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Context-specificity in facial cues of leadership

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I. ABSTRACT

Facial cues can have context-contingent effects on leadership judgments, with dominant-looking individuals judged as better leaders in wartime than peacetime contexts and trustworthy-looking individuals judged as better leaders in peacetime than wartime contexts. To further explore this issue participants rated faces for dominance, trustworthiness, attractiveness, effectiveness as leader of a country during wartime or peacetime, and effectiveness as leader of a company manufacturing cars or clothing. Principal component analysis of potential leaders' characteristics that predicted leadership judgments in prior research produced three components, reflecting general *positive regard*, *dominance*, and *height*, respectively. Perceived *dominance* and actual *height* positively predicted leadership judgments in a wartime context but not in a peacetime context. *Positive regard* positively predicted leadership judgments in a peacetime context, but not in a wartime context. Similar patterns of results were observed for leadership judgments in car-manufacturing and clothing-manufacturing contexts. Together, these results present further evidence for context-contingent effects of facial cues on hypothetical leadership judgments.

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AUTHOR'S DECLARATION

I, Vanessa Fasolt, hereby certify that this thesis has been written by me, and that it is the record of work carried out by me, and that it has not been submitted in any previous application for a higher degree.

Date: 10\03\2017   Signature:

INTRODUCTION

The face conveys vast amounts of information and people highly agree on rapid, unreflective trait inferences from faces (Oosterhof & Todorov, 2008; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015; Zebrowitz & Montepare, 2008). These first impressions of a person are made within the first 100 milliseconds of exposure to the face, and their rapid nature leaves little room for inhibiting or adjusting the first impression (Willis & Todorov, 2006). The minimum exposure time needed to build this first impression is so short that no saccadic eye movements are possible, hence the face is not judged through exploration but through one single glance (Olivola & Todorov, 2010). Some of the personality traits that are inferred from a single rapid exposure to a face include competence, aggressiveness, trustworthiness, and many more (Todorov, Said, Engell, & Oosterhof, 2008). These intuitive judgments inform real life outcomes in various domains, such as judicial decisions (Zarkadi, Wade, & Stewart, 2009), where mature and masculine looking defendants had to pay higher monetary awards in small claim courts than baby-faced defendants (Zebrowitz & McDonald, 1991). Another domain in which first impressions influence the outcome is mate choice (Olivola & Todorov, 2010), where males appearing extroverted had a high success rate on dating websites, while females appearing competent, ambitious and trustworthy had a low success rate on dating websites. Another domain that is influenced by these intuitive judgments is leadership, as one of the personality traits that may be inferred from a face is leadership ability (Murray, 2014; Van Vugt & Grabo, 2015).

In order to investigate whether leadership ability can be inferred from a face, Todorov, Mandisodza, Goren, and Hall (2005) looked at whether judgments of faces

(i.e., naïve trait inferences) can predict the outcome of actual U.S. elections. Participants were shown a pair of black and white headshot photographs of the candidates for the U.S. House and Senate. They were asked to choose whichever face they thought to be more competent. In case any of the participants recognized a candidate their data was excluded from the analysis, which allowed the results to be exclusively based on character trait inference based on a face, with no prior information about the actual personality of the candidate in the picture. They found that the faces chosen to be more competent won a seat significantly more often than the faces not chosen from the pair of candidates. Specifically, the more competent looking candidate won in 72% of the Senate races and in 67% of the House races. Moreover, competence judgments were significantly positively correlated with the difference in votes between the candidates, with correlations ranging from 0.37 to 0.44 for the different seats. These results suggest that face perception plays a crucial role in leadership judgment and actual leadership outcomes.

Children seem to use similar facial cues in leadership judgments as adults and their judgments are similarly proficient at predicting election outcomes. Antonakis and Dalgas (2009) recruited 681 children between the ages of 5 and 13 years of age, whom they asked to play a video game in which they were travelling from Troy to Ithaca on a boat. After the game the children were presented with pairs of faces and were asked to select the person they would like to be the captain of their boat. The pairs of faces were composed of the runner-up and winner of the 2002 French parliamentary elections. Logistic regression revealed that the probability of children's choice of captain to correctly predict election outcomes was 0.71. This outcome suggests that children are already proficient in using facial cues in

leadership judgments. Moreover, the accuracy of these judgements does not seem to change with age and with increasing experience, as 684 adults were asked to judge the same pairs of faces on their competence and the pattern of results was indistinguishable from the children's judgments.

While the findings described above suggest that both adults' and children's judgments of faces predict election outcomes, it is unclear whether such judgments also predict actual leadership competency. Consequently, several other studies have tested for possible links between facial appearance and putative measure of leadership competency.

In a study by Rule and Ambady (2008), participants were asked to rate male Chief Executive Officers' (CEOs) faces from the 25 highest and lowest ranked companies of the Fortune 1000 list on leadership ability in general and on five facial traits that are thought to be important for leadership judgments (dominance, competence, likeability, trustworthiness and facial maturity). If a participant recognized the face of a CEO, their data was excluded from the analysis. First, a principal component analysis was performed on the five facial traits. This analysis produced two components. One component was labelled *Power* and was highly correlated with rated competence, dominance and maturity. The other component was *Warmth*, which was highly correlated with rated likeability and trustworthiness. There was a significant positive correlation between the *Power* component and company profits, even when controlling for potential confounds, such as CEO age, facial demeanour and attractiveness. Ratings of CEO faces for the trait leadership also predicted company profits. However, general leadership ratings and the *Power* component

were not significantly correlated with each other. This is noteworthy since it suggests that participants based their leadership judgments on more than simply perceived power and that perceived power and leadership ability of CEOs independently predicted company profits. In a follow-up study of female CEOs faces, Rule and Ambady (2009) found that competence ratings of female CEOs faces predicted company profits and their own personal financial success. Together, these results suggest that ratings of faces predict leadership success, at least within the domain of CEOs. However, it is not clear from these studies whether companies who already generate high company profits employ certain leaders based on the facial appearance or whether individuals with certain facial features are superior in generating company profits. The relationship between perceived traits and actual performance could be based on expectancy-confirmation processes, such as selecting certain environments and activities based on own appearance and stereotype congruency (Caspi, Harrington, Milne, Amell, Theodore, & Moffitt, 2003; Caspi, Harrington, Moffitt, Milne, & Poulton, 2006). Furthermore, appearance also leads to certain expectancies from other people, which can result in advantages such as more attention, more given opportunities, and more support (Rosenthal, 1994; Trzesniewski, Donnellan, Moffitt, Robins, Poulton, & Caspi, 2006).

The studies described above (Antonakis & Dalgas, 2009; Rule & Ambady, 2008; Rule & Ambady, 2009; Rule & Ambady, 2011; Todorov, Mandisodza, Goren, & Hall, 2005) suggest a relationship between subjective perceptions of faces and leadership outcomes. However, other studies have investigated the possible relationships between more objective, measureable facial characteristics and leadership outcomes. Facial width-to-height ratio (fWHR) is calculated by dividing

the bizygomatic width by the upper-face height (Lewis, Lefevre, & Bates, 2012).

Previous research has found that higher fWHR is associated with aggressive

behaviour in men (Carré & McCormick, 2008) and sense of power (Haselhuhn &

Wong, 2012). Wong, Ormiston and Haselhuhn (2011) examined the relationship

between CEOs' fWHR and their companies' financial success. The results show that

a greater fWHR in CEOs was correlated with a company's financial success.

Importantly, Wong, Ormiston and Haselhuhn (2011) found that fWHR predicted

company performance even when controlling for the companies previous financial

successes. A problem with previous research on CEO facial cues was that it was

unclear whether already successful companies hire CEOs with more "leader-like"

faces, or whether CEOs with more "leader-like" faces causally contribute to

company success (Rule & Ambady, 2008). This finding suggests that the facial

appearance of CEOs may causally contribute to a company's financial success.

To summarize the research discussed so far, we have established that there seems to

be a link between aspects of leaders' faces and leadership outcomes. This then raises

the question what specific facial characteristics influence leadership judgments?

Attractiveness could be one of the facial characteristics influencing leadership

judgments, as it influences outcomes in various domains, such as mate choice, social

interaction and hiring decisions (Frevert & Walker, 2014; Langlois, Kalakanis,

Rubenstein, Larson, Hallam, & Smoot, 2000; Re & Perrett, 2014; Todorov,

Mandisodza, Goren, & Hall, 2005). Frevert and Walker (2014) examined the link

between attractiveness and social outcomes and found several domains in which

being attractive can be advantageous. For example, in criminal cases, more attractive

defendants receive shorter sentences than less attractive defendants. This pattern is

especially apparent for female defendants. Furthermore, social exchange and interaction is facilitated and enhanced by attractiveness. Comparably, more attractive children and adults are judged and treated more positively than less attractive children and adults, often providing more attractive children and adults with more and better opportunities than less attractive children and adults (Langlois, Kalakanis, Rubenstein, Larson, Hallam & Smoot, 2000). Indeed, attractiveness holds incentive salience, as neuroimaging studies have shown that seeing attractive faces activates brain regions associated with motivation and reward (Cloutier, Heatherton, Whalen & Kelley, 2008; Winston, O'Doherty, Kilner, Perrett & Dolan, 2007). A classic example of the importance of facial appearance and attractiveness in leadership judgments in a political context was the U.S. presidential debate in 1960 between John F. Kennedy and Richard Nixon. Only 0.17% was separating them in the national popular vote, but the appearance of the two candidates on a televised debate changed the population's perception of the candidates drastically. Kennedy looked fit and handsome, while Nixon looked sickly and sweaty (Kraus, 1962). Anecdotal reports highlight the impact of visual impressions, as those who watched the debate agreed that Kennedy emerged as winner of the debate, while those who listened to the debate on the radio agreed that Nixon won the debate. Berggren, Jordahl and Potvaara (2010) find that increasing the attractiveness of a face by just one standard deviation increases the number of votes for a parliamentary candidate by 20% in both males and females. Furthermore, they found that attractiveness is more strongly positively correlated with electoral success than trustworthiness or competence. Banducci, Karp, Thrasher and Rallings (2008) also find that attractiveness influences electoral success. However, they found that attractiveness is mediated by trait evaluations (trustworthiness, leadership, qualification, competence etc.) which are

based on facial information such as age, and that the correlation between attractiveness and electoral success loses significance when trait evaluations are controlled for. Vocal attractiveness has also been associated with leadership ratings, confirming a positive effect of attractiveness on leadership perceptions (Surawski & Ossoff, 2006). Although physical attractiveness had a bigger impact on ratings than vocal attractiveness, unattractive voices lowered the ratings of highly physically attractive candidates (Surawski & Ossoff, 2006). One explanation for the positive effect of attractiveness on electoral success might be that positive characteristics are attributed to attractive faces, and that these positive attributions impact voting behaviour (Frevert & Walker, 2014; Zebrowitz & Montepare, 2008). Attractive people are not only treated preferentially (Langlois, et al., 2000), but they are also perceived as having more positive personality characteristics, such as being more intelligent and socially competent than less attractive people (Langlois, et al., 2000; Zebrowitz & Rhodes, 2004). This association between attractiveness and positive characteristics is also called the 'attractiveness halo' (Eagly, Ashmore, Makhijani, & Longo, 1991). Another theory that might explain voting behavior based on judgments of attractiveness is the functional disease-avoidance mechanism (White, Kenrick, & Neuberg, 2013). Diseases have been a persistent threat to humans and disease-avoidance mechanisms have evolved in response to this threat to prevent infections (Wolfe, Dunavan, & Diamond, 2007). Psychological as well as behavioural responses are employed to avoid disease threat (Schaller & Park, 2011), these include avoidance of individuals displaying heuristic cues of illnesses, such as lesions, physical disability, facial asymmetry and obesity (Park, Faulkner, & Schaller, 2003; Park, Schaller, & Crandall, 2007). Perceptions of attractiveness are highly positively correlated with perceptions of health (Rhodes, 2006) and some

research has suggested that attractiveness is correlated with actual health outcomes (Henderson & Anglin, 2003; Rhodes, Zebrowitz, Clark, Kalick, Hightower, & McKay, 2001; Zebrowitz & Montepare, 2008). Judging a leader's health status is crucial, as the followers are more dependent on him than on any other group member. An ill and thus ineffective leader could have severe negative consequences for the group's survival (Van Vugt, Johnson, Kaiser, & O'Gorman, 2008). White, Kenrick and Neuberg (2013) examined the relationship between disease threat and voting for physically attractive leaders in a number of studies. Disease threat in a particular region was assessed using life expectancy and infant mortality rate, as these are arguably a sensitive proxy measure of population health (Murray, Salomon, & Mathers, 2000). Disease threat was found to bias voting decisions. In districts high in disease threat, attractiveness significantly predicted both vote percentage and also whether a candidate won or lost, whereas in districts low in disease threat, attractiveness had no significant effect on vote percentage or election outcome. These results remained significant when controlling for education, gender and income.

As mentioned at the beginning, attractiveness is only one of multiple characteristics that can be inferred from a face, other characteristics include dominance and valence judgments. Dominance and valence (trustworthiness) appear to be the two principal components an emotionally neutral face is judged on (Oosterhof & Todorov, 2008; but see Sutherland, Oldmeadow, Santos, Towler, Burt and Young (2013) for a different component structure. They identify a third component 'youthful-attractiveness' when a diverse age range of faces is used). As these are two major components in social judgments of faces, they might also play a role in leadership

perception. Riggio and Riggio (2010) argue that faces are often deemed to look competent, and that competence judgments are based on these two principal components dominance and trustworthiness. These first impressions of candidates may be particularly important in low information and low involvement voting choices, namely when the voter is not processing the information provided by the candidate's campaign and the voting choice is based on a bias inferred by the candidate's face (Riggio & Riggio, 2010). It is estimated that at the last Presidential elections in the U.S., 50% of voters followed a party who they consistently vote for, 25% didn't vote at all, and the remaining 25% were so called "swing voters", who are minimally involved and could therefore be basing their voting decision on first impressions of the candidate's face (Kaufmann, Petrocik, & Shaw, 2008).

It is important to mention at this point that judgments derived from faces overlap in what facial cues are used to make them, however, they differ in their more nuanced use of the same facial cues. For example, dominance, which we have just identified as one of two principal components a face is judged on immediately, is dissociable from attractiveness perceptions, in that there are common but also distinct features in the face associated with these variables (Windhager, Schaefer & Fink, 2011). Perceived dominance has been associated with facial cues of physical strength, whereas perceived physical attractiveness has been associated with facial cues of height (Windhager, Schaefer & Fink, 2011). Facial cues related to dominance ratings include broad chins, thin lips, closeness of eyes and eyebrows, maturity and decreased facial roundness (Olivola & Todorov, 2010; Riggio & Riggio, 2010). Feminine facial characteristics are generally associated with more trustworthy and approachable traits, while masculine facial features are generally associated with

more dominant traits (Chiao, Bowman, & Gill, 2008; Riggio & Riggio, 2010).

Judging a leader's dominant personality traits from facial cues can be of advantage

for a group (Murray, 2014). More dominant personality traits have been associated

with better presidential performance, higher leadership ratings, persuasiveness and

also objective presidential outcomes, such as initiating new projects (Lilienfeld,

Waldman, Landfield, Watts, Rubenzer, & Faschingbauer, 2012). It is also suggested

that these traits interact differently in male and female faces. In male faces

trustworthiness is independent from dominance, hence a man can be perceived as

both, but for female faces trustworthiness and dominance are interrelated, and

increasing trustworthiness decreases dominance and vice versa (Heilman, 2001;

Olivola & Todorov, 2010).

A further characteristic informing dominance judgments is height (Marsh, Henry,

Schechter, & Blair, 2009; Sharoni, 2006). Height has been linked in multiple studies

with leadership judgments and a general perceptual bias (Blaker, Rompa, Dessing,

Vriend, Herschberg, & Van Vugt, 2013; Re, Dzhelyova, Holzleitner, Tigue,

Feinberg, & Perrett, 2012; Re, et al., 2013; Sorokowski, 2010). Height is positively

correlated with income (Judge & Cable, 2004), military rank (Mazur, Mazur, &

Keating, 1984), authority status in the workplace (Gawley, Perks, & Curtis, 2009),

professional and educational achievement (Cavelaars, et al., 2000; Silventoinen,

Krueger, Bouchard, Kaprio, & McGue, 2004; Stulp, Buunk, Verhulst, & Pollet,

2012), and number of times run for positions of leadership (Murray & Schmitz,

2011). Taller males are physically stronger (Carrier, 2011; Murray, 2014; Sell,

Cosmides, Tooby, Sznycer, von Rueden, & Gurven, 2009), perceive others as less

dominant (Watkins et al., 2010) and display less jealousy when confronted with

physically and socially superior rivals (Buunk, Park, Zurriaga, Klavina, & Massar, 2008). Height can be accurately judged from faces (Schneider, Hecht, Stevanov, & Carbon, 2013), however, it is not entirely clear which facial cues drive this attribution (Re et al., 2013). Facial elongation (length divided by width of face), which increases from infancy to adulthood, could be one of the cues used to judge height from faces (Enlow & Hans, 1996; Ramanathan & Chellappa, 2006). Indeed, Re et al. (2013) found that face elongation influenced perceived height, and that perceived height influences leadership judgments.

Whenever words such as "large", "above", "up", "top" are used they are conceptually related with authority and dominance, while words like "small", "down", below" are associated with submissiveness (Giessner & Schubert, 2007; Schubert, 2005). Colloquial expressions such as "big man" underline this conceptual thinking of big and tall as a sign of authority and importance (Stulp, Buunk, Verhulst, & Pollet, 2013). This association could result in a disadvantage for females applying for leadership roles, as height is a sexually dimorphic trait and females are in general shorter than males (Blaker et al., 2013). Indeed, it has been found that males receive higher leadership ratings than females (Re et al., 2012) and that perceived height only impacts dominance perceptions in males but not females, for whom height only impacts intelligence perceptions (Blaker et al., 2013). Still, dominance is a cue used in both males and females to infer leadership ability (Blaker et al., 2013); yet, different cues seem to inform dominance judgments for males and females. Thus, height seems to play a crucial role in leadership judgments as it informs dominance perceptions, however, there seem to be gender differences in how height interacts with leadership judgments (Gawley et al., 2009; Maner,

DeWall, & Gailliot, 2008). McCann (2001) found that in the U.S. elections between 1824 and 1992, taller winners would have a bigger margin of victory, and that in years of social, political and economic threat, taller candidates were elected in comparison to years with less societal threat. These findings fit nicely with the disease threat hypothesis, arguing that during periods of heightened threat a strong and healthy leader is crucial (White, Kenrick, & Neuberg, 2013). Presidential candidates are aware of this effect and have used tricks to influence their perceived height, such as wearing heeled shoes and changing podium heights (Sorokowski, 2010). As these manipulations are used, it is crucial to examine not only actual height of politicians, but also the perceived height by the voters, as actual height might not be known by voters, or have been manipulated. Moreover, it is especially interesting to investigate whether height perception changes with electoral support and success, as Highman and Carment (1992) suggested. Indeed, in the presidential elections in Poland in 2005, Sorokowski (2010) found that the perceived height of a candidate depends on whether a voter supports the candidate or not. The candidate's supporters perceived their preferred candidate as being taller than their opponents before the actual elections, and electoral level of support was also positively correlated with perceived height before the elections. After the elections, perceived height changed significantly. The perceived height of the two candidates who withdrew decreased, while the perceived height of one of the candidate's, whose support grew over the course of the elections, increased. These findings also support the notion that the concepts "tall", "status" and "dominance" are associated, as voters changed candidate's estimated height according to the status and level of support of the candidate. Unfortunately, no female candidates could be included in the study,

hence, it remains unclear whether the association between "tall" and "status" is the same in females (Sorokowski, 2010).

It is important to note the inconsistencies in the leadership literature concerning the association between height and electoral success, as different papers seem to vary significantly in their figures of how often the taller candidate has won an election (Stulp, Buunk, Verhulst, & Pollet, 2013). Sorokowski (2010) reports that between 1900 and 1968 the taller candidate always won the U.S. election race, while Persico, Postlewaite and Silverman (2004) state that between 1952 and 2000, out of 13 elections, the taller candidate won 10 times. Murray and Schmitz (2011), provide yet another figure, as they conclude that between 1789 and 2008 the taller candidate won 58% of the elections. These differences in findings could be based on the selective sampling of election years, which lacks guidelines and explanations and seems arbitrary. Stulp, Buunk, Verhulst and Pollet (2013) therefore gathered height information and popular votes received for all candidates from all US presidential elections to draw valid conclusions about the association between height and electoral success. They found that in 45 elections for which height data was given, 58% of elections were won by the taller candidate, 67% of popular votes were won by the taller candidate and re-elected presidents were on average 5.5cm taller than presidents who were not re-elected. Height explained 15% of the variation in electoral support. Moreover, presidents were on average 7.23cm taller than Caucasian military men from the same birth cohort. The height difference between presidents and other men from the same birth cohort has increased over the years. This could be related to the increasing exposure to the candidates through media, making height a more accessible and used cue. It is important to note that not only

the winning, but also the losing candidates were taller than other men of their age. Stulp, Buunk, Verhulst and Pollet (2013) conclude that taller presidents do not win the elections more often, but that height is indeed positively correlated with popular vote.

Re et al. (2012) found that perceived height from facial cues influences leadership judgments, but that facial adiposity also seems to play a crucial role. Rated facial adiposity from face photographs is reliably associated with actual weight and Body Mass Index (BMI) (Coetzee, Chen, Perrett, & Stephen, 2010). Facial adiposity is negatively correlated with actual longevity (Reither, Hauser, & Swallen, 2009) and is positively correlated with poorer psychological health, including anxiety, stress and depression in females (Tinlin, Watkins, Welling, DeBruine, Al-Dujaili, & Jones, 2012). Therefore, an unhealthily high BMI decreases perceived leadership ability as health is a crucial trait sought in a leader and a higher BMI is associated with negative health consequences (Re et al., 2012). Moreover, adiposity preferences seem to be context-contingent, as a significantly lower BMI is chosen to maximise attractiveness than to maximise perceived leadership ability (Re & Perrett, 2014). While the BMI of the face chosen to be most attractive was underweight according to the World Health Organization's classification, the BMI of the face chosen to represent the most able leader was in the healthy weight range. The choice of a higher BMI to maximise perceived leadership ability in comparison to attractiveness could be based on the preference of a physically dominant leader (Murray, 2014). A low BMI or a very high BMI might undermine the physical dominance of an individual. Indeed, obese candidates are very rare in US elections, and only male overweight candidates are represented, not female overweight candidates (Roehling

et al., 2014). This is a first indication of the discrimination against candidates with high BMIs running for elections, as they are not represented in the candidate pool. Moreover, weight influences the support received in votes, as heavier candidates receive a lower vote share than their thinner opponents, and the difference in votes increases with larger size difference between the two candidates (Roehling et al., 2014). Therefore, it can be concluded that adiposity as well as height plays a crucial role in leadership judgments.

Following on from this study looking at height and adiposity, Batres, Re and Perrett (2015) looked at height and age of an individual and found that both influence perceptions of dominance of a face and therefore leadership judgments. Increasing height and masculinity, but also increasing age up to 35 years increased perceived dominance. Hence, the relationship between male's age and their perceived dominance followed an inverted U-shape. Furthermore, the influence of age was mediated by masculinity. The three traits height, age and masculinity significantly interacted with each other, suggesting a perceptual cross-influence on each other.

We have discussed a few characteristics influencing leadership judgments including attractiveness and height, lets now take a look at how age might influence these judgments following the last paper suggesting age to be a factor in dominance perceptions. Research has shown that preferences for age are dependent on context (Spisak, Grabo, Arvey, & van Vugt, 2014). Younger faces are preferred over older faces in a context requiring a leader promoting change, and older faces are preferred over younger faces in a context requiring a leader promoting stability (Spisak, Grabo, Arvey, & van Vugt, 2014).

There is a general lack of literature taking the context specificity of leadership into account. There is some compelling evidence that masculinity and dominance for example, are not generally favoured traits, but that preference depends on the context a leader is elected in (Murray, 2014; Little, Burriss, Jones, & Roberts, 2007). In one study conducted by Little, Burriss, Jones and Robert (2007), faces manipulated to look more masculine were elected more in a wartime voting scenario, while feminine faces were elected more in a peacetime voting scenario. Moreover, when manipulating unfamiliar faces to resemble either the U.S. presidential candidate George Bush's or John Kerry's facial physiognomies, context contingent effects were again observed. The face with Bush's facial physiognomies received more votes in the wartime context, while the face with Kerry's facial physiognomies received more votes in the peacetime context (Little, Burris, Jones, & Roberts, 2007). These findings underline the importance of taking into account the effects of context on leadership needs and how the context shapes the perception of the preferred leader.

Another study investigating the effect of context found that when participants were asked to describe their ideal leader after reading vignettes describing different scenarios demanding a leader, the weight and height of the ideated leaders differed significantly for different scenarios. The ideated leader in a wartime scenario was described as being taller and heavier, hence of a greater physical stature, than the ideated leader in a peacetime scenario (Murray, 2014). The wartime scenario leader fell into the overweight category of the Body Mass index (BMI) set by the World Health Organization (Murray, 2014). Moreover, the same data revealed a preference

for male leaders over female leaders in a wartime scenario. A preference for male

leaders over female leaders has also been observed in a study manipulating the

gender specificity of the leadership role (Garcia-Retamero & López-Zafra, 2006).

They presented participants with one of three vignettes that were identical apart from

the industry they were advertising for. The vignettes advertised a managerial position

in either the car manufacturing industry, the clothing manufacturing industry or a not

specified industry. Thereafter, participants were asked to imagine the successful

candidate for the managerial position. In the female gendered clothing

manufacturing industry, successful applicants were envisioned as being female. In

the male gendered car manufacturing industry and the neutral gendered, not specified

industry, successful applicants were envisioned as being male (Garcia-Retamero &

López-Zafra, 2006). These findings are in line with the gender role congruity theory

(Eagly & Karau, 2002), which states that leadership roles are gender typed, which

leads to expectations about the gender of the leader. People vote or select a leader

who matches the evoked context-specific leader image, which is either female typed

or male typed. Hence, females and males might be discriminated against in the hiring

process and might not be elected as leader based on a mismatch between gender

expectation for the role and actual gender of the contester. Re, DeBruine, Jones and

Perrett (2013) asked participants to transform a shown face to resemble the leader

they would like to lead their country during a time of war or during a time of peace.

Participants were able to manipulate the faces for perceived masculinity and height

by scrolling over them. Both masculinity and height were significantly increased in

the wartime context for females and males, while only masculinity was significantly

reduced in females in the peacetime context. Hence, there is a clear context-

contingent effect of facial traits, as the same trait, here masculinity, was increased in one context and decreased in another and these traits seem to also be gender specific. Two different leader prototypes have been described in traditional societies. First, the prosocial prototype in peacetime, which enables cooperation within the group and with other groups, emphasising altruism, warmth and empathy (Johnson, & Earle, 2000). Second, the dominant prototype in wartime, which maintains dominance over other groups through risk-taking and authority (Johnson, & Earle, 2000). Facial traits convey information employed to categorize people into the different leadership prototypes, hence, leaders are often elected because they look a certain way (Olivola & Todorov, 2010; Spisak, Dekker, Krüger, & Van Vugt, 2012).

Spisak, Homan, Grabo and Van Vugt (2012) found that masculine and feminine facial traits are associated with the two leader prototypes, with masculine looking leaders being expected to behave dominantly and competitively and feminine looking leaders being expected to behave empathetically and cooperatively. Masculine looking leaders were preferred in a competition scenario, showing that the leader's facial cues match the adaptive situation (Spisak, Homan, Grabo, & Van Vugt, 2012). This is especially the case when the message a potential leader is sending matches both their facial characteristics and context (Sharpanskykh & Spisak, 2011; Spisak, Homan, Grabo, & Van Vugt, 2012). For example, a leader with masculine facial traits advocating a message of competition and dominance in a wartime context will be preferred over a leader with feminine facial traits advocating a competitive message or a cooperative message in a wartime context. These evolved mechanisms helping choose a context-specific leader may have increased the efficiency of survival for the followers (Spisak, Dekker, Krüger, & Van Vugt, 2012).

The facial characteristics associated with the two leadership prototypes are also paralleled with the phenotypic types related to the hormones testosterone and oestrogen (Spisak, Dekker, Krüger, & Van Vugt, 2012). Higher levels of testosterone are associated with more dominant facial traits, such as a stronger jaw and thicker brows, and also with more dominant behaviour, such as higher risk taking and status-seeking (Archer, 2006; Pound, Penton-Voak, & Surridge, 2009; Swaddle & Reierson, 2002). Yet, higher levels of oestrogen are associated with more feminine facial traits, such as bigger eyes and fuller lips, and also with more empathetic behaviour, such as more cooperation and mitigation of conflict (Smith et al., 2006; Smith et al., 2012; Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000). Furthermore, Spisak, Dekker, Krüger and Van Vugt (2012) argue that facial cues of masculinity and femininity are more influential than actual gender of the face in leadership preferences in wartime and peacetime. The tendency for leaders with masculine faces to be preferred during wartime, and leaders with feminine faces being preferred during peacetime, is also consistent across Western and East Asian cultures (Spisak, Dekker, Krüger, & Van Vugt, 2012).

In addition to masculinity and femininity, attractiveness and trustworthiness are context-contingent facial traits. Attractiveness has been found to be preferred during wartime and trustworthiness to be preferred during peacetime (Little, Roberts, Jones, & DeBruine, 2012). On the one hand, trustworthiness is associated with the pro-social leadership prototype, as it emphasises the leader as a facilitator of intragroup and intergroup collaboration (Gomibuchi, 2004; Johnson & Earle, 2000). On the other hand, attractiveness is associated with the dominant leadership prototype, as attractiveness is associated with good physical health, which is crucial during

conflict (Rantala et al., 2012; Rhodes, Chan, Zebrowitz, & Simmons, 2003; Surawski & Ossoff, 2006; Thornhill & Gangestad, 2006; Zebrowitz & Rhodes, 2004).

In light of the above, the current study explored the roles of perceived facial attractiveness, trustworthiness, and dominance, actual age, height and BMI on leadership judgments of men and women. Principal component analysis was used to investigate the component structure underlying these inter-related variables and reduce these variables to orthogonal components. Moreover, as previous literature has suggested that leadership judgments can be context-specific, the current study explored the relationship between these components and judgments of men and women's leadership ability at a time of war, a time of peace, as leader of a car-manufacturing company, and as leader of a clothes-manufacturing company. Wartime and peacetime contexts were chosen following Little, Burris, Jones and Roberts (2007) and Re, DeBruine, Jones and Perrett (2013). Car-manufacturing company and clothes-manufacturing company contexts were chosen following Garcia-Retamero and López-Zafra (2006), who showed that these are male and female sex-stereotypical leadership roles, respectively. By contrast with previous research on leadership judgments of faces (e.g., Little, Burriss, Jones, & Roberts, 2007; Little, Roberts, Jones, & DeBruine, 2012; Re, DeBruine, Jones and Perrett 2013; Spisak, Blaker, Lefevre, Moore, & Krebbers, 2014; Spisak, Dekker, Krüger, & Van Vugt, 2012; Spisak, Homan, Grabo, & Van Vugt, 2012), in which both raters and face stimuli were selected from relatively narrow age ranges, the raters and stimuli in the current study were selected to represent a diverse age range. Specifically, based on previous findings, we predicted that leaders perceived to

possess pro-social traits would be preferred more in peacetime and a clothing manufacturer context than in wartime and a car manufacturer context, respectively. Conversely, we predicted that leaders perceived to possess dominant traits would be preferred more in wartime and a car manufacturer context than in peacetime and a clothing manufacturer context, respectively.

METHODS

Participants

Nineteen young adult women (mean age=21.14 years, SD=2.66 years, range=18-30 years), 16 older adult women (mean age=56.71 years, SD=6.88 years, range=40-70 years), 15 young adult men (mean age=23.65 years, SD=3.03 years, range=18-30 years), and 15 older adult men (mean age=54.66 years, SD=9.05 years, range=40-70 years) took part in the study. Over 95% of these participants were white.

Face stimuli

Face images of 45 white men (mean age=36.53 years, SD=14.15 years, range=18-67 years) and 45 white women (mean age=35.96 years, SD=14.07 years, range=18-66 years) were used in the study. These face images were taken under standardized photographic conditions in which the individuals photographed were posing with a neutral expression and direct gaze. Images were standardized on pupil position and were masked so that clothing was not visible. Images were selected from a larger image database to have a flat age distribution within each sex (i.e., 5 male and 5 female images were selected from each of the following age bands: younger than 20 years, 20 to 25 years, 25 to 30 years, 30 to 35 years, 35 to 40 years, 40 to 45 years, 45 to 50 years, 50 to 55 years, older than 55 years). Height (M=1.75m, SD=0.09m)

and weight (M=71.79kg, SD=17.66kg) were measured from each person

photographed and were used to calculate their body mass index (BMI;

$M=23.42kg/m^2$, $SD=4.80kg/m^2$).

Procedure

Participants rated the attractiveness, trustworthiness, and dominance of each face

using 1 (not very) to 7 (very) scales. They also indicated how good a leader they

thought each person would be for (a) a country during a time of war, (b) a country

during a time of peace, (c) a company that manufactured cars, and (d) a company

that manufactured clothing. These leadership ratings were also made using 1 (not

very) to 7 (very) scales. Each of the seven traits was rated in a separate block of trials

containing both the male and female faces. Block order and trial order within each

block were fully randomized. All participants rated the faces for all traits, except for

one woman from the older participants group who rated the faces for attractiveness

and trustworthiness only (i.e., opted not to complete the study).

Initial processing of data

Inter-rater agreement for ratings of each trait was high (all Cronbach's alphas>.91).

Consequently, for each trait, the mean rating for each face was calculated by

averaging ratings across raters. Descriptive statistics for these scores are given in

Table 1. Because older and younger raters' face ratings were highly correlated for all

traits (all r>.74, all N=90, all p<.001) data from older and younger raters were

combined for analyses.

Trait	Mean	Standard deviation	Cronbach's alpha	Correlation between older and younger participants' ratings (r)
Attractiveness	3.26	.95	.98	.92
Trustworthiness	3.79	.66	.95	.87
Dominance	4.00	.64	.93	.78
Leadership during wartime	3.46	.59	.92	.74
Leadership during peacetime	3.52	.68	.94	.86
Leadership of car manufacturer	3.64	.76	.95	.75
Leadership of clothing manufacturer	3.62	.89	.96	.87

Table 1. Descriptive statistics (means, standard deviation, Cronbach's alpha,

correlation between older and younger participants' ratings) for face ratings used in

the study.

Next, attractiveness ratings, trustworthiness ratings, dominance ratings, the height of

the person in the photograph, the BMI of the person in the photograph, and the age

of the person in the photograph were subjected to principal component analysis with

no rotation. This principal component analysis revealed three components with

eigenvalues greater than one, which, in total, explained approximately 83% of the

variance in scores. The component matrix for this analysis is shown in Table 2.

	Positive regard (component 1)	Height (component 2)	Dominance (component 3)
Attractiveness	.91	.15	.21
Trustworthiness	.80	-.27	-.13
Dominance	-.37	.28	.85
Age	-.81	-.39	.08
BMI	-.73	-.05	-.33
Height	-.19	.89	-.32

Table 2. Component matrix for principal component analysis of attractiveness

ratings, trustworthiness ratings, dominance ratings, the height of the person in the

photograph, the BMI of the person in the photograph, and the age of the person in the photograph.

The first component, explained approximately 47% of the variance in scores. This component was highly positively correlated with attractiveness and trustworthiness ratings and highly negatively correlated with age and BMI (see Table 2). This component was labeled the *positive regard component*. The second component, explained approximately 19% of the variance in scores. This component was highly positively correlated with height ratings. This component was labeled the *height component*. The third component, explained approximately 17% of the variance in scores. This component was highly positively correlated with dominance ratings. This component was labeled the *dominance component*

RESULTS

Wartime and peacetime contexts

First, leadership ratings for the wartime and peacetime contexts were analyzed using a custom model ANCOVA. The ANCOVA had the within-item factor *leadership context* (wartime, peacetime) and the between-items factor *sex of face* (male, female). The *positive regard component*, *dominance component*, and *height component* were entered as covariates. The custom model included main effects of all variables. It also included all possible interactions involving the within-items factor, between-items factor, or covariates, except for those involving more than one covariate.

The two-way interaction between *sex of face* and *leadership context* was significant (F(1,82)=6.21, p=.015, partial eta^2=.07). This interaction reflected men being rated as better leaders in the wartime context than peacetime context (t(44)=2.26, p<.001; wartime: M=3.71, SEM=0.10; peacetime: M=3.49, SEM=0.10) and women being rated as better leaders in the peacetime context than wartime context (t(44)==4.00, p=.029; wartime: M=3.21, SEM=0.06; peacetime: M=3.55, SEM=0.10). See Figure 1.
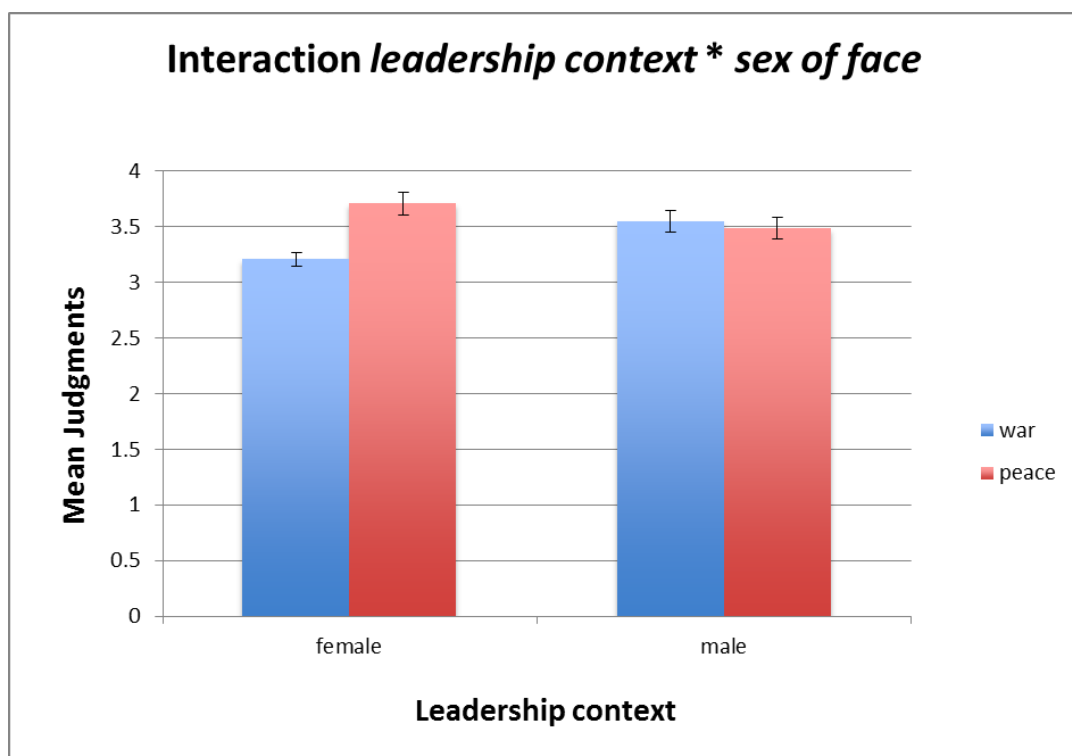

Figure 1. Interaction between *sex of face* (*female* and *male*) and *leadership context* *(wartime context* and *peacetime context)*

The two-way interactions between the *positive regard component* and *leadership context* (F(1,82)=225.71, p<.001, partial eta^2=.73) and between the *height component* and *leadership context* (F(1,82)=12.93, p<.001, partial eta^2=.14) were both significant. These interactions reflected the *positive regard component* being correlated with leadership ratings in the peacetime (r=.71, N=90, p<.001), but not

wartime (r=-.09, N=90, p=.40), context and the *height component* being correlated with leadership ratings in the wartime (r=.34, N=90, p<.001), but not peacetime (r=-.01, N=90, p=.96), context.

The three-way interaction among the *dominance component, sex of face,* and *leadership context* was significant (F(1, 82)=4.10, p=.046, partial eta^2=.05). This interaction reflected the *dominance component* being strongly correlated with wartime leadership ratings of both women (r=.73, N=45, p<.001) and men (r=.69, N=45, p<.001) and weakly correlated with peacetime leadership ratings of women (r=.27, N=45, p=.070), but not men (r=.01, N=45, p=.95).

The three-way interactions among the *positive regard component, sex of face,* and *leadership context* (F(1,82)<.01, p=.97, partial eta^2<.01) and among the *height component, sex of face,* and *leadership context* (F(1,82)=.20, p=.66, partial eta^2<.01) were not significant.

Following recommendations by Simmons et al. (2011), we repeated the main analysis without the covariates. There was no main effect of *leadership context* (F(1, 88)=0.89, p=.348, partial eta^2=.01), but there was an interaction between *sex of face* and *leadership context* (F(1,88)=18.82, p<.001, partial eta^2=.18). This interaction reflected men being rated as better leaders in the wartime context than peacetime context (t(44)=2.26, p=.029; wartime: M=3.71, SEM=0.10; peacetime: M=3.49, SEM=0.10) and women being rated as better leaders in the peacetime context than wartime context (t(44)=-4.00, p<.001; wartime: M=3.21, SEM=0.06; peacetime: M=3.55, SEM=0.10).

Car manufacturer and clothing manufacturer contexts

Next, the custom model ANCOVA described above was repeated, this time replacing leadership ratings for the wartime and peacetime contexts with leadership ratings for car manufacturer and clothing manufacturer. The two-way interaction between *sex of face* and *leadership context* was again significant ($F_{(1, 82)}=147.35$, $p=<.001$, partial eta^2=.64). Men were rated as better leaders of car manufacturers than clothing manufacturers ($t(44)==8.38$, $p<.001$; car manufacturer: M=4.08, SEM=0.10; clothing manufacturer: M=3.30, SEM=0.10). Women were rated as better leaders of clothing manufacturers than car manufacturers ($t(44)==9.33$, $p<.001$; car manufacturer: M=3.21, SEM=0.08; clothing manufacturer: M=3.93, SEM=0.14). See Figure 2.
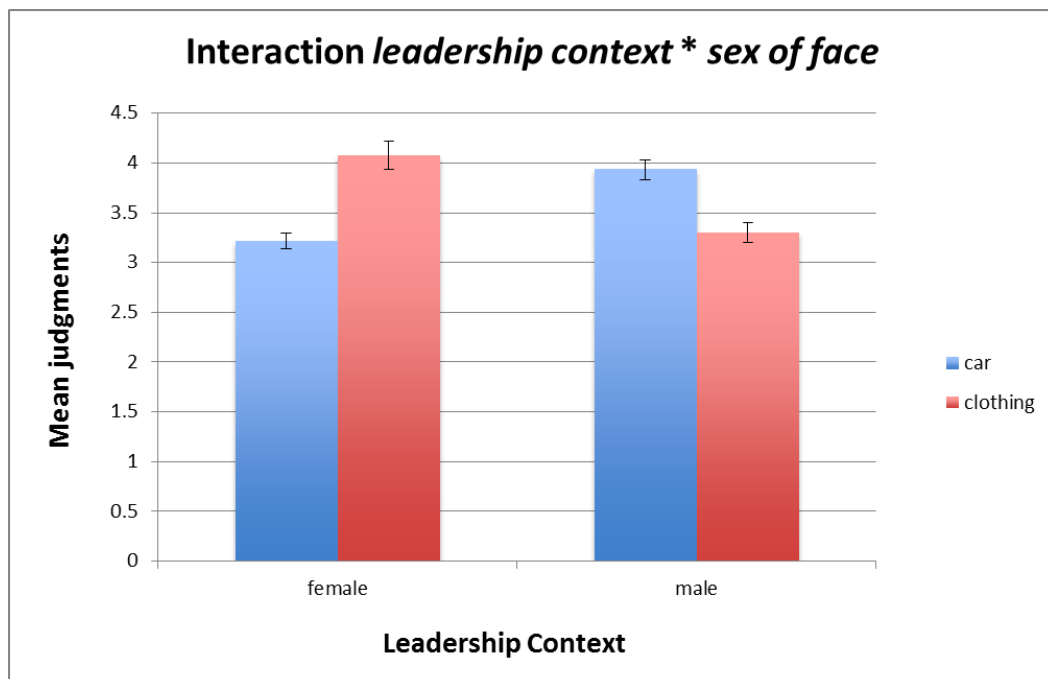

Figure 2. Interaction *sex of face* (*female* and *male*) and *leadership context (car manufacturer context* and *clothing manufacturer context)*

The two-way interaction between the *positive regard component* and *leadership context* was also significant again (F(1,82)=76.98, p<.001, partial eta^2=.48). The *positive regard component* was more strongly correlated with leadership ratings for the clothing manufacturer context (r=.82, N=90, p<.001) than the car manufacturer context (r=.18, N=90, p=.095). This interaction was not qualified by a significant three-way interaction among the *positive regard component, sex of face,* and *leadership context* (F(1,82)=0.30, p=.59, partial eta^2<.01).

The three-way interaction among the *dominance component, sex of face,* and *leadership context* was also significant in this analysis (F(1, 82)=11.04, p<.001, partial eta^2=.12). The *dominance component* was correlated with leadership ratings of both women (r=.53, N=45, p<.001) and men (r=.51, N=45, p<.001) in the car manufacturer context and with leadership ratings of women (r=.51, N=45, p<.001), but not men (r=.21, N=45, p=.17) in the clothing manufacturer context.

Because the two-way interaction between the *height component and sex of face* was close to significance (F(1,82)=3.32, p=.072, partial eta^2=.04), as was the three-way interaction among the *height component, sex of face,* and *leadership context* was close to significance (F(1,82)=2.81, p=.098, partial eta^2=.03), further exploratory analyses of the *height component* was carried out. The *height component* was correlated with leadership ratings of women in both the car manufacturer (r=.51, N=45, p<.001) and clothing manufacturer (r=.48, N=45, p<.001) contexts, but was not correlated with leadership ratings of men in either context (car manufacturer: r=-.09, N=45, p=.54; clothing manufacturer: r=.15, N=45, p=.32).

Following recommendations by Simmons et al. (2011), we repeated the main analysis without the covariates for the car and clothing manufacturer context. There was no main effect of *leadership context* (F(1, 88)=0.22, p=.639, partial eta^2=.003), but there was an interaction between *sex of face* and *leadership context* (F(1,88)=153.96, p<.001, partial eta^2=.64). This interaction reflected men being rated as better leaders in the car manufacturer context than clothing manufacturer context (t(44)=8.38, p<.001; car manufacturer: M=4.08, SEM=0.10; clothing manufacturer: M=3.30, SEM=0.10). Women were rated as better leaders of clothing manufacturers than car manufacturers (t(44)=-9.33, p<.001; car manufacturer: M=3.21, SEM=0.08; clothing manufacturer: M=3.93, SEM=0.14).

DISCUSSION

The current analyses showed that men were rated as better leaders than women were in both the wartime and car manufacturer contexts. By contrast, women were rated as better leaders than men were in the peacetime and clothing manufacturer contexts. These results are consistent with Re et al. (2012) and Garcia-Retamero and López-Zafra (2006), who also reported context-specific preferences for men versus women in leadership judgments.

Principal component analysis of attractiveness ratings, trustworthiness ratings, dominance ratings, the height of the person in the photograph, the BMI of the person in the photograph, and the age of the person in the photograph revealed three components (positive regard, height, dominance). The orthogonal positive regard and dominance components are similar to those reported by Oosterhof and Todorov (2008) who found that ratings of faces on multiple traits could be reduced to valence

and dominance components. The existence of a height component (height was not included in Oosterhof and Todorov's (2008) principal component analysis) is consistent with Re et al. (2013), who have previously demonstrated the existence of facial cues of height. However, whereas Batres, Re and Perrett (2015) have previously reported that facial cues of height influence dominance judgments of faces, the height component in the current study was orthogonal to the dominance component. Importantly, ratings of traits by participants of different ages were highly correlated, suggesting that the younger and older participants rated the faces in similar ways. This is consistent with other research demonstrating high agreement among individuals in perceptual judgments of faces (e.g., Oosterhof & Todorov, 2008).

The *positive regard component*, on which high scores indicate a combination of high attractiveness, high trustworthiness, youth, and low levels of adiposity (i.e., low BMI), positively predicted leadership judgments in the peacetime and clothing manufacturer contexts, but not the wartime or car manufacturing contexts. This is consistent with previous research (Little, Burriss, Jones, & Roberts, 2007; Spisak, Dekker, Krüger, & Van Vugt, 2012; Spisak, Homan, Grabo, & Van Vugt, 2012), in which leaders who were ascribed pro-social traits were preferred more during peacetime and extends this context-specific effect of perceived prosociality to managing different types of manufacturing companies.

The *dominance component*, on which high scores indicate individuals being perceived to be highly dominant, positively predicted leadership judgments in the wartime context and car manufacturer contexts. For women's, but not men's, faces, looking dominant increased leadership judgments in the clothing manufacturer and

peacetime contexts. These results are also consistent with previous research (Little, Roberts, Jones, & DeBruine, 2012; Murray, 2014) suggesting that more dominant-looking individuals are preferred as leaders during wartime, but also suggest that dominance can have positive effects on women's perceived leadership ability in other contexts. The effect of perceived dominance on women's perceived ability to lead a clothing manufacturing company is particularly interesting, since it shows that perceived dominance can benefit women's perceived leadership in contexts that are not necessarily male sex-stereotypical. This suggests that context-specific effects of facial cues on leadership abilities are not simply a by-product of over-generalisation of sex-related stereotypes.

The *height* component, on which higher scores indicated taller individuals, positively predicted leadership judgments in the wartime, but not peacetime, context. For women's, but not men's, faces, being taller also positively predicted leadership judgments in both the car manufacturer and clothing manufacturer contexts. This pattern of results suggests that facial cues of height have sex-specific contextual effects on leadership judgments and again suggests that context-specific effects of facial cues on leadership abilities are not simply a by-product of over-generalisation of sex-related stereotypes.

To summarize, perceived *dominance* and actual *height* are cues used in leadership judgments in a wartime context but not in a peacetime context. *Positive regard* is a cue used in leadership judgments in a peacetime context, but not in a wartime context. When looking at the cues used to judge leadership ability in a car manufacturer context and a clothing manufacturer context the patterns are sex

specific. For females, looking dominant and being tall is an advantage in both a car manufacturer context and a clothing manufacturer context. For males, being tall does not provide any advantage in either a car manufacturer nor a clothing manufacturer context, and looking dominant only provides an advantage in a car manufacturer context. The effect of *positive regard* generalizes to both sexes, as scoring higher on those traits is an advantage in a clothing manufacturer context for both males and females, but does not have any effect in a car manufacturer context. Together, these findings underline the importance of considering multiple contexts and facial characteristics when investigating judgments of leadership ability from facial cues (see also Little, Burriss, Jones, & Roberts, 2007; Little, Roberts, Jones, & DeBruine, 2012; Re, DeBruine, Jones, & Perrett, 2013; Spisak, Blaker, Lefevre, Moore, & Krebbers, 2014; Spisak, Dekker, Krüger, & Van Vugt, 2012; Spisak, Homan, Grabo, & Van Vugt, 2012; Van Vugt, De Cremer, & Janssen, 2007).

The current findings overall fit well with previous literature on facial cues of leadership and expand on it in several ways (Garcia-Retamero, & López-Zafra, 2006; Little, Burriss, Jones, & Roberts, 2007; Little, Roberts, Jones, & DeBruine, 2012; Murray, 2014; Olivola, & Todorov, 2010; Spisak, Dekker, Krüger, & Van Vugt, 2012; Spisak, Homan, Grabo, & Van Vugt, 2012). For example, the current results find that dominance and height are especially valued in a leader during wartime, which is in line with previous findings (Little, Roberts, Jones, & DeBruine, 2012). A physically imposing individual would evoke more respect in the opponent and a rivalling group would be less likely to attack, as an attack might be costly to the group (Johnson & Earle, 2000; Murray, 2014). The current study, however, also shows that dominance is not a universal preference, but rather based on context.

Preferences are modulated depending on context according to the specific leadership needs in a certain situation (Little, Burriss, Jones, & Roberts, 2007). Although it has been suggested that dominant-looking leaders are only preferred in situations involving a threat or conflict, when physical strength might be of advantage (Spisak, Homan, Grabo, & Van Vugt, 2012), the current study found that dominant-looking women were preferred in other contexts too (e.g., leading a clothing or car manufacturer company).

In times of cooperation or peace, the current study suggests that a trustworthy, attractive, youthful, and slim person is preferred as leader. Little, Roberts, Jones, & DeBruine (2012) found that attractiveness is preferred in a leader during wartime, while trustworthiness is preferred in a leader during peacetime. This is consistent with some aspects of the current study's findings, but not with others. For example, in the current study, trustworthiness was preferred during peacetime. However, attractiveness and trustworthiness were highly correlated and combined in a general positive impression of a person. This association between attractiveness and trustworthiness has been observed in previous literature (Willis & Todorov, 2006; Theodoridou, Rowe, Penton-Voak, & Rogers, 2009). The current findings might differ from those by Little, Roberts, Jones, and DeBruine (2012) in so far as the present study has taken into consideration numerous traits on which a face could be judged and looked at their association with each other using principal component analysis. Based on this first step of analysis, the current study found that attractiveness and trustworthiness are both highly positively correlated with a general positive impression of a face.

Moreover, the current study has found that males were judged as better leaders in a wartime context than females were, and that females were judged as better leaders in a peacetime context than males were. These findings could again be explained by the development of leadership roles in nomadic hunter and gatherer groups, in which the males were in charge of coordinating attacks against other groups, whereas females were in charge of coordinating intragroup peace and were consulted to settle arguments (Johnson & Earle, 2000; Murray, 2014; Spisak, Nicholson, & Van Vugt, 2011). However, the current study found that some cues affect leadership judgments differently according to gender. The current study has found that increasing dominance and height only enhances leadership judgments in females in a female gendered context such as a clothing manufacturer context, whereas it does not enhance leadership judgments of males in a female gendered context. This might represent a trend to first choose the gender most appropriate for the role, a theory called gender role congruity (Eagly & Karau, 2002), and only in a second step pay attention to specific cues that might provide information about leadership ability within the appropriate gender group. It is unclear why being taller did not increase leadership judgments in males in a male gendered context, namely a car manufacturer. This finding might actually be derived from the assumption that in a car manufacturer context the leadership role is typed as blue-collar rather than a white-collar job. There is a significant height difference in the general population according to blue-collar and white-collar jobs, in that the latter are on average taller than the former (Cavelaars et al., 2000; Gawley, Perks, & Curtis, 2009; Judge & Cable, 2004; Silventoinen, Krueger, Bouchard, Kaprio, & McGue, 2004). The car manufacturer context could have elicited a leadership image that is more closely related to manual work and hands-on knowledge. Therefore, the current findings

might be an indication of different job typing. In general, it seems that the war time and peace time context were eliciting a much clearer leadership image, whereas the car manufacturer and clothing manufacturer context elicited much more intricate leadership images in which the gender typing was the first decision criteria, while facial cues were only employed in a second instance to judge leadership ability. The current results therefore paint a very interesting picture that should encourage future research into leadership perceptins to take different facial cues and contexts into consideration, as they are encountered in real life. It will also help further the understanding of the complex interactions between different variables, such as gender, facial cues and context.

The fact that age of the rater did not influence leadership judgments is somewhat surprising considering the amount of literature on the effect of age on the perception of trustworthiness and dominance/threat (Boshyan, Zebrowitz, Franklin, McCormick, & Carré, 2014; Castle et al., 2012; Ng, Zebrowitz, & Franklin, 2014; Ruffman, Sullivan, & Edge, 2006). This literature finds that older individuals perceive the same faces as more trustworthy and less hostile than younger individuals. This increased perception of trustworthiness has been attributed to a possible positivity bias, which directs attention towards positive stimuli and promotes positive memories (Isaacowitz, Allard, Murphy, & Schlangel, 2009; Mather & Carstensen, 2005). Although the current study found that trustworthiness and dominance play a crucial role in leadership judgments in different contexts, younger and older raters gave very similar ratings on these traits. The age range in the current study might be the basis of the lack of difference between the perception of younger and older raters. The older age group in the current study was between 40

and 70 years old and some of the studies reporting age effects in perception recruited participant off up to 85 years of age (Castle et al, 2012; Ebner, 2008). It could be that the present age group was still too young to exhibit the positivity bias reported in some previous research.

An avenue for future research would be to examine a possible own age bias in leadership judgments. The own age bias may favour leaders within the own age range, creating in-groups and out-groups (Anastasi, & Rhodes, 2005; Sporer, 2001). The own age bias could be elicited through the increased exposure to faces of one owns age group (Anastasi, & Rhodes, 2005; Anastasi, & Rhodes, 2006; Rhodes, & Anastasi, 2012). Another explanation of a possible own age bias, especially in an older age group, could be the devaluation of the own career if the leader is younger than the employee. In other words, a younger leader could be a reminder of what an older person has not achieved in their career. The younger employee is theoretically still able to achieve the same status in the same age bracket (Shore, Cleveland, & Goldberg, 2003). Younger employees could also prefer young leaders as they might perceive them as cognitively more similar. Older leaders have generally been assigned leadership roles emphasising stability and conservative decision-making, while younger leaders are assigned leadership roles emphasising change and innovative decision making (Spisak, Grabo, Arvey, & van Vugt, 2014).

Another avenue for future research would be to examine a possible change in preferences more closely, namely how environmental factors influence voting behaviour. It has been proposed that disease threat influences psychological and behavioural responses to prevent infections (Schaller & Park, 2011; White, Kenrick,

& Neuberg, 2013; Wolfe, Dunavan, & Diamond, 2007). It could be argued that changes in disease threat acuity could influence leadership preferences. White, Kenrick and Neuberg (2013) found that physically attractive leaders won significantly more often in high disease threat environments, while there was no preference for physically attractive leaders in low disease threat environments. This finding supports the notion that attractiveness is used as a cue to health in unique high disease threat situations and not in all situations. However, no studies have looked at how preferences for other facial cues, such as trustworthiness, or height, are modulated by changes in environmental disease threat.

The current study is arguably analogous to low information voting scenarios, in which the voter is not familiar with the details of a candidate's political stance and hence bases the decision about the candidate's leadership ability on other cues than political agenda (Riggio & Riggio, 2010). It is especially important to understand which cues are used in what way in low information voting scenarios considering the estimation of 25% of voters in the United States to be "swing voters", who are minimally involved and informed about the elections and candidates (Kaufmann, Petrocik, & Shaw, 2008). These 25% of voters could be using the face as a cue to leadership ability, as it is a readily available cue and conveys a multitude of information about a person. Or rather, people are highly skilled at making instantaneous inferences about a person's character, which might be true or not, based on their faces (Oosterhof & Todorov, 2008).

The current study has incorporated numerous traits that could be judged on a first impression basis that other studies have only looked at separately (Garcia-Retamero, & López-Zafra, 2006; Little, Burriss, Jones, & Roberts, 2007; Little, Roberts, Jones,

& DeBruine, 2012; Murray, 2014; Olivola, & Todorov, 2010; Spisak, Dekker, Krüger, & Van Vugt, 2012; Spisak, Homan, Grabo, & Van Vugt, 2012). They were therefore not able to draw conclusions about the interaction of various traits used to make leadership judgments. This is a shortcoming as in real life scenarios people do not only consider or base judgments on one trait at a time, but base judgments on a general impression encompassing every possible trait available (Oosterhof & Todorov, 2008). Even though some traits are more important in informing leadership judgments than others, it is only possible to assess their independent contributions by incorporating a great number of them. The current study looked at attractiveness, trustworthiness, dominance, general leadership judgment, actual age, BMI and height of the person depicted. These traits have been implicated in leadership judgments but have never been examined in one study. The current study is able to infer the importance and independent and interdependent contribution of each of these traits in forming one impression of a face in leadership judgments.

Particularly with the rising use of social media (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015), people are more than ever exposed to visual input such as photographs of leadership candidates, which could lead to an increased reliance on facial cues in forming impressions of those candidates. This is true for every occupation, however, it has an especially detrimental effect in politics, as political stance and ability are certainly more important in executing a political role, representing a country and ameliorating the citizen's wellbeing than having the "right" face. However, even informed voters might be biased, as party affiliation has been found to predict preferences for certain facial characteristics (Laustsen & Denmark, 2013; Laustsen & Petersen, 2016). They found that raters who identify

themselves as being Conservatives prefer a more dominant looking face, as this might reflect a more dominant and traditional personality, which is compatible with the views of Conservatives. The current study did not include party affiliation as a factor, but it would be interesting to see how this is reflected in the present findings. Still, inferences from facial cues might not be completely misleading, as faces of CEOs rated higher on leadership ability and dominance were actually CEOs of companies with higher profits (Rule & Ambady, 2009). However, it is difficult to objectively measure the success of a politician in the same way as the success of a CEO. The economic situation of a country is not a direct indicator of the ability of the leading politician, but rather a reflection of the interaction between numerous national and international factors (Mankiw, Romer, & Weil, 1990). Any factor that might be chosen to objectively measure the success of a political leader will be influenced by a multitude of variables that cannot easily be controlled for (Clark & Linzer, 2015). Furthermore, an inexhaustible list of factors has been used to provide an indication of a country's wellbeing, such as decreasing unemployment, homelessness, crime, and increasing Gross Domestic Product (GDP), income, import and export, health care and education (Diener, Oishi, & Lucas, 2015). As Diener, Oishi and Lucas (2015) pointed out, it is nearly impossible to formulate a clear framework to assess national wellbeing that is valid internationally, i.e. should for example art investment be considered an indicator of national wellbeing? The Solow Growth Model (Solow, 1956) could be used as a comparative tool in the approximation to the economic growth of different nation, as it has been found to capture cross-country economy well (Mankiw, Romer, & Weil, 1990). This has the shortcoming of only addressing the economic status of a country, which is arguably not the only indicator of a nation's wellbeing, however.

Research conducted with CEOs that has taken the past success of a company into consideration find a significant relationship between CEOs and company profit (Wong, Ormiston, & Haselhuhn, 2001). This means that independently of how well the company was doing before the present CEO, the new CEO seems to make an objective difference to company profits. In line with Diener, Oishi and Lucas (2015) case above it could be argued that company profits are one factor to look at to examine a company's wellbeing, and it is unclear whether that is the only or best way to assess it. Employment rates, subjective gratification of the employee and policy making are other factors that might be included in the assessment of a company's status.

A different methodology could be employed to further test the current hypotheses. It would be interesting to follow the methodology used by Morgan, Morton, Whitehead, Perrett, Hurly and Healy (2016). They conducted a study examining the impact of facial colour on health judgments, and used a methodology in which raters were presented with three faces, of which two were moderately yellow and one face which was either much more yellow or much less yellow than the two healthy faces. They found that the choice between the two healthy faces was depending on the unhealthy face, namely in case the unhealthy face was much more yellow, the yellower face out of the two healthy faces was chosen as the most healthy. The same happened if the unhealthy face was much less yellow, the less yellow face out of the two healthy faces was chosen as the most healthy. It would be interesting to formulate a study in which this methodology was adapted to investigate dominance preferences in leadership judgments showing three faces, two moderately dominant,

and one much more dominant or much less dominant. Then the rater could be asked

to pick the best leader for a country during a time of war. The results from this could

shed further light on the context effects on judgments about leadership ability. It

could be that in case the third face is much more dominant, the more dominant face

out of the two moderately dominant faces is chosen as the best leader for a country

during war time. Similarly, if the third face is much less dominant, the less dominant

face out of the two moderately dominant faces could be chosen as the best leader for

a country during war. Yet another possibility is, that the most dominant face out of

all three is consistently chosen to be the best leader for a country during wartime.

This would help clarify the extent to which a dominant face is preferred during

wartime. In real world elections, voters are not exposed to only one candidate at a

time, but are rather exposed to a group photo of a whole party, debates between

different parties, or in case of the U.S. elections the Presidential and Vice

Presidential candidates at the same time. Whoever is depicted and associated with a

candidate could positively or negatively influence the evaluation of the facial

characteristics of that candidate. The same methodology could be used to assess

numerous traits, such as trustworthiness, attractiveness and height.

Moreover, faces are only one modality used to deduce automatic and instantaneous

information about a person's character. Voices are also judged on attractiveness,

trustworthiness and dominance (Cheng, Tracy, Ho, & Henrich, 2016; Klofstad,

Anderson, & Peters, 2012; Puts, Apicella, & Cárdenas, 2011; Surawaski & Ossoff,

2006; Tsankova, Aubrey, Krumhuber, Möllering, Kappas, Marshall, & Rosin, 2012),

To conclude, faces provide a myriad of information about a person (Oosterhof &

Todorov, 2008; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015; Zebrowitz &

Montepare, 2008). People are very good at judging personality traits from minimal exposure to a face, with no further information about the person (Olivola & Todorov, 2010; Todorov, Said, Engell, & Oosterhof, 2008), although these inferences are not necessarily accurate. One of the traits inferred from faces is leadership ability, which is assessed by combining facial cues of attractiveness, dominance, trustworthiness, age, height, adiposity, among others (Murray, 2014; Van Vugt, & Grabo, 2015). The current study examined how leadership preferences might change depending on the context, namely a wartime context, a peacetime context, a car manufacturer context, or a clothing manufacturer context. Indeed, the current study has found that leadership preferences are context contingent and that there is not one general leader type. A dominant and tall person is preferred as leader during a time of war, while a young, attractive, trustworthy and slim person is preferred as leader during a time of peace. Dominant and tall females are preferred in both car manufacturer and clothing manufacturer contexts, yet dominance and height do not seem to play a role for males in these contexts. Age of the participant did not appear to influence ratings of facial cues or leadership judgments. These findings expand the leadership literature, as they take into consideration several cues informing leadership ratings and underline the importance of taking into consideration the context in which a leader is chosen. Several avenues for future research can be identified stemming from this work, for example including voices as another modality conveying information about an individual's character, or investigating the impact of environmental factors on leadership ratings.

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