisation and experience (Epitropaki & Martin, 2004).** The implicit assumptions that lay individuals hold concerning leadership have been found to reflect eight leader attributes, namely sensitivity, dedication, tyranny, charisma, attractiveness, masculinity, intelligence, and strength (Offerman, Kennedy & Wirtz, 1994). Studies show that maleness (Koenig, Eagly, Mitchell & Ristikari, 2011) and height (Blaker, et al, 2013) are implicitly associated with more positive leadership perceptions. These findings illustrate that evaluations of leaders can be derived from very limited and superficial cues to leadership, which supports the limited-capacity model of implicit evaluations of leadership described by Lord and Maher (1991). This model refers to principles of simplification in information processing that individuals apply so that they require only very little information, or simplified cues in order to explain others' behaviour. Pre-existing schemas and simplified knowledge structures support individuals to arrive at adequate rather than optimal responses (Lord & Maher, 1991). The present study bases its investigation of perceptions of facial cues and their association with assigned pay to managers on these propositions of the limited-capacity model.

Biosocial leadership theories propose that leadership preferences have evolved based on the benefits to one's reproductive fitness that are accrued from selecting an effective leader (Spisak, Dekker, Krüger, Van Vugt, 2012a). **These** leadership

theories **extend implicit leadership theory as they** provide an additional ultimate-level explanation by proposing that leadership preference has also been shaped by cooperation and conflict in our evolutionary past (Spisak et al, 2012a). From an evolutionary perspective, preferences for physically attractive individuals are thought to reflect preferences for individuals of good underlying physical condition (e.g., Krupp, DeBruine & Jones, 2011; Sell, Tooby & Cosmides, 2009). Preferences for individuals who are able to confer fitness benefits onto recipients through resource-pooling or collaboration are thought to underpin preferences for trustworthy looking individuals (see Watkins, DeBruine, Little & Jones, 2012 for discussion). Finally, preference for physical dominance in leaders has been proposed to reflect preferences for individuals who are better-placed to represent their group against others via their formidability as well as the threat they pose to rival groups when competing for resources (e.g. 'parochial altruism'; see Choi & Bowles, 2007; Van Vugt, De Cremer & Janssen, 2007). In addition to the implicit value of the traits implied by facial cues, evidence suggests that social judgements based on facial cues have a degree of accuracy (e.g., Penton-Voak, Pound, Little & Perrett, 2006; reviewed in Todorov et al., 2008, in press). Collectively, implicit preferences for traits signalled by facial cues in leaders would still be expected to emerge in modern organisations, which face problems that require collective action toward common goals. As argued by the theory, appearance based cues that signal traits such as cooperation and dominance will be utilized in our judgements of leaders **in managerial roles** today.

Implicit leadership theories and biosocial perspectives of leadership are not primarily concerned with actual leadership, but perceptions of leadership. Such perceptions have been shown to influence evaluations of actual leadership quality

(e.g. Epitropaki & Martin, 2004) and are likely to play a role in determining the allocation of rewards in organisations. A greater understanding of the basic factors that determine these perceptions, including facial features, is important in developing a more complete understanding of the processes involved in leadership perceptions in organisations.

1.2. Dominance, trustworthiness and attractiveness and managerial pay

Based on biosocial leadership theories concerned with inferences of traits from physical features, **it is predicted in this study** that facial attractiveness, dominance and trustworthiness will be rewarded in managerial pay. Because these facial cues have been associated with attributes in leaders that are thought to be positive for organisational outcomes, employers may wish to retain individuals who hold such desirable traits in their organisations. Satisfaction with pay has been found to be associated with lower intention to leave an organisation (i.e. withdrawal cognition; DeConnick & Stilwell, 2004). Therefore, pay is a critical mechanism that employers can use to reduce turnover intention in valued employees. In the following, we outline some of the reasons why employers may value the traits implied by these facial cues in their managerial staff, starting with dominance.

First, dominance as a trait that is **independent of its manifestation as a facial feature** (defined as being directive and determined), is positively associated with judgements of **an individual's effectiveness as a leader** (House & Howell, 1992; Lord, de Vader & Alliger, 1986; Dinh, Lord, Gardner, Meuser, Liden & Hu, 2014). Powerful (i.e. dominant) individuals in general are thought to be more approach-oriented, opportunistic and less inhibited than their less powerful peers (Keltner, Gruenfeld &

Anderson, 2003). Such traits may be important to retain in managers in organisations. **It has been found that** cues that denote physical dominance are associated with a weaker preference for the redistribution of wealth (Petersen, Sznycer, Sell, Cosmides & Tooby, 2013) and are positively associated with the extent to which men prefer to resolve confrontation through competitive means (Sell et al., 2009). The importance of dominance cues in leadership choices (Little et al., 2007; Re & Perrett, 2014; Tigue, Borak, O'Connor, Schandl & Feinberg, 2012) may, at least in part, reflect an evolved preference for leaders who are better-placed to accrue fitness benefits for group members whilst representing and/or protecting their group from out-groups (i.e. competitors; see Flinn, Ponzi & Muehlenbein, 2012 and MacDonald, Navarette & Van Vugt, 2012 for related discussion). Consistent with this proposal, facial cues to dominance correlate with progression into higher ranks in the military and have been described as a signal of dominant behaviour (e.g., Mueller & Mazur, 1996). It has been theorised that today's dominant individuals still benefit from their historical advantage when it comes to resource distribution (Hamstra, 2014). Thus, in addition to dominance being beneficial in leaders, dominant individuals will also be more effective in gaining resources such as salary increases and thus are likely to be awarded higher pay by others.

Second, trustworthiness as a trait has been described as subsuming trust in the ability and competence of an individual but also their integrity and benevolence (Little, Roberts, Jones & DeBruine, 2012). Trait-ratings of proxies for trustworthiness, such as perceived ability, benevolence and integrity, are positively associated with important workplace outcomes such as team performance, extra-role behaviour (i.e. going beyond ones' prescribed job duties), and organizational commitment (see Colquitt, Scott & LePine, 2007 for a meta-analytic review). Indeed, a leader's ability

to generate trust in their subordinates mediates the impact of leader behaviour on follower performance (e.g. Braun, Peus, Weisweiler Frey, 2013; Burke, Sims, Lazzara & Salas, 2007; Jung & Avolio, 2000; Schaubroeck, Lam, & Peng, 2011), suggesting that leaders' effectiveness is **to some extent** exerted via the level of trust they inspire in their workforce. **Moreover**, judgements of trustworthiness in faces may be of utility in the workplace. For example, men with faces that are perceived as less trustworthy are more likely to exploit others when given the choice between collaboration and exploitation of others' trust for personal gain in decision-making games (Stirrat & Perret, 2010). Additionally, **humans** are less inclined to trust men with faces that are perceived as untrustworthy in decision-making games (Stirrat & Perrett, 2010) and, conversely, will invest more money in trustworthy-looking partners (Rezlescu, Duchaine, Olivola, & Chater, 2012; reviewed in Todorov et al., 2015). Managerial work is based on interaction with others, and is driven towards achieving an advantage for their organisation through these interactions. Thus managers who appear trustworthy may be valued more than less trustworthy managers **at an implicit level**. In turn, trustworthy managers may receive higher remuneration than less trustworthy managers.

Finally, facial attractiveness has been identified as an indicator of health, **such as a good immune system (Rantala, Moore, Skrinda, Krama, Kivleniece, Kecko & Krams, 2012)**, and is associated with longevity (Henderson & Anglin, 2003). Attractiveness is also linked with a variety of positive personality attributions (Eagly, Ashmore, Makhijani, & Longo, 1991). The positive attributions associated with physically attractive individuals may have a degree of accuracy. **For example, individuals**, who are rated as attractive by naïve judges from their facial photographs, evaluate themselves as more agreeable and extraverted than their less attractive

peers do (Meier, Robinson, Carter & Hinsz, 2010). Judge et al., (2009) argue that the link between attractive appearance and positive traits emerges due to expectancy confirmation (based on Langlois et al, 2000). This bias involves a process in which attractive appearance triggers positive expectations, which lead to more positive judgement and treatment of individuals by others and in turn become internalized and are reflected in the behaviour of relatively attractive people. Thus, more attractive managers may be afforded a range of positive attributions that organisations would like to retain in their managers, such as sociability (reviewed in Langlois et al., 2000). Indeed, higher physical attractiveness is associated with perception of leadership competence (Surawski & Ossoff, 2006) and higher income (Judge et al, 2009). Assumption of positive personality traits and the managers' leadership abilities may lead individuals to value attractive managers as being more valuable to organisations, thus awarding them a higher pay.

In summary, facial cues to dominance, trustworthiness and attractiveness are proposed in this study to affect remuneration. Given that judgements of these facial cues have a degree of accuracy and are correlated with traits that may be desirable to retain in managers within the workforce, we predict that they will be positively associated with managerial pay. Accordingly, facial cues to traits such as dominance and trustworthiness, as well as attractiveness are likely to affect remuneration, even if these traits are valued purely at an implicit level.

Hypothesis 1: Facial attributes (dominance, attractiveness and trustworthiness) will be positively related to managerial pay.

1.3 Facial trustworthiness, dominance and attractiveness at two managerial levels

The second focus of our study is the extent to which perceived facial attractiveness, dominance and trustworthiness predict pay differently for upper-level versus lower-level managers. In this study, we focus on the relationship between facial cues and pay for employees in two managerial positions in the retail sector, namely at the shop floor (Retail Managers) and top management level (Heads of Retail Operations). Classic models of leadership propose that given 'types' of leaders may be more effective in contexts or situations that favour their given attributes, and thus will be preferred among followers in these contexts (Fiedler, 1964). The recently proposed biosocial contingency model of leadership (Spisak, Homan, Grabo & Van Vugt, 2012b; see also Little & Roberts, 2012) extends this proposition by providing an additional ultimate-level explanation (see Scott-Phillips, Dickins & West, 2011) for why different forms of leadership may be preferred in specific contexts. This model explicitly acknowledges that human cognition has been shaped by fitness-relevant concerns related to how groups compete and cooperate successfully with one another. The model proposes that these goals are still relevant to implicit evaluations made by decision-makers within modern organizations (Spisak et al., 2012b).

Thus far, this model has been used to test for differences in leadership evaluations in war and peace contexts (Spisak et al., 2012a; Little et al, 2012) and according to the current economic climate (Rule & Tshaky, 2014). Additionally, facially-dominant men have been found to behave more altruistically in public goods games when competition between rival groups is salient (Stirrat & Perrett, 2012).

We propose that such differences in preferences and behaviour can also be observed in the different contexts within organisations. We put forward that differences in preferences for traits derived from facial appearance will be apparent

at different hierarchical positions of an organization, given that job roles across these levels can pose different challenges. As such, perceptions of traits derived from facial cues are likely to be valued more in managers in contexts where these traits are particularly desired. As work at different hierarchical levels of organisations can pose different challenges, characteristics derived from facial cues might be of greater or lesser salience for employee pay according to the nature of the position in question. Senior management positions differ crucially from other leadership roles in terms of the tasks and challenges that they involve (Mintzberg, 1975; Tengblad, 2006). Consequently, the perceived value of the facial cues considered in the current study will likely differ for senior managers relative to lower-level managers.

First, power, in terms of the capacity of an individual to exert their will has been especially emphasised as critical for senior managers (Finkelstein, 1992). Consistent with this proposal, evaluations of dominance based on CEO's facial appearance are positively correlated with company profit and financial performance (Rule & Ambady, 2008; Wong et al., 2011). Consequently, due to the heightened function of power exertion in senior roles, cues to dominance are more likely to be incentivised at the top of organisations. Thus, we predict a stronger link between facial dominance and pay awarded to managers in senior positions than lower-level managerial positions.

Second, although the ability to generate trust is generally linked to leadership (e.g., Jung & Avolio, 2000) and is also likely to be an important trait for managers at both organisational levels studied here, we propose that the relationship between facial cues to trustworthiness and pay will be more pronounced in senior management positions. Creed and Miles (1996) propose that trust in leaders is especially relevant in workplaces where tasks are unstructured and complex with

high levels of interdependencies. This description is particularly fitting to senior managerial work (Mintzberg, 1975; Tengblad, 2006). Moreover, given that strategic decisions are not always made under a consensus from all team members, it is particularly important for senior leaders to generate trust in their teams (Korsgaard, Schweiger & Sapienza, 1995). We therefore propose that there will be a stronger association between cues to trustworthiness and pay in senior managers than lower-level managers.

Hypothesis 2a: Dominance and trustworthiness will be more influential on payment decisions for top level positions than shop floor level positions.

Finally, we predict that facial cues to attractiveness will be less relevant when awarding pay for top management positions than lower-level managerial posts. While recent work suggests that perceived attractiveness is less important in leadership judgements derived from facial cues than perceived dominance derived from facial cues (Re & Perrett, 2014) it is, however, associated with success in sales jobs (Ahearne et al., 1999; DeShields, Kara, & Kaynak, 1996). It has been proposed that this effect is due to a contagious effect of beauty that occurs when consumers perceive that a product has been physically touched by a highly attractive person (Argo, Dahl & Morales, 2008). Because descriptions of a retail manager's job (see http://www.prospects.ac.uk/retail_manager_job_description.htm) entails touring the sales floor and dealing with sales, facial attractiveness might be rewarded more in these lower-level management positions, compared to a senior position that is more exclusively focussed on managerial than sales tasks. Therefore, perceived facial

attractiveness is likely to be more strongly linked to awarded pay for the customer-facing role of lower-level managers than it is for senior managers.

Hypothesis 2b: Attractiveness will be more influential on payment decisions for shop floor level positions than top level positions.

2. Methods

2.1 Stimuli

Face images of 100 Caucasian individuals (50 men, 50 women; Mean age = 24 years, SD = 4 years) were used. These photos were downloaded from a publicly-available database of images (www.3d.sk). All photographs were taken under constant lighting and camera set-up, with each individual posing with neutral expression, direct gaze and hair pulled back from forehead.

2.2 Trait ratings

All facial photographs had been rated previously by a separate panel of judges ($n = 1200$; Mean age = 25.10 years; SD = 5.78) for attractiveness, dominance and trustworthiness using a 1 (much less attractive/trustworthy/dominant than average) to 7 (much more attractive/trustworthy/dominant than average) scale. Attractiveness, dominance and trustworthiness were not defined to the raters and they were not instructed to pay attention to specific features of the faces. Raters were randomly assigned to a condition in which they rated either men's attractiveness ($M = 2.64$; SD = 0.62), women's attractiveness ($M = 2.71$; SD = 0.68), men's dominance ($M = 3.62$; SD = 0.69), women's dominance ($M = 3.57$; 0.50), men's trustworthiness ($M = 3.36$; SD = 0.57), or women's trustworthiness ($M = 3.37$; SD =

0.49). One-hundred men and 100 women were allocated to each condition (i.e. 600 men and 600 women participated in total). Inter-rater reliability (Cronbach's alpha) was high for all six combinations of sex of face and rated trait (all $\pm > .95$).

2.3 Payment task

We collected data for the payment of shop floor managers (Retail Managers) and senior managers (Head of Retail Operations) using two independent samples. Three hundred and fifty participants evaluated the pay of hypothetical shop floor managers (out of which 133 were men; Mean age = 24.06 years, SD = 6.75) and 1081 participants evaluated the pay of hypothetical senior managers (out of which 528 were men; Mean age = 27.26 years, SD=9.01). Participants from both samples were recruited via links on social bookmarking websites, such as stumbleupon. Previous research on social perceptions of faces has demonstrated that laboratory and online studies produce equivalent results (Buchanan, 2000; Senior, Barnes, Jenkins, Landau, Philips & David, 1999; Senior, Philips, Barnes & David, 1999; Wilson & Daly, 2004; see also Gosling, Vazire, Srivastava et al., 2004 for a review).

Participants completed an identical, randomised face payment task, with the exception of the payment range and the job role **associated with the** set of faces (shop floor managers or senior managers). They were informed that they would be shown photographs of individuals and would be asked to indicate how much they would pay each individual either for the position of Retail Manager or for the position of Head of Retail Operations. It was decided to focus on retail given the almost equal representation of both genders in this sector (European Foundation for the Improvement of Living and Working Conditions, 2009) and because most participants will be familiar with retail sectors.

Participants were informed that all of the pictured individuals have two years of prior experience in their role. They were asked to use the full range of pay on the rating scale. This explicit instruction was given in order to provide an authentic context for participants, whereby employers typically have a grade band within which they can remunerate an employee. Based on typical pay rates for the two job roles (retrieved from prospects.ac.uk and inretail.co.uk), participants could award pay on a fixed scale in increments of £1,000, ranging from £23,000 to £29,000 for the shop floor manager position and from £83,000 to £89,000 for the senior management position. In order to avoid boredom or rater-fatigue, participants rated a randomly-selected subset of the 100 face images (40 out of 100 images in randomly-ordered blocks).

Inter-rater reliability of the payment awards was estimated using bootstrapped correlations. This technique computed the average correlation between payment scores for each face (derived from randomly selected subsamples of participants over ten thousand iterations). The bootstrapped-correlation was high for the face payment task both when awarding pay to hypothetical Retail Managers (mean $r = .86$; 95% $CI_{LL} = .82$ to $CI_{UL} = .89$) and when awarding pay to hypothetical Heads of Retail Operations (mean $r = .85$; 95% $CI_{LL} = .82$ to $CI_{UL} = .90$). This bootstrapping procedure was used because each participant awarded pay only to a random subset of the full image set.

2.4 Initial processing of the data

For each of the faces in our full picture set, we calculated the mean pay independent of the position concerned, the mean pay awarded in the Retail Manager payment task, and separately when awarded in the Head of Retail Operations

payment task. Similarly, mean ratings for each face’s attractiveness, trustworthiness and dominance were computed.

3. Results

Bivariate correlations shown in Table 1 give an overview of the relationships between facial attractiveness, trustworthiness and dominance and the pay awarded to individuals across the two job roles. The three facial attributes were significantly correlated with overall payment and with payment at both hierarchical levels of the organization.

=====
 Insert Table 1 here
 =====

We then carried out linear regression analyses to investigate the relative impact of the facial cues on the amount of pay awarded to the hypothetical managers overall and in the two roles (see Table 2). We entered the sex of the face, attractiveness, trustworthiness and dominance simultaneously. The overall model explained 70% of the variance in the payment decisions and all three facial attributes were found to significantly contribute to pay ($r^2_{\text{attractiveness}} = .37, p < .001$; $r^2_{\text{trustworthiness}} = .48, p < .001$; $r^2_{\text{dominance}} = .35, p < .001$; $F(3,96) = 111.59, p < .001$) (see Table 2). Accordingly, Hypothesis 1 was supported. We also found that sex of face was significantly linked with the awarded payment ($r^2 = .24, p < .001$).

=====
 Insert Table 2 here
 =====

To test hypotheses 2a & 2b, we first ran two separate regression analyses; one for shop floor managers and one for senior managers (see Table 2). The overall model at the shop floor level was significant ($F(3,96) = 59.89, p < .001$), with our predictor variables accounting for 72% of the variance in awarded pay. Rated attractiveness ($r^2 = .47, p < .001$), rated trustworthiness ($r^2 = .41, p < .001$) and rated dominance ($r^2 = .25, p < .001$) were all significantly related to pay awarded to shop floor workers. As for the overall sample, sex of face was also significantly linked with pay at the shop floor level ($r^2 = .23, p < .001$). The overall model was also significant at the senior manager level ($F(3,96) = 107.38, p < .001$), with the predictor variables accounting for 82% of the variance in pay awarded. Rated attractiveness ($r^2 = .30, p < .001$), rated trustworthiness ($r^2 = .59, p < .001$) and rated dominance ($r^2 = .50, p < .001$) were all positively related to pay awarded to senior managers. At the senior level, sex of pay was also positively linked with pay awarded ($r^2 = .27, p < .001$).

To identify whether the relationship between facial attributes and pay were significantly different for managers in the two positions we conducted a Chow test (Chow, 1960; Lee, 2008). The test showed that the relationship between the three facial attributes and pay all differed significantly from one another at the two managerial levels. The link between attractiveness and pay (as shown in Table 2) was significantly stronger at the shop floor level ($F(2, 192) = 27.83, p < .001$) than at the senior management level. In contrast, the r^2 scores for the relationship between pay and perceived trustworthiness' and perceived dominance (as shown in Table 2) was significantly greater for senior-level managers than it was for shop-floor managers ($F_{\text{trustworthiness}}(2, 192) = 28.72, p < .001$; $F_{\text{dominance}}(2, 192) = 23.43, p < .001$). Accordingly hypothesis 2a and 2b were confirmed.

Although we had not hypothesised an effect of sex of face on the level of pay, the results so far pointed to it as a factor. The analyses indicated a positive effect of sex, in a way that female faces were awarded higher pay in our study. Thus, to further explore whether the amount of pay awarded to male and female faces differed significantly across all three facial evaluations, we carried out separate regression analyses, for male and female faces and conducted a Chow test. The results (see Table 3) indicate that for male and female faces, both models were significant ($F_{\text{female faces}}(3, 96) = 86.00, p < .001$; $F_{\text{male faces}}(3,96) = 65.85, p < .001$). The predictor variables accounted for 73% of the variance in pay awarded to female faces. Rated attractiveness ($r^2 = .36, p < .001$), rated trustworthiness ($r^2 = .61, p < .001$) and rated dominance ($r^2 = .57, p \leq .001$) were all significantly associated with pay for female faces. For male faces, the predictor variables accounted for 67% of the variance. Trust ($r^2 = .57$) and dominance ($r^2 = .33$) were both significantly associated at a significance level of $p < .001$, attractiveness ($r^2 = .27$) was also significantly associated with pay, albeit at $p < .01$ for male faces.

=====

Insert Table 3 here

=====

The Chow test indicated that the relationship between pay and all three facial cues was significantly greater when awarding pay to women than to men ($F_{\text{attractiveness}}(2, 192) = 11.86, p < .001$; $F_{\text{trustworthiness}}(2, 192) = 35.11, p < .001$; $F_{\text{dominance}}(2, 192) = 28.32, p < .001$).

Finally, we used our data to calculate a predicted 'pay premium' based on the standard deviation in pay and the beta values of each of the three rated traits, shown in Table 4 (following guidelines by Field, 2009).

=====

Insert Table 4 here

Results of this additional analysis showed that the greatest 'premium' for senior managers was placed on trustworthiness (£275.70; \$419.06), followed by dominance (£233.65; \$355.15). For shop floor workers, the highest premium was placed on attractiveness (£238.02; \$361.79) and the lowest premium on dominance (£126.61; \$192.45). The highest premium overall was awarded to trustworthiness in male faces (£302.10; \$459.19).

4. Discussion

In this study, a face payment task was employed to investigate the impact of facial cues on monetary reward across two levels of management in organizations. While much of the organizational literature has **so far** focussed on exploring the relationship between physical attractiveness and pay (e.g., Judge et al., 2009), this study presents novel evidence that perceptions of facial dominance and trustworthiness, **in addition to physical attractiveness**, predict employee rewards.

Perceived trustworthiness and dominance are the two key dimensions on which we judge faces (Oosterhof & Torodov, 2008) and, in addition to attractiveness, were predicted to be rewarded in managerial staff given that they are cues to traits that are likely to be valuable in managerial positions (e.g. Colquitt et al., 2007; House & Howell, 1992; Judge et al., 2009). Our findings were consistent with this proposal, as

all three judgements derived from facial cues were positively associated with awarded pay in our payment task.

Moreover, while these findings suggest that perceived attractiveness, trustworthiness and dominance are all positively related to monetary reward, the relationship between attractiveness and pay was significantly greater at lower- than upper-level management positions, whereas the relationship between trustworthiness and dominance and pay was significantly greater at upper- than lower-level management positions. Thus, our findings demonstrate that the relationship between facial appearance and pay varies systematically according to the nature of the position in question. This finding is consistent with traditional contingency models of leadership (Fiedler, 1964) as well as the biosocial contingency model of leadership (Spisak et al., 2012b; Little, 2014; Little & Roberts, 2012 for further discussion). The systematic variation in the relationship between social judgements of faces and pay according to seniority is consistent with these models' propositions that traits in leaders may be valued especially in contexts where these traits are at a premium. Our findings indicated a greater reward for trustworthiness and dominance in senior managers than lower-level managers and this is likely to be routed in the specific context of senior positions (e.g. Mintzberg, 1975; Tengblad, 2006).

Two issues underlie our findings: First, we found that facial cues are sufficient to trigger an evaluation of managers' deserved pay. This role of facial cues in relation to pay illustrates a tangible impact of the belief that appearance can indicate character (Hassin & Trope, 2000; see Todorov et al., 2008 for a review). Second, our research's finding that facial cues differed in their salience for the two managerial roles suggests that participants' judgements were likely based on their implicit

theories about the two roles, as no detailed descriptions of the positions were provided. Offermann et al (1994) have emphasised that the general public holds naïve theories of the characteristics associated with effective leaders. Our findings are consistent with this assumption. The observed relationship between facial appearance and pay in a sample who were not explicitly asked to pay attention to the faces' cues for attractiveness, trustworthiness or dominance, or were made aware that this was the purpose of our study, is consistent with prior work on the implicit nature of leadership preference. It further points to the evolved nature of implicit leadership preferences based on contingency perceptions routed in biosocial cursors of traits (Spisak et al, 2012a). Similarly, our participants were only provided with photographs of the individuals. Yet they were found to approximate the "value" of a manager based on their facial cues. Of note, our findings complement and extend prior work on natural observations of the relationship between appearance and remuneration within the workplace (e.g. Judge & Cable, 2004; Judge et al., 2009).

Although we did not have any *a priori* predictions that our proposed relationships between facial appearance and pay would differ depending on the sex of the face, this emerged as a factor in our analysis. Contrary to the well evidenced gender-pay-gap (e.g. Drolet, 2002; Blau & Kahn, 2007; Mandel & Semyonov, 2014), women were paid more than men in our task. Our experimental task presented facial cues in isolation from external cues. Viewed in the context of this experimental set-up this finding might suggest that the relationship between gender and career earnings observed in the gender-pay-gap literature is not likely to be due to biases derived from facial features alone. This suggestion is in line with the gender-pay-gap literature's focus on societal and other contextual factors in predicting gender

differences in career earnings. Such factors include wage structures, characteristics of specific jobs and workplaces (Rubery, Grimshaw & Figueiredo, 2005), the nature of the welfare state (Mandel, & Shalev, 2009) and the reduced time women spend in the labour market due to family commitments (Blau & Kahn; 2006), rather than discrimination *per se*.

However, further analyses of the facial cues' influence on pay for the two sexes showed it to be more pronounced for female than male faces. As such, this finding suggests that while facial features on their own may not generate an overall disadvantage for women in terms of the level of pay they receive compared to men, the pay awarded to women was more strongly derived from facial cues studied in this context. Thus, facial cues appear to have a more prominent role in the process of awarding pay to women than to men, suggesting stronger tendencies of discrimination towards women based on facial features. Previous work in the social perception literature suggests that aspects of physical appearance influence social judgements differently for men and women. For example, height influences perception of leadership ability in men but not women (Hamstra, 2014). In the face perception literature, computer-graphic manipulations of masculinity-femininity demonstrate that in women, feminine faces are reliably perceived as more trustworthy (Perrett, Lee, Penton-Voak, Rowland, Yoshikawa, Burt, Henzi et al, 1998), attractive (Rhodes, 2006) and more *socially* dominant (i.e. respected, good leaders), but not more physically dominant (Watkins, Jones & DeBruine, 2010), than masculine faces. By contrast, feminine faces in men are perceived as more trustworthy but less socially and physically dominant than masculine faces (Perrett et al., 1998; Watkins et al., 2010) and there is also no overall effect of masculinity-femininity on judgements of men's attractiveness (see Rhodes, 2006 for a meta-

analysis). It might be the case that similar factors in differential responses to men's and women's faces can explain the moderation of our effects by gender.

Overall, our findings illustrate the potential role that facial features might have when studied in isolation, and indicate that evolutionary-based evaluations of others are relevant to the here studied phenomenon. In doing so, this study illustrates what impact facial features *could* in principal have on pay outcomes (as discussed in Mook's (1983) reflection on external validity). **The findings of the experimental research presented in this paper may not readily generalise to the field, however they contribute to a refinement of biosocial and implicit leadership theories, which can in turn be generalised across a wide array of settings.** Moreover, one of the strengths of studying facial features' impact on pay in isolation is the ability to clearly separate their influence from other potential confounds. This approach, when combined with our data, suggests that the gender-pay-gap is unlikely to be driven by perceptions of the facial cues that were studied. Our findings are consistent with naturalistic data on the relationship between physical attractiveness and pay (e.g., Judge et al., 2009). Little et al (2007) discuss the generalizability of their findings of a laboratory study on facial appearances and voter decisions. They propose that some of these effects can transfer to real life decisions, as reliance on facial features can be used as a cognitive shortcut, similar to heuristics, and is also applied when individuals are overloaded with information (also see Lord & Maher, 1994). In line with this argument, in a review of meta-analyses reporting effect sizes for field and experimental settings Mitchell (2012) found that research investigating phenomena from organizational psychology tend to correlate very well with field research conducted within this sub-discipline ($r=.82$).

4.1 Future directions

Our study, with its setup as an online face payment task enabled us to hold a number of variables constant. This task design allowed an assessment of the relationship between facial features and pay, independent of other information about the pictured individual. Using an experimental task, we are not proposing that our findings are insensitive to context, where payment decisions are not solely made based on facial appearance, but under consideration of other information, such as perceptions of employees' performance or in light of the current business environment. However, it is noted here that our experimental design, which isolates facial cues from such other external cues, actually represents *strength* of our work in this instance. Indeed, our findings suggest that when no additional information about performance and behaviour are available, factors such as physical appearance will play a role in the remuneration of managers. In light of this important proof of concept, further work can test whether our effects vary systematically according to context, such as uncertainty in the external business environment, or attributes of the organisation itself, such as its climate, business strategy, size, and the industry or sector in which it operates. Indeed, recent work demonstrates that judgments of power or leadership ability from faces are affected by contextual differences in the level of financial certainty (i.e. stability of the financial markets; Rule & Tshkay, 2014), suggesting that dominant-looking leaders will be rewarded differently according to such contextual factors. Adding to this work can identify the effect of additional information on payment outcomes, both related to the shown individuals' workplaces, as well as their work performance, level of experience, organisational commitment or leadership style.

Alternative underlying reasons for the higher pay awarded to women in the experimental task employed in this study should also be investigated in future research. It is for example possible that this effect may have resulted from participants guessing hypotheses or responding in a way that would not make them appear discriminatory towards women, potentially based on their awareness of the gender-pay-gap. Future research should test participants' awareness of the gender-pay-gap (both explicitly and implicitly) and the extent to which they considered this during the experimental task. Doing so can show the degree to which participants may have considered the disadvantages that women face concerning pay equality and what impact this may have had on the level of pay that they awarded to men and women. In addition, it needs to be considered whether the higher pay for women allocated in our experimental task may be an artefact of a perceived stereotypical association between women and work in the retail sector. Although men and women are roughly equally represented in this sector (European Foundation for the Improvement of Living and Working Conditions, 2009), the stereotypes that individuals hold about the workforce in the retail sector may not conform to this statistic. Moreover, raters' own beliefs about sex roles more generally (that is independent of the job context) may also moderate these kinds of appearance-based decisions.

Additionally, we put forward that the generalizability of our findings should be investigated in organisational contexts directly. The participants who made the evaluations in this study are unlikely to be representative of the people who are responsible for payment decisions in organisations. However they represent a more general, societal perception of deserved pay. Future research could further complement our findings and assess the impact of facial features in organisational

contexts more directly, by considering actual pay and assessing facial dominance of employees in order to extend the current study's findings. Such research can also consider other payment related variables, such as the performance ratings and experience of individuals. It would also be of interest to test whether behavioural measures of dominance have similar effects on positive workplace evaluations or rewards, for example, when assessed through indirect measures of dominance (e.g. strength of handshake; see Stewart, Dustin, Barrick & Darnold 2008) or within biological motion studies of nonverbal displays that indicate 'power' within dyads, such as open and expansive posturing (see Carney, Cuddy & Yap, 2010).

Finally, a further avenue to build on our findings concerns the issue of promotion in organisations. Our results illustrate that facial cues to underlying traits are more or less valued at more or less senior positions. Thus it would be relevant to investigate to what extent promotion hinges on perceptions of physical cues to underlying traits. *For example, it would be interesting to investigate to what extent the congruency between facial cues with the demands of a current versus a future job role influences promotion outcomes.*

4.3 Practical implications

Prejudice and discrimination based on physical appearance naturally have undesirable consequences for society, and yet biases in human decision-making are ubiquitous (reviewed in Johnson, Blumstein, Fowler & Haselton, 2013; Krueger & Funder, 2004). *It seems unfair that superficial physical cues may disadvantage individuals by precluding them from leadership opportunities in the workplace, and disfavours them in the allocation of associated rewards. Likewise,* given that there may be a degree of accuracy to appearance-driven judgements of faces on some

dimensions (e.g. extraversion; reviewed in Todorov et al., 2008), but not others (e.g. competence; reviewed in Todorov et al., 2015), the potential benefits and costs to these judgements for organizations **and employees** can be considered in unison, as has been proposed in work on the evolution of human decision-making more generally (reviewed in Johnson et al., 2013; Todorov et al., 2008).

We are somewhat neutral about making direct recommendations from these findings given that there are both costs and benefits to biases within human decision-making (Johnson et al., 2013; Todorov et al., 2008). Moreover, the possible benefits of reliance on facial features for payment awards for organisations are not yet fully-established in the organisational literature. One potential application of these findings more generally is simply to better understand the mechanisms and processes by which people treat others' differently based on appearance (e.g. Little & Roberts, 2012; Miller & Todd, 1998). Indeed, awareness-raising might be suitable to stimulate decision-makers to reflect on the potential impact their perception of physical cues may have on employee pay. For example, organisations can be encouraged to focus their appraisal processes on observable and/or measurable behaviour. As has been argued elsewhere (e.g. Little & Roberts, 2012), giving individuals the opportunity to demonstrate their *actual* competence in behaviourally-based approaches and in prolonged interactions could potentially attenuate appearance-driven biases. Such an approach has been established as effective in recruitment practices (Schmidt & Hunter, 1998) and might also help reduce potential appearance-driven biases in remuneration.

Our findings, which suggest that facial cues alone are sufficient to shape pay offers (all else equal), are of further practical relevance given that profile pictures are often used by individuals to enhance CV's or their online profiles on business-related

social networks such as LinkedIn. Indeed, some individuals can, and will, use knowledge of appearance-driven biases to their strategic advantage in the workplace (see Little & Roberts, 2012 for discussion related to interviews). Thus, our findings could support them in picking the right pictures for the desired effect.

Given that our 'pay premium' data (Table 4) suggests that every standard deviation increase in trait-ratings of faces on our three dimensions carries a potential premium in pay (between approximately £126/\$192 to £302/\$459), our findings **indicate** that differences among employees in their appearance alone could potentially shape tangible differences in one's ability to accrue wealth *across a career*, when competing with equally-skilled or experienced people within the job market. Over the course of a 40 year career, this would mean an income advantage of between £5,040/\$7,680 to £12,080/\$18,360 just based on having particular facial features. We suggest that increased awareness through training, the removal of photographs from CV's (as is not common in many countries), **or else targeted use of photographs that fit the traits required for a position**, and promoting the review of progress documents *before* face-to-face interaction with unfamiliar individuals could improve the quality of organizational decision-making in this domain.

References

- Ahearne, M., Gruen, T. W., & Jarvis, C. B. (1999). If looks could sell: Moderation and mediation of the attractiveness effect on salesperson performance. *International Journal of Research in Marketing*, 16, 269-284.
- Antonakis, J., & Dalgas, O. (2009). Predicting elections: child's play! *Science*, 323, 1183.
- Argo, J. J., Dahl, D. W. & Morales, A. C. (2008). Positive consumer contagion: Responses to attractive others in a retail context. *Journal of Marketing Research*, 45, 690-701.
- Ballew, C. C., & Todorov, A. (2007). Predicting political elections from rapid and unreflective face judgments. *Proceedings of the National Academy of Sciences USA*, 104, 17948-17953.

- Bass, B.M. (1990). *Handbook of Leadership: A survey of Theory and Research*. New York: Free Press.
- Berscheid, E., & Walster, E. (1974). Physical attractiveness. *Advances in Experimental Social Psychology*, 7, 157-215.
- Blaker, N. M., Rompa, I., Dessing, I. H., Vriend, A. F., Herschberg, C., & Van Vugt, M. (2013). The height leadership advantage in men and women: Testing evolutionary psychology predictions about the perceptions of tall leaders. *Group Processes & Intergroup Relations*, 16, 17-27.
- Blau, F. D., & Kahn, L. M. (2007). The Gender-pay-gap Have Women Gone as Far as They Can?. *The Academy of Management Perspectives*, 21, 7-23.
- Blau, F.D., & Kahn, L.M. (2006). The US gender-pay-gap in the 1990s: Slowing convergence. *Industrial & Labor Relations Review*, 60, 45-66.
- Braun, S., Peus, C., Weisweiler, S., & Frey, D. (2013). Transformational leadership, job satisfaction, and team performance: A multilevel mediation model of trust. *The Leadership Quarterly*, 24, 270-283.
- Bruce, V. & Young, A. (1986). Understanding face recognition. *British Journal of Psychology*, 77, 305-327.
- Buchanan, T. (2000). Internet research: self-monitoring and judgments of attractiveness. *Behavior Research Methods Instruments and Computers*, 32, 521-527.
- Burke, C. S., Sims, D. E., Lazzara, E. H. and Salas, E. 2007. Trust in leadership: A multi-level review and integration. *The Leadership Quarterly*, 18, 606–632.
- Carney, D. R., Cuddy, A. J. C., & Yap, A. J. (2010). Power posing: Brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychological Science*, 21, 1363-1368.
- Chiu, R. K., & Babcock, R. D. (2002). The relative importance of facial attractiveness and gender in Hong Kong selection decisions. *International Journal of Human Resource Management*, 13, 141-155.
- Choi, J. K., & Bowles, S. (2007). The coevolution of parochial altruism and war. *Science*, 318, 636–640.
- Chow, G. C. (1960). Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, 28, 591–605.
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007). Trust, trustworthiness and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92, 909-927.
- Creed, W. D., & Miles, R. E. (1996). *Trust in organizations: frontiers of theory and research*. Thousand Oaks, CA: Sage.
- 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.
- Day, D. V. (2001). Leadership development: A review in context. *The Leadership Quarterly*, 11, 581-613.
- DeConinck, J. B., & Stilwell, C. D. (2004). Incorporating organizational justice, role states, pay satisfaction and supervisor satisfaction in a model of turnover intentions. *Journal of Business Research*, 57, 225-231.
- DeShields Jr., O.W., Kara, A. & Kaynak, E. (1996). Source effects in purchase decisions: The impact of physical attractiveness and accent of salesperson. *International Journal of Research in Marketing*, 13, 89-101.

- Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *The Leadership Quarterly*, 25, 36-62.
- Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, 24, 285-290.
- Drolet, M. (2002). Can the workplace explain canadian gender pay differentials? *Canadian Public Policy / Analyse de Politiques*, 28, Supplement: Occupational Gender Segregation: Public Policies and Economic Forces, S41-S63.
- Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but...: A meta-analytic review of research on the physical attractiveness stereotype. *Psychological bulletin*, 110, 109 - 128.
- Epitropaki, O., & Martin, R. (2004). Implicit leadership theories in applied settings: factor structure, generalizability, and stability over time. *Journal of Applied Psychology*, 89, 293 – 310.
- European Foundation for the Improvement of Living and Working Conditions. (2009) retrieved April 2014 from <http://www.eurofound.europa.eu/publications/htmlfiles/ef081426.htm>
- Fiedler, F. E. (1964). A contingency-model of leadership effectiveness. *Advances in Experimental Social Psychology*, 1, 149-190.
- Field, A. F. (2009). *Discovering Statistics using SPSS (3rd Edition)*. London: Sage.
- Finkelstein, S. (1992). Power in top management teams: Dimensions, measurement, and validation. *The Academy of Management Journal*, 35, 505-538.
- Flinn, M. V., Ponzi, D. & Muehlenbein, M. (2012). Hormonal mechanisms for regulation of aggression in human coalitions. *Human Nature*, 23, 68-88.
- Frieze, I. H., Olson, J. E. & Russell, J. (1991). Attractiveness and income for men and women in management. *Journal of Applied Social Psychology*, 21, 1039-1057.
- Furnham, A., Lavancy, M. & McClelland, A. (2001). Waist to hip ratio and facial attractiveness: A pilot study. *Personality and Individual Differences*, 30, 491-502.
- Goldstein, A. G., Chance, J. E., & Gilbert, B. (1984). Facial stereotypes of good guys and bad guys: A replication and extension. *Bulletin of the Psychonomic Society*, 22, 549-552.
- Gosling, S. D., Vazire, S., Srivastava, S. & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist*, 59, 93-104.
- Hamstra, M. R. W. (2014). 'Big' men: Male leaders' height positively relates to followers' perception of charisma. *Personality and Individual Differences*, 56, 190-192.
- Hassin, R. & Trope, Y. (2000). Facing faces: Studies on the cognitive aspects of physiognomy. *Journal of Personality and Social Psychology*, 78, 837–852.
- Henderson, J. J., & Anglin, J. M. (2003). Facial attractiveness predicts longevity. *Evolution and Human Behavior*, 24, 351-356.
- House, R. J., & Howell, G. J. M. (1992). Personality and charismatic leadership. *The Leadership Quarterly*, 3, 81-108.
- Hugenberg, K., & Bodenhausen, G. V. (2003). Facing prejudice: implicit prejudice and the perception of facial threat. *Psychological Science*, 14, 640–643.
- Johnson, D. D. P., Blumstein, D. T., Fowler, J. H. & Haselton, M. G. (2013). The evolution of error: Error management, cognitive constraints and adaptive decision-making biases. *Trends in Ecology and Evolution*, 28, 474-481.

- Judge, T. A., & Cable, D. M. (2004). The effect of physical height on workplace success and income: Preliminary test of a theoretical model. *Journal of Applied Psychology, 89*, 428–441.
- Judge, T. A., Hurst, C., & Simon, L. S. (2009). Does it pay to be smart, attractive, or confident (or all three)? Relationships among General Mental Ability, physical attractiveness, core self-evaluations, and income. *Journal of Applied Psychology, 94*, 742-755.
- Jung, D. I., & Avolio, B. J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior, 21*, 949-964.
- Keltner, D., Gruenfeld, D. H. & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review, 110*, 265-284.
- Koenig, A. M., Eagly, A. H., Mitchell, A. A., & Ristikari, T. (2011). Are leader stereotypes masculine? A meta-analysis of three research paradigms. *Psychological Bulletin, 137*, 616 – 642.
- Korsgaard, M. A., Schweiger, D. M., & Sapienza, H. J. (1995). Building commitment, attachment, and trust in strategic decision-making teams: The role of procedural justice. *Academy of Management Journal, 38*, 60-84.
- Kotter, J.P. (1990). *A force for change: How leadership differs from management*. New York: Free Press.
- Krueger, J. I., & Funder, D. C. (2004). Towards a balanced social psychology: Causes, consequences, and cures for the problem-seeking approach to social behavior and cognition. *Behavioral and Brain Sciences, 27*, 313–327.
- Krupp, D. B., DeBruine, L. M., & Jones, B. C. (2011). Apparent health encourages reciprocity. *Evolution and Human Behavior, 32*, 198-203.
- Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin, 126*, 390 – 423.
- Lee, H. B. (2008). Using the Chow Test to Analyze Regression Discontinuities. *Tutorials in Quantitative Methods for Psychology, 4*, 46-50.
- Little, A. C. (2014). Facial appearance and leader choice in different contexts: Evidence for task contingent selection based on implicit and learned face-behaviour/face-ability associations. *The Leadership Quarterly, 25*, 865-874.
- Little, A. C., & Roberts, S. C. (2012). Evolution, appearance and occupational success. *Evolutionary Psychology, 10*, 782-801.
- Little, A. C., Burriss, R. P., Jones, B. C., & Roberts, S. C. (2007). Facial appearance affects voting decisions. *Evolution and Human Behavior, 28*, 18-27.
- Little, A. C., Roberts, S. C., Jones, B. C., & DeBruine, L. M. (2012). The perception of attractiveness and trustworthiness in male faces affects hypothetical voting decisions differently in wartime and peacetime scenarios. *The Quarterly Journal of Experimental Psychology, 65*, 2018-2032.
- Lord, R. G., & Maher, K.J. (1991) Alternative Information-Processing Models and Their Implications for Theory, Research, and Practice. *The Academy of Management Review, 15*, 9-28
- Lord, R. G., de Vader, C. L. & Alliger, G. M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology, 71*, 402-410.

- MacDonald, M. M., Navarrete, C. D., & Van Vugt, M. (2012). Evolution and the psychology of intergroup conflict: the male warrior hypothesis. *Philosophical Transactions of the Royal Society of London B*, 367, 670-679.
- Macrae, C. N., & Bodenhausen, G. V. (2000). Social cognition: Thinking categorically about others. *Annual Review of Psychology*, 51, 93-120.
- Mandel, H., & Semyonov, M. (2014). Gender-pay-gap and Employment Sector: Sources of Earnings Disparities in the United States, 1970–2010. *Demography*, 51, 1597-1618.
- Mandel, H., & Shalev, M., (2009). How Welfare States Shape the Gender-pay-gap: A Theoretical and Comparative Analysis, *Social Forces*, 87, 1873-1911.
- Marlowe, C. M., Schneider, S. L., & Nelson, C. E. (1996). Gender and attractiveness biases in hiring decisions: Are more experienced managers less biased? *Journal of Applied Psychology*, 81, 11-21.
- Mason, M. F., Cloutier, J., & Macrae, C. N. (2006). On construing others: category and stereotype activation from facial cues. *Social Cognition*, 24, 540–562.
- Meier, B. P., Robinson, M. D., Carter, M. S. & Hinsz, V. B. (2010). Are sociable people more beautiful? A zero-acquaintance analysis of agreeableness, extraversion, and attractiveness. *Journal of Research in Personality*, 44, 293-296.
- Miller, G. F. & Todd, P. M. (1998). Mate choice turns cognitive. *Trends in Cognitive Science*, 2, 190-198.
- Mintzberg, H. (1975). The manager's role: folklore and facts. *Harvard Business Review*, 53, 49-61.
- Mitchell, G. (2012). Revisiting truth or triviality: The external validity of research in the psychological laboratory. *Perspectives on Psychological Science*, 7, 109-117.
- Mook, D. G. 1983. In defense of external invalidity. *American Psychologist*, 38, 379-387.
- Mueller, U. & Mazur, A. (1996). Facial dominance in Homo sapiens as honest signaling of male quality. *Behavioral Ecology*, 8, 569–579.
- Offermann, L. R., Kennedy, J. K., & Wirtz, P. W. (1994). Implicit leadership theories: Content, structure, and generalizability. *The Leadership Quarterly*, 5, 43–58.
- Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the National Academy of Sciences*, 105, 11087–11092.
- Penton-Voak, I. S., Pound, N., Little, A. C. & Perrett, D. I. (2006). Personality judgments from natural and composite facial images: More evidence for a "kernel of truth" in social perception. *Social Cognition*, 24, 607- 640.
- Perrett, D. I., Lee, K. J., Penton-Voak, I. S., Rowland, D. R., Yoshikawa, S., Burt, D. M., Henzi, S. P., Castles, D. I., & Akamatsu, S. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature*, 394, 884-887.
- Petersen, M. B., Sznycer, D., Sell, A., Cosmides, L. & Tooby, J. (2013). The ancestral logic of politics: Upper-body strength regulates men's assertion of self-interest over economic redistribution. *Psychological Science*, 24, 1098-1103.
- Rantala, M. J., Moore, F. R., Skrinda, I., Krama, T., Kivleniece, I., Kecko, S., & Krams, I. (2012). Evidence for the stress-linked immunocompetence handicap hypothesis in humans. *Nature Communications*, 3, 694-699.
- Re D.E., Dzhelyova, M., Holzleitner, I.J. , Tigue C.C., Feinberg D.R., Perrett, D.I. (2012). Apparent height and body mass index influence perceived leadership ability in three-dimensional faces. *Perception*, 41, 1477-1485.

- Re, D. E., Hunter, D. W., Coetzee, V., Tiddeman, B. P., Xiao, D., DeBruine, L. M., Jones, B. C. & Perrett, D. (2013) Looking like a leader: facial shape predicts perceived height and leadership ability. *PLoS One*, 8, e80957.
- Re, D.E. & Perrett, D. (2014). The effects of facial adiposity on attractiveness and perceived leadership ability, *The Quarterly Journal of Experimental Psychology*, 67, 676-686.
- Rezlescu, C., Duchaine, B., Olivola, C. Y., & Chater, N. (2012). Unfakeable facial configurations affect strategic choices in trust games with or without information about past behavior. *PLoS One*, 7, e34293.
- Rhodes, G. (2006). The evolutionary psychology of facial beauty. *Annual Review of Psychology*, 57, 199-226.
- Rubery, J., Grimshaw, D., & Figueiredo, H., (2005). How to close the gender-pay-gap in Europe: towards the gender mainstreaming of pay policy. *Industrial Relations Journal*, 36, 184–213.
- Rule, N. O., & Ambady, N. (2008). The face of success: Inferences from chief executive officers' appearance predict company profits. *Psychological Science*, 19, 109-111.
- Rule, N., & Tshkay, K. O. (2014). The influence of economic context on the relationship between chief executive officer facial appearance and company profits. *The Leadership Quarterly*, 25, 846-854.
- Schaubroeck, J., Lam, S. S., & Peng, A. C. (2011). Cognition-based and affect-based trust as mediators of leader behavior influences on team performance. *Journal of Applied Psychology*, 96, 863 - 871.
- Schmidt, F. L. & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262-274.
- Scott-Phillips, T. C., Dickins, T. E., & West, S. A. (2011). Evolutionary theory and the ultimate-proximate distinction in the human behavioral sciences. *Perspectives on Psychological Science*, 6, 38-47.
- Sell, A., Tooby, J. & Cosmides, T. (2009). Formidability and the logic of human anger. *Proceedings of the National Academy of Sciences*, 106, 15073-15078.
- Senior, C., Barnes, J., Jenkins, R., Landau, S., Philips, M. L., & David, A. S. (1999). Attribution of social dominance and maleness to schematic faces. *Social Behavior and Personality*, 27, 331–338.
- Senior, C., Philips, M. L., Barnes, J., & David, A. S. (1999). An investigation into the perception of dominance from schematic faces: A study using the World-Wide Web. *Behavior Research Methods, Instruments, & Computers*, 31, 341–346.
- Spisak, B. R., Dekker, P. H., Krüger, M., & Van Vugt, M. (2012^a). Warriors and peacekeepers: Testing a biosocial implicit leadership hypothesis of intergroup relations using masculine and feminine faces. *PloS one*, 7(1), e30399.
- Spisak, B. R., Homan, A. C., Grabo, A., & Van Vugt, M. (2012^b). Facing the situation: Testing a biosocial contingency model of leadership in intergroup relations using masculine and feminine faces. *The Leadership Quarterly*, 23, 273-280.
- Stangor, C., & Schaller, M. (1996) Stereotypes as Individual and Collective representations. In C.N. Macrae, C. Stangor, & M. Hewstone (Eds.). *Stereotypes and stereotyping* (pp. 3-40). Guilford Press.
- Stewart, G. L., Dustin, S. L., Barrick, M. R., & Darnold, T. C. (2008). Exploring the handshake in employment interviews. *Journal of Applied Psychology*, 93, 1139-1146.

- Stirrat, M. & Perrett, D. I. (2010). Valid facial cues to cooperation and trust: Male facial width and trustworthiness. *Psychological Science*, 21, 349-354.
- Stirrat, M., & Perrett, D. I. (2012). Face structure predicts cooperation: Men with wider faces are more generous to their in-group when out-group competition is salient. *Psychological Science*, 23, 718-722.
- Surawski, M.K. & Ossoff, E.P. (2006). The effects of physical and vocal attractiveness on impression formation of politicians. *Current Psychology*, 25, 15–27.
- Tengblad, S. (2006). Is there a new managerial work? A comparison with Henry Mintzberg's classic study 30 years later. *Journal of Management Studies*, 43, 1437-1461.
- Tigue, C. C., Borak, D. J., O'Connor, J. J. M., Schandl, C. & Feinberg, D. R. (2012). Voice pitch influences voting behavior. *Evolution and Human Behavior*, 33, 210-216.
- Todorov, A., Mandisodza, A. N., Goren, A. & Hall, C. C. (2005). Inferences of competence from faces predicts election outcomes. *Science*, 308, 1623–1626.
- Todorov, A., Olivola, C. Y., Dotsch, R., & Mende-Siedlecki, P. (2015). Social attributions from faces: Determinants, consequences, accuracy, and functional significance. *Annual Review of Psychology*, 66, 519-545.
- Todorov, A., Said, C. P., Engell, A. D., & Oosterhof, N. N. (2008). Understanding evaluation of faces on social dimensions. *Trends in Cognitive Sciences*, 12, 455–460.
- Van Vugt, M., De Cremer, D., & Janssen D.P. (2007). Gender differences in cooperation and competition: The male-warrior hypothesis. *Psychological Science*, 18, 19-23.
- Watkins, C. D., DeBruine, L. M., Little, A. C., & Jones, B. C. (2012). Social support influences preferences for feminine facial cues in potential social partners. *Experimental Psychology*, 59, 340-347.
- Watkins, C. D., Jones, B. C., & DeBruine, L. M. (2010). Individual differences in dominance perception: Dominant men are less sensitive to facial cues of male dominance. *Personality and Individual Differences*, 49, 967-971.
- Wheeler, S. C. & Petty, R. E. (2001). The effects of stereotype activation on behaviour: A review of possible mechanisms. *Psychological Bulletin*, 127, 797-826.
- Wilson, M. & Daly, M. (2004). Do pretty women inspire men to discount the future? *Proceedings of the Royal Society of London B*, 271, S177-S179.
- Wong, E. M., Ormiston, M. E., & Haselhuhn, M. P. (2011). A face only an investor could love: CEOs' facial structure predicts their firms' financial performance. *Psychological Science*, 22, 1478-1483.
- Yukl, G. (2006). *Leadership in Organizations*. New Jersey: Pearson Education Inc.

Table 1.

Correlations between facial attributes and payment reward

FACIAL CUES AND PAY

	M	SD	1	2	3	4
1. Sex of face	1.50	.50				
2. Attractiveness	2.68	.65	-.06			
3. Trustworthiness	3.37	.53	-.01	.58**		
4. Dominance	3.60	.61	.04	.24*	-.36**	
5. Payment shop floor	3.06	.51	.25*	.78**	.59**	.21*
6. Payment executive	2.77	.47	.27**	.77**	.58**	.35**
7. Payment overall	2.92	.51	.25**	.74**	.56**	.26**

Note: N = 100 faces, * p < .05, ** p < .01, two-tailed, Sex of Face: 0 = male, 1 = female

Table 2.

Regressions of pay on facial attributes, for all pictures and by managerial position

Predictor	<u>Overall sample</u>		<u>Shop floor managers</u>		<u>Senior managers</u>	
	B(SE)	f^2	B(SE)	f^2	B(SE)	f^2
Sex of face	0.24 (.04)	.24**	0.23 (.06)	.23**	0.25 (.04)	.27**
Attractiveness	0.29 (.05)	.37**	0.37(.06)	.47**	0.21 (.05)	.30**
Trustworthiness	0.45 (.06)	.48**	0.39 (.08)	.41**	0.52 (.06)	.59**
Dominance	0.30 (.05)	.35**	0.21 (.06)	.25**	0.38 (.04)	.50**

*Overall sample: $R^2 = .70$, $f^2 = 2.33$; Shop level: $R^2 = .72$, $f^2 = 2.57$; Senior level: $R^2 = .82$; $f^2 = 4.56$; ** $p > .001$; Sex of face is dummy coded so that 0 = male face; 1 = female face; Effect sizes are computed using Cohen's f^2 effect size for an F-test:
 $f^2 = \frac{R^2}{1-R^2}$*

Table 3

Regression of pay on facial attributes by sex of face

Predictor	<u>Female managers</u>		<u>Male managers</u>	
	B(SE)	f^2	B(SE)	f^2
Attractiveness	0.24 (.05)	.36**	0.23 (.09)	.27*
Trustworthiness	0.56 (.09)	.61**	0.53 (.09)	.57**
Dominance	0.52 (.08)	.57**	0.25 (.06)	.33**

*Female Managers: $R^2 = .73$, $f^2 = 2.70$; Male Managers: $R^2 = .67$; $f^2 = 2.03$; ** $p > .001$; * $p > .01$; Sex of face is dummy coded so that 0 = male face; 1 = female face; Effect sizes are computed using Cohen's f^2 effect size for an F-test:
 $f^2 = \frac{R^2}{1-R^2}$*

Table 4.

'Pay premium' calculated for each of the facial attributions

Sample	Pay premium		
	Attractiveness	Dominance	Trustworthiness
Pay Overall sample	£187.33 (\$284.74)	£177.21 (\$269.36)	£243.02 (\$369.39)
Shop floor level	£238.02 (\$361.79)	£126.61 (\$192.45)	£207.64 (\$315.61)
Senior level	£140.19 (\$213.09)	£233.65 (\$355.15)	£275.70 (\$419.06)
Female faces	£162.00 (\$246.24)	£256.50 (\$389.88)	£274.50 (\$417.24)
Male faces	£143.10 (\$217.51)	£174.90 (\$265.85)	£302.10 (\$459.19)

*Note: the pay premium was computed as follows: $pay\ premium = 2 \times \text{of facial attribute} \times SD_{in\ pay}$ *£1000 (based on Field, 2009). Pound to Dollar conversion (£1=\$1.52) correct as of 14/01/2015.*