**Gordon Institute
of Business Science**
University of Pretoria

Facial appearance manipulations for favourable first impressions in economic interactions

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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Abstract

Strong first impressions are created within a tenth of a second after seeing someone's face for the first time. In business, where deals often need to be made with strangers in a relatively short period of time, creating favourable first impressions are of critical importance. There is little that a person can do to change their facial dimensions, but wearing of eyeglasses and - for men - growing of facial hair are easy ways in which one's appearance may be altered. From the literature, trustworthiness and competence were identified as the most important attributes for success in business and this study endeavoured to experimentally measure the influence of wearing eyeglasses and growing facial hair on how these attributes are perceived. Photographs of men with different combinations of eyeglasses (no glasses, rimless glasses and rimmed glasses) and facial hair (clean shaven, chin beard and full beard) were presented to correspondents and their perception of the trustworthiness and competence of the person in the photograph were measured. Analysis of the results showed that perception of trustworthiness and competence were both most favourable when persons wear rimless glasses. For perceived trustworthiness a significant interaction effect were present between eyeglasses and facial hair. Correspondent demographics such as gender, race, language and age all had significant effects on perceived competence and trustworthiness, but effect sizes of these were small in comparison to that of the facial manipulations (facial hair and eyeglasses).

Keywords

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Name of the student: PETRUS JACOBUS VENTER

Signature of the student: _____

Date: 9 November 2015

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"In business interactions, first impressions are crucial. While you can't stop people from making snap decisions – the human brain is hardwired in this way as a prehistoric survival mechanism – you can understand how to make those decisions work in your favour."

~ Carol Kinsey Goman

Context

The research component of this degree has been compiled as a journal article targeted for the *Journal of economic psychology*. This report consists of a collection of appendices comprising content as specified in the *Integrative business research project regulations* for 2015.

The complete article as submitted to the *Journal of economic psychology* can be found in Appendix A. A letter from the supervisor confirming that the article meets the standard of the selected journal and an email response from the journal confirming that the article had been submitted are given in Appendix B and Appendix C respectively. Appendix D contains a checkbox list of adherence to journal requirements with regards to length, referencing format as well as the structure of the article in the accepted journal style.

An additional literature review as well as an expanded methodology and results section can be found in Appendix E. These are similar to the corresponding sections in the article, but with some additional content. The Matlab code that was written to generate the figures and statistics used in the article is given in Appendix F. The ethical clearance letter is in Appendix G while the design view of the online survey that was used to gather the data for this research is given in Appendix H. The database of survey responses consists of 7446 detailed responses which is too large to be added as a hard copy and this have been added to the digital data pack. The *Guide for authors* of the *Journal of economic psychology* can be found in Appendix I and, finally, Appendix J contains the Turnitin report for the article.

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Appendix A: Journal article

This article was submitted to the "Journal of economic psychology" on 4 November 2015.

Facial appearance manipulations for favourable first impressions in economic interactions

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ABSTRACT

Strong first impressions are created within a tenth of a second after seeing someone's face for the first time. In business, where deals often need to be made with strangers in a relatively short period of time, creating favourable first impressions are of critical importance. There is little that a person can do to change their facial dimensions, but wearing of eyeglasses and - for men - growing of facial hair are easy ways in which one's appearance may be altered. From the literature, trustworthiness and competence were identified as the most important attributes for success in business and this study endeavoured to experimentally measure the influence of wearing eyeglasses and growing facial hair on how these attributes are perceived. Photographs of men with different combinations of eyeglasses (no glasses, rimless glasses and rimmed glasses) and facial hair (clean shaven, chin beard and full beard) were presented to correspondents and their perception of the trustworthiness and competence of the person in the photograph were measured. Analysis of the results showed that perception of trustworthiness and competence were both most favourable when persons wear rimless glasses. For perceived trustworthiness a significant interaction effect were present between eyeglasses and facial hair. Correspondent demographics such as gender, race, language and age all had significant effects on perceived competence and trustworthiness, but effect sizes of these were small in comparison to that of the facial manipulations (facial hair and eyeglasses).

Keywords: Trust, Competence, Facial hair, Eyeglasses, First perceptions

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1. Introduction

It is fascinating that humans, when meeting someone for the first time, will immediately make unconscious judgments about the person's traits (such as trustworthiness, aggressiveness, likeability and competence) based on their appearance alone (Olivola & Todorov, 2010). Willis and Todorov (2006) found that people make trait inferences from the facial features of others within one tenth of a second. Interestingly, longer exposure to a face only made the observer more confident about their original judgments. It is also known that people's judgments of trustworthiness are influenced on an unconscious level by the race of the person under evaluation (Stanley, Sokol-Hessner, Banaji, & Phelps, 2011). The motivation for the proposed research is to determine the impact of facial feature judgments in a culturally diverse business context.

It has been shown that people in the business world manipulate their own behaviour to manage the impressions of others (Kumra & Vinnicombe, 2010). The implication of the studies mentioned in the paragraph above, however, is that lasting first impressions are made by evaluation of facial features which leaves little room for behavioural impression management in short term interactions. Acknowledging that people cannot (barring some extreme medical procedures) transform their physical characteristics like race, gender and facial dimensions to change the way that they are initially perceived, the proposed study will focus on two elements that can be easily controlled but may still alter initial impressions. These are the presence and style of facial hair as well as the presence and style of eyeglasses.

Dixson and Brooks (2013) found that facial hair had a strong influence on the socio-sexual judgments that people make about men. Men with full beards are, for example, regarded as better parents while men with heavy stubble are perceived to be more attractive than those who are clean shaven or have full beards. It seems a logical conclusion that facial hair would also play a role in the way that men are perceived in a business context. Generally, men can fashion different styles of beards in only a few weeks which give them the ability to manipulate the first impressions others will have of them in a business interaction. Although literature provides some clues as to how a man could go about creating a desired first impression by fashioning their beard in a

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particular way, it is not yet clear how this should be attempted to convey specific attributes that are important in business.

Facial appearance can also be influenced by wearing eyeglasses. General stereotypes are that glasses make people look less attractive but more intelligent. Leder, Forster, and Gerger (2011) determined that face perception, recognition, distinctiveness as well as the attribution of stereotypes can be affected by wearing glasses. The type of glasses (full-rim or rimless) as well as the amount of face that is covered by the glasses were found to be variables that significantly influence how a person is perceived. It was confirmed that full-rim glasses did allow a person to be perceived as more intelligent and less attractive. Rimless glasses, in turn, made a person appear more trustworthy without diminishing their perceived attractiveness. The proposed study will attempt to determine how combinations of different types of eyeglasses and the styles of facial hair influence perceptions.

2. Motivation

2.1. Social capital theory and first impressions

Social capital theory states that individuals can further their careers by establishing influential relationships. Individuals in the business world manipulate their own behaviour to manage the impressions of others with the purpose of accumulating social capital (Kumra & Vinnicombe, 2010). Impression management can be done in verbal and non-verbal ways (Magalhaes, 2014; Matsumoto & Hwang, 2011), but the strong influence that facial features have on perceptions of others means that it may be worthwhile to spend more energy on management of facial appearance to ensure that the desired attributes are projected.

When social capital theory was first developed, face-to-face interaction was thought to be an essential requirement for the development of generalized trust and other pro-social attitudes. It was therefore believed that electronic media such as television would potentially have a negative impact on development of social capital. A recent study by Hooghe and Oser (2015), however, found that there is a positive relationship between internet use and social capital indicators. As online interactions often involves information profiles with photos, it would seem that individuals that project themselves in a way that result in favourable first impressions would be in an advantaged position for the accumulation of social capital.

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2.2. Personality at face value

It has been known for quite some time that the amygdala (the part of the brain that plays an important role in the processing of emotional reactions and decision-making) reacts to facial features and expressions on a subconscious level (Whalen et al., 1998). Recently, it has been shown that the amygdala's processing of social cues in the absence of awareness may be more extensive than previously described (Freeman, Stolier, Ingbretsen, & Hehman, 2014) which means that decision-making such as deciding whether someone is to be trusted as a business partner might be strongly influenced by subconscious judgments based on the person's facial features. In fact, Bonnefon, Hopfensitz, and Neys (2013) found that trustworthiness detection (based on facial features) in an economic interaction is an ability that are possessed in equal amount by people of all cognitive capacities. These findings are supported by Ewing, Caulfield, Read, and Rhodes (2014) who showed that children as young as five years of age use facial features to determine whether an adult may be trusted or not. It has even been shown that electoral success of political candidates can be predicted solely on their physical appearance (Leigh & Susilo, 2009; Olivola & Todorov, 2010).

It turns out that in many cases the unconscious first impressions that result when a person is first exposed to someone's facial features are valid. Borkenau, Brecke, Möttig, and Paelecke (2009) found that people do have the ability to accurately perceive another person's level of extraversion from facial photographs. Stirrat and Perrett (2010) systematically explored the validity of first impression judgments based on facial features. This was done using trust games where participants could collaborate for mutual financial gain or to exploit for greater personal gain. The study found that men with greater facial width (a testosterone-linked trait predictive of aggression) were more likely to exploit the trust of others. Other participants were less likely to trust male participants with wide (opposed to narrow) faces.

It seems obvious that, except for facial features, the facial expression of a person on a photograph would also play an important role in how the person is perceived. Leikas, Verkasalo, and Lönnqvist (2013) showed that people can adjust their expression in different photographs to be perceived as extrovert, open, neurotic or non-conscientious. It has also been shown that smiling can increase the level of cooperation between individuals (Scharlemann, Eckel, Kacelnik, & Wilson, 2001). Other attributes such as agreeableness could not be influenced by facial expression.

Nurmoja and Bachmann (2014) specifically determined whether facial expressions could mask initial perceptions that are normally formed in reaction to unalterable facial features. Photographs of neutral, happy and serious faces of the same individuals were assessed to determine certain personal attributes. It was found that certain perceived attributes such as trustworthiness remained consistent when measured as responses to photographs containing different facial expressions.

Specific facial features that are used by the brain to determine trustworthiness such as the facial-width ratio mentioned above can be manipulated using computer graphics to control attributions such as trustworthiness (Petrican, Todorov, & Grady, 2014; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). Unfortunately, a person looking for a way to accumulate social capital by managing their impressions of others cannot (short of plastic surgery) change their facial ratios. Even changing their facial expressions cannot significantly change others' first impressions of them. It would therefore make sense to investigate the influence of other techniques that may change facial appearance and accordingly also others' perceptions.

2.3.   The role of facial hair in personal impressions

It has been known for some time that facial hair influences how a person is perceived (Wogalter & Hosie, 1991). The length and type of male facial hair influences females' judgment of the male's traits (Neave & Shields, 2008). Specifically, males with a light beard were considered most dominant while those with a full beard were seen as more masculine, aggressive and socially mature. Light stubble were viewed as most attractive and were preferred by women for both long-term and short term relationships. More recently it was found that level of facial hair (such as clean shaven, stubble or full beard) altered both male and female observers' judgment on matters such as health and parenting ability (Dixson & Brooks, 2013).

Interestingly, while bearded men were perceived as better parents by Dixson and Brooks (2013), a study was conducted by Conti and Conti (2004) to find out if criminal defendants are generally perceived as having facial hair. Participants were shown photographs of two men with similar appearance except that one of the men had facial hair. Participants were asked to choose which of the two men they thought was the defendant in a rape case and 78% of the participants chose the photograph of the man with facial hair. In the second part of the study participants were asked to draw the face

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of a criminal offender. This time 82% of the drawings depicted a man with some form of facial hair. This seems to indicate that facial hair has strong and sometimes conflicting influences on the perception of an individual's personal attributes.

2.4. The role of eyeglasses on the perception of personality

The way in which eyeglasses changes the perceptions about a person has been studied for a long time (Manz & Lueck, 1968; Thornton, 1944). Over the years some stereotypes about wearers of eyeglasses have emerged, e.g. wearers of eyeglasses are generally introverted. Borkenau (1991) conducted a study to determine the validity of some of these stereotypes. It was found that persons who wear eyeglasses were indeed less extraverted and less open to experience. Stereotypes of eyeglasses start at a young age (Jellesma, 2013) and although stereotypes of those who wear glasses are mostly negative, children perceive other children that wear glasses as more intelligent.

Brown, Henriquez, and Groscup (2008) investigated how the presence of eyeglasses would influence juror decisions. Participants were shown a photograph (one version of the photograph where the person did not wear glasses and another were the person did wear glasses) of the "defendant". The incidence of guilty verdicts were less for the photograph in which the person did wear glasses.

Children who wear glasses appear to be more intelligent and honest than their peers (Walline et al., 2008) and these perceived traits endure into adulthood and seem to depend on the type of glasses that a person wears. Individuals with rimless eyeglasses were found to be perceived as more honest while those with full-rim glasses corresponded with decreased attractiveness and increased intelligence (Leder et al., 2011).

2.5. The influence of race on perceptions

Upon seeing a face, racial category membership is automatically encoded in the brain (Ito & Senholzi, 2013). Event-related brain potentials measured by Ito and Urland (2003) suggested that this racial categorisation processing occurs within around 120 millisends after seeing a face. This rapid subconscious encoding of racial in-group and outgroup distinctions affects a range of ensuing racially biased behaviours.

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It is well known that race has a notable influence on perceived personal attributes of others such as leadership abilities (Festekjian, Tram, Murray, Sy, & Huynh, 2014) credibility (Hong & Len-Riós, 2015) and trustworthiness (Boyas & Sharpe, 2010; MacDonald & Stokes, 2006; Rudolph & Popp, 2010; Smith, 2010). The impact of race on perceptions of trustworthiness also holds true in the context of economic interactions (Stanley et al., 2011).

In addition to biases in perceived attributes, the proposed study may also be impacted by the fact that individuals are capable of more accurately recognizing faces of their own race than faces from other races, a phenomenon known as the other-race effect (Horry, Cheong, & Brewer, 2015).

2.6. Research questions

It has been established that social capital needs to be accumulated to enhance one's career opportunities. Individuals manipulate their behaviour to manage the impressions of others in the quest to accumulate social capital, but in many situations (e.g. a prospective client first sees a photo of the person they will deal with on the company's website) first impressions cannot be manipulated by behaviour, but rather depends on facial appearance.

The research question is to find out if and how different combinations of facial hair styles and types of eyeglasses influence the perception of key personal attributes (to be identified under the subsequent section of this document) that are associated with favourable economic interactions.

3. Methods

The aim of the study was to determine the effect of manipulating facial appearance by combinations of facial hair styles and types of eyeglasses on the initial perceptions of others. As literature shows that first impressions are a powerful unconscious process, it makes sense to measure this in a way that will preserve the initial impressions that manifests itself in the unconscious mind. If this process is not carefully controlled, the data could become contaminated by conscious modifications from participants who change their responses to be more socially acceptable (e.g. by moderating their initial perceptions when participants realise that their initial perceptions was influenced by stereotypes of race, gender or age to avoid a feeling of guilt). For this reason,

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anonymity was key in obtaining truthful responses. Secondly, participants had to be able to communicate their impressions with as little interference from their conscious minds as possible. For this reason participants was urged to react on their initial impressions without first having to verbalise or justify reasons for their choices.

3.1. Experimental design

Six men of different racial backgrounds (two black, two white and two Indian) were photographed for the study. With regards to facial hair, three photographs were taken of the face of each person under evaluation. Three styles of facial hair were used for each person, namely clean shaven (left panel), chin beard (middle panel) and full beard (right panel). The persons whose faces were used for the photographs were asked to grow a full beard for a period of six weeks. All the photographs were taken on the same day. The full beard was photographed first, after which the person was asked to shave off a part of his beard so that only the chin beard remained. After photographing the chin beard, the person had to shave clean before the final photograph was taken.

For each facial hair condition, two additional photographs were created to evaluate the effect of rimless and rimmed eyeglasses which resulted in a total of nine variations per person as shown in Table 1 below. For each facial hair condition one set of three photographs were of the person without any glasses. A second set of three photographs were of the person wearing rimless glasses and finally a set of three photographs of the person wearing full-rim glasses.

To minimise the risk of introducing unwanted variables that could influence the outcome of the experiments, all photographs were taken in similar lighting conditions and in front of a similar background.

Table 1. Eyeglasses and facial hair combinations for P1-P6

Glasses	Facial Hair	P1	P2	P3	P4	P5	P6
No glasses	Clean						
No glasses	Chin						
No glasses	Full						
Rimless	Clean						
Rimless	Chin						
Rimless	Full						
Rimmed	Clean						
Rimmed	Chin						
Rimmed	Full						

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3.2. Experimental procedure

For this study, data could be measured in one of several possible ways. The simplest way might be to present one photograph at a time and then ask the participant to rate certain attributes (these will be discussed in a paragraph below) of the person in the photograph on a Likert scale. For example, one of the statements may be: "If you lend money to this person, he will pay back the loan on time." (On a scale between 1 and 7 where 1 corresponds to "very unlikely" and 7 to "very likely").

Another procedure that could be followed is to show participants a number of faces at the same time and ask them to rank the faces according to a specified attribute. In this case the question could be, for example: "If you lent money to the individuals in the photograph, who would be most likely to pay back the loan?" (Select the person most likely to pay back the loan first and then the person second most likely to pay back the loan and continue until all photographs have been selected. This method has the advantage that it does not provide the participant an option to give a neutral response.

A ranking procedure would need too many repetitions to obtain a balanced sample (e.g. if photographs of six individuals were presented on each trial and for each person nine conditions were available, 10 077 696 repetitions would need to be done to ensure that all possible combinations have been presented once). For this reason, the first option (rating photographs individually on a Likert scale) was chosen for the present study.

3.3. Attributes under study

Personality is often described using the five-factor model (Digman, 1990) which divides personality into five broad categories namely openness, conscientiousness, extraversion, agreeableness, and neuroticism. Judge, Higgins, Thoresen, and Barrick (1999) found that conscientiousness (which is linked to self-discipline) is positively correlated with success in business while neuroticism (tendency to easily experience unpleasant emotions such as anxiety or anger) is negatively correlated to success.

Each of the broader personality categories can be subdivided into several personal attributes. Attributes that are deemed important in business may include trustworthiness, leadership abilities, competitiveness, integrity, ambition, adaptability, how organised a person is, competency, attention to detail, consistency, level of

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education, communication skills, level of confidence, enthusiasm, resourcefulness, sense of humour, commitment, decisiveness and focus.

For the purpose of the present study, the perceived attributes that strongly influence individuals' choices in economic interactions had to be measured. Oesch and Murnighan (2003) found that judgments of competence and trustworthiness had strong effects on how individuals chose to distribute economic resources to others and as such the influence of facial hair and eyeglasses on the perception of these two attributes were measured. Trustworthiness has sometimes been described as a combination of different dimensions, namely integrity, benevolence and competence (Yu, Saleem, & Gonzalez, 2014). For the present study, trustworthiness were defined to be synonymous with integrity while competence were measured separately.

For each of these two attributes, a statement about the person in the photograph was displayed and the participant had to rate how likely they believe the statement to be true (as was described in the previous subsection). To control for any unwanted effects that may arise because of the way a specific statement was posed, three statements (presented to participants at random) were used for measurement of each of the perceived attributes.

Statements were chosen to be as generic as possible so that it might apply to the general population. For the purpose of this study, statements needed to speak to the broad question of "Does this person have integrity?" The first statement tests whether a person can be trusted with your money. The second statement tests if the person handles money in an honest way and the last statement aims to test for trustworthiness without involving the concept of money. The three statements that were used for measurement of perceived trustworthiness are listed below.

- If you lend money to this person, he will pay back the loan on time.
- If this person realised that he received too much change after paying at the till he would return the additional money.
- If this person made a verbal business agreement with you, he would honour the agreement.

Perceived competence were measured using three generic statements speaking to the broad question of "Is this person good at what he does?" The first statement tests

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whether the person recently won an award for professional excellence. The second statement do not refer to an award, but simply measures whether the person was one of the top performers in his class. The final statement is more direct and asks if the person is viewed as highly competent by his colleagues. The three statements that were used for measurement of perceived competency are listed below.

- This person recently won an award for professional excellence.
- This person was one of the top performers of his class in business school.
- This person is viewed by his colleagues as being highly competent.

3.4. Control of nuisance variables

It was expected that extraneous variables (e.g. age, gender or race/ethnicity) might impact the dependent variables measured in this study. Information such as age group, gender, race/ethnicity, home language, sexual orientation and religion were recorded for every participant. A multi-factor ANOVA with all of these as treatment factors would indicate which of these factors had large effects on the measured data.

3.5. Experimental interface

The experiment was conducted in the form of an online survey. When a participant clicked on the web link to the survey the participant was directed to an information page with basic instructions on how to complete the survey. Participants were then asked to provide the information specified above to assist in the analysis of the data (it was communicated clearly that participants will remain completely anonymous).

Each of the six faces were displayed one at a time (in random order) and the participant was asked to rate the person in the photograph according to the attributes described above. The particular photograph of each face was randomly selected (with equal probability) to be one of the nine different permutations described above.

3.6. Sampling method and size

As it had been shown by Bonnefon et al. (2013) that facial feature judgment is possessed by all individuals in an equal amount, the assumption was made that the relevant population consists of all people who are involved in any form of decision making on economic transactions (deciding to buy goods or services). The aim was thus to obtain a large sample from the general population.

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3.7. Limitations of the study

This study measured first impressions of participants that were shown photographs of faces with different types of facial hair and eyeglasses. While first impressions that are generated upon the first visual exposure to a face result in strong and lasting judgments about a person (Willis & Todorov, 2006), verbal interactions and non-verbal communication such as body posture, eye contact, gestures and touch also play an important role (Magalhaes, 2014; Teodorescu, 2013) that was not measured in this study. As a great number of factors will contribute to first impressions in a real world situation, the findings of the proposed study will be especially applicable in situations where people are forced to make judgments with only a photograph at their disposal. These situations do exist, e.g. choosing a consultant from available photographs on a website or choosing which real estate agent to phone when interested in a property.

4. Results and discussion

4.1. Analysis approach

Data obtained from the Likert scale are not interval data as it cannot be shown that, for example, the perceptual difference between a rating of three and four is the same as that between eight and nine. Also, a five out of ten score may be interpreted differently by different participants. It is customary, however, to treat data from the Likert scale as interval data and the use of parametric statistics on Likert scale data has been shown to be robust (Norman, 2010).

4.2. Primary analysis

A total of 1241 correspondents completed the experiment in full resulting in 7446 unique data points for each of the perceived attribute measurements. Perceived competence and trustworthiness were analysed separately using multi-factor ANOVAs with treatment factors of facial manipulation (9 combinations of glasses and facial hair), respondent language, respondent religion, respondent sexual orientation, respondent race, respondent age and respondent gender. The question number that was used for measurement were also included as a treatment factor to determine the amount of systematic variation caused by differences in these questions.

The results of the multi-factor ANOVAs for perceived competence and perceived trustworthiness are tabulated in Table 2 and Table 3 respectively. The between groups

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design allows the effect size to be gauged directly from the treatment sum of squares. It could be expected that the greatest variation in the data would be caused by respondent scaling differences (the use of a subjective Likert scale) and for this reason an additional column (% of explained systematic variation) was added to the tables to give an indication of the effect size relative to all of the other treatment factors. From this it is clear that the effects of facial manipulations were dominant for both perceived competence (55.57%) and perceived trustworthiness (43.41%). Interestingly, all of the treatment factors had a small but significant ($p<0.005$) influence on perceived competence. All treatment factors except for sexual orientation also significantly influenced perceived trustworthiness.

For both perceived competence and trustworthiness significant differences existed between the questions that were used to gauge perception. Although the mean scores of different questions did fluctuate, there were no significant differences between the ranking order of glasses or facial hair styles between the different questions and as such the average scores for the three questions were used throughout.

Table 2. Perceived competence

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Facial manipulation (glasses and facial hair)	325.8	55.57%	8	40.7	18.44	<0.0001
Respondent language	43.1	7.35%	5	8.6	3.90	0.0016
Respondent religion	41.6	7.10%	6	6.9	3.14	0.0045
Respondent sexual orientation	14.7	2.51%	1	14.7	6.64	0.01
Respondent racial group	27.3	4.66%	3	9.1	4.11	0.0063
Respondent age group	47.9	8.17%	6	8.0	3.61	0.0014
Respondent gender	10.9	1.86%	1	10.9	4.93	0.0264
Question number	75.0	12.79%	2	37.5	16.98	<0.0001
Error	16369.1		7413	2.2		
Total	17009.0		7445			

Table 3. Perceived trustworthiness

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Facial manipulation (glasses and facial hair)	200.9	43.41%	8	25.1	10.63	<0.0001
Respondent language	84.7	18.30%	5	16.9	7.17	<0.0001
Respondent religion	31.3	6.76%	6	5.2	2.21	0.0394
Respondent sexual orientation	1.3	0.28%	1	1.3	0.57	**0.4519**
Respondent racial group	36.6	7.91%	3	12.2	5.15	0.0015
Respondent age group	47.2	10.20%	6	7.9	3.33	0.0028
Respondent gender	23.8	5.14%	1	23.8	10.07	0.0015
Question number	37.0	7.99%	2	18.5	7.82	0.0004
Error	17520.6		7413	2.4		
Total	18085.4		7445			

4.3.   Interactions between eyeglasses and facial hair conditions

The main purpose of using a full set of eyeglasses and facial hair style combinations in the experiment was to determine whether the influence of eyeglasses and those of facial hair are orthogonal or if there are interactions between the two conditions, e.g. are certain attributes affected by eyeglasses, but only if the person wears a full beard?

To find an answer to the question posed above the facial manipulation factor were subdivided into two different groups named type of glasses and facial hair. Additional multi-factor ANOVAs were set up to determine the significance of the interaction between the glasses and facial hair factors. The results of these ANOVAs for perceived competence and trustworthiness are tabulated in Table 4 and Table 5 respectively.

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Table 4. Perceived competence

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Glasses	254.1	79.54%	2	127.0	56.61	<0.0001
Facial hair	44.9	14.05%	2	22.4	10.00	<0.0001
Glasses*Facial hair	20.5	6.41%	4	5.1	2.28	0.0581
Error	16692.0		7437	2.2		
Total	17009.0		7445			

Table 5. Perceived trustworthiness

Source	Sum Sq.	% of explained systematic variance	d.f.	Mean Sq.	F	p
Glasses	138.2	69.10%	2	69.1	28.74	<0.0001
Facial hair	31.9	15.95%	2	16.0	6.64	0.0013
Glasses*Facial hair	29.9	14.95%	4	7.5	3.11	0.0145
Error	17887.5		7437	2.4		
Total	18085.4		7445			

For perceived competence the interaction between the glasses and facial hair factors were not significant (p=0.0581). For perceived trustworthiness, however, a significant (p<0.05) interaction effect were observed. On average, the relative effect size of the glasses factor were large (around 80% for perceived competence and 70% for perceived trustworthiness) in comparison to that of facial hair and interaction effects. This is an encouraging finding as it requires considerably less effort to change eyeglasses than to cultivate a new style of facial hair.

4.4. Individual results

It was shown in the previous subsections that the facial manipulations (eyeglasses and facial hair) had a significant influence on perceived competence and trustworthiness and that the effect size was large relative to the other factors that were considered. The obvious question that arises from those findings is whether specific combinations of eyeglasses and facial hair can be identified that lead to improvements in first

perceptions of competence and trustworthiness over a range of different persons. The data pertaining to the individuals in the photographs that were used for the experiment are shown in Figs. 1 and 2 for perceived competence and trustworthiness respectively.

Fig. 1. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived competence. Higher scores indicate more favourable perceptions.

Fig. 2. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived trustworthiness. Higher scores indicate more favourable perceptions.

Perceived trustworthiness

○ Clean shaven
▽ Chin beard
□ Full beard
◆ Mean score per person (all conditions)

In both Figs. 1 and 2 significant differences in mean scores for individual participants could be due to factors beyond the control of the participant such as facial shape and dimensions. It could be argued that P3 is naturally perceived as more competent than P5 (Fig. 1) or that P5 is naturally perceived as more trustworthy than P3 (Fig. 2). If this holds true, the implication of the data shown in Figs. 1 and 2 are that the shift in perceived competence or trustworthiness resulting from the optimal choice of eyeglasses and facial hair style are larger than the natural differences between participants due to factors beyond a person's control. A person with a face that is

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naturally less trustworthy than someone else may be perceived as more trustworthy than the other person if his face is complemented by an optimal choice of facial hair and eyeglasses.

To assist in identifying trends that span over the different participants the different conditions for eyeglasses and facial hair were ranked in order from most favourable (1) to least favourable (3) for each of the participants for perceived trustworthiness (Table 6) and competence (Table 7). Superscripts indicate the conditions that were significantly different ($p < 0.05$) according to a post hoc Tukey-Kramer test (a condition ranked first that is significantly different from the condition ranked third will have a superscript containing a "3").

Table 6. Perceived trustworthiness rankings for each of the participants

	Glasses					
Ranking	P1	P2	P3	P4	P5	P6
1	Rimless	Rimmed	Rimless [3]	Rimless [3]	Rimmed	Rimless [3]
2	Rimmed	Rimless	Rimmed [3]	Rimmed [3]	Rimless	Rimmed [3]
3	No glasses	No glasses	No glasses [1,2]	No glasses [1,2]	No glasses	No glasses [1,2]
	Facial hair					
Ranking	P1	P2	P3	P4	P5	P6
1	Chin [3]	Shaven	Shaven	Chin	Full [3]	Chin [2,3]
2	Shaven [3]	Chin	Chin	Shaven	Shaven [3]	Shaven [1]
3	Full [1,2]	Full	Full	Full	Chin [1,2]	Full [1]

Table 7. Perceived competence rankings for each of the participants

	Glasses					
Ranking	P1	P2	P3	P4	P5	P6
1	Rimless	Rimless [3]	Rimless [3]	Rimless	Rimless [3]	Rimless [3]
2	Rimmed	Rimmed [3]	Rimmed [3]	Rimmed	Rimmed	Rimmed [3]
3	No glasses	No glasses [1,2]	No glasses [1,2]	No glasses	No glasses [1]	No glasses [1,2]
	Facial hair					
Ranking	P1	P2	P3	P4	P5	P6
1	Chin [2,3]	Shaven	Chin	Chin	Shaven [3]	Chin [2,3]
2	Shaven [1]	Chin	Shaven	Shaven	Full [3]	Shaven [1]
3	Full [1]	Full	Full	Full	Chin [1,2]	Full [1]

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4.5. Comparison with previous studies

The present study differs from previous studies in that both facial hair and eyeglasses were systematically manipulated for each face in the study. This allowed analysis to determine not only the direct effects of eyeglasses and facial hair on perceived attributes, but also interaction effects between facial hair and eyeglasses. A significant interaction effect between eyeglasses and facial hair was observed for perceived trustworthiness, indicating that the effects of eyeglasses and facial hair on perceived trustworthiness are not orthogonal.

Leder et al. (2011) found that wearing of full-rimmed glasses made an individual look less attractive, but more intelligent while rimless glasses increased perceived honesty. It seems a logical conclusion that perceived competence would be closely correlated with perceived intelligence and so one might have expected full-rimmed glasses to result in higher perceived competence and rimless glasses to result in higher perceived trustworthiness. Somewhat surprisingly, rimless glasses resulted in higher perceived competence scores than full-rimmed glasses for all of the faces in the study. One possible explanation for this is that the negative effect of diminished attractiveness caused by full-rim glasses outweighs the positive effect of increased perceived intelligence in judgment of competence (Praino, Stockemer, & Ratis, 2014).

The literature on the effect of facial hair on perceptions of attributes are somewhat ambiguous. Facial hair could result in a more positive perception of a person as demonstrated by Dixson and Brooks (2013) who found that both men and women perceived men with full beards as having the best parenting abilities. In contrast, Conti and Conti (2004) demonstrated that people also associate facial hair with criminality while Herrick, Mendez, and Pryor (2015) found that facial hair could result in a decreased number of votes for politicians. In line with the contrasting findings from literature, the present study do not provide a clear answer to which style of facial hair would result in the most favourable first impressions. The present data indicates that facial hair does have a significant influence on perceived trustworthiness and perceived competence, but while wearing rimless glasses produce more favourable perceptions overall the best choice of facial hair style depends on the individual. The situation is, however complicated by the fact that the same style of facial hair would

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not necessarily produce the most favourable results for both competence and trustworthiness. For example, P5 was perceived as most trustworthy with a full beard, but most competent when clean shaven. A good initial strategy for men who are unsure about which style of facial hair to adopt would probably be to wear rimless glasses on a clean shaven face as De Souza, Baião, and Otta (2003) found a general trend that men attending job interviews with facial hair were less likely to be hired.

While the results of the present study indicate that first perceptions can be improved by the correct choice of eyeglasses and facial hair style it should be kept in mind that many factors that might play an important role in influencing first perceptions in real life interactions was kept constant in the experiments of this study. Non-verbal communications such as facial expressions, eye contact, body posture and gestures may all have a significant influence on first perceptions when meeting someone face to face for the first time (Teodorescu, 2013). While photographs used in the present study contained only faces, the first perceptions of others may also be influenced strongly by attire. Howlett, Pine, Orakçioğlu, and Fletcher (2013) found that small changes in clothing choice of a man can result in significant differences in perceived attributes. Finally, it is also important to keep in mind that, while favourable first perceptions can open up many doors, people learn from experience and if your behaviour contrasts with persons' initial impressions they will adapt their impressions to be in line with your behaviour (Yu et al., 2014).

5. Conclusion

The aim of this research was to investigate whether combinations of different types of glasses and styles of facial hair influence how attributes that are important in economic interactions are perceived. A number of conclusions may be drawn from the results of this study. Firstly, while factors such as race, gender and age of correspondents all had a significant influence on perceived attributes, the combined effect of facial hair style and eyeglasses was found to be much larger than any of the aforementioned factors. Secondly, data that were measured in this study showed that perceived trustworthiness and perceived competence are most favourable when wearing rimless glasses and least favourable when not wearing any glasses at all. Thirdly, a significant interaction effect exists between type of eyeglasses and facial hair style for perceived trustworthiness. Finally, the style of facial hair also has a significant influence on

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perceived trustworthiness and perceived competence, but the optimal choice of facial hair seems to be person specific. A full beard generally resulted in least favourable first perceptions while some individuals are perceived more favourably with chin beards and others when clean shaven.

The findings from this study can be condensed as follows: by wearing rimless eyeglasses and (in most cases) not growing a full beard, men make significantly more favourable first impressions in economic interactions.

Acknowledgements

Reference list

Bonnefon, J. F., Hopfensitz, A., & Neys, W. D. (2013). The modular nature of trustworthiness detection. *Journal of Experimental Psychology: General, 142*(1), 143-150.

Borkenau, P. (1991). Evidence of a correlation between wearing glasses and personality. *Personality and Individual Differences, 12*(11), 1125-1128. doi: 10.1016/0191-8869(91)90074-I

Borkenau, P., Brecke, S., Möttig, C., & Paelecke, M. (2009). Extraversion is accurately perceived after a 50-ms exposure to a face. *Journal of Research in Personality, 43*(4), 703-706. doi: 10.1016/j.jrp.2009.03.007

Boyas, J., & Sharpe, T. L. (2010). Racial and ethnic determinants of interracial and ethnic trust. *Journal of Human Behavior in the Social Environment, 20*(5), 618-636. doi: 10.1080/10911351003673682

Brown, M. J., Henriquez, E., & Groscup, J. (2008). The effects of eyeglasses and race on juror decisions involving a violent crime. *American Journal of Forensic Psychology, 26*(2), 25-43.

Conti, R. P., & Conti, M. A. (2004). Mock jurors' perceptions of facial hair on criminal offenders. *Perceptual and Motor Skills, 98*(3 II), 1356-1358.

De Souza, A. A. L., Baião, V. B. U., & Otta, E. (2003). Perception of men's personal qualities and prospect of employment as a function of facial hair. *Psychological Reports, 92*(1), 201-208.

Digman, J. M. (1990). Personality structure: emergence of the five-factor model. *Annual Review of Psychology, 41*(1), 417-440.

Dixson, B. J., & Brooks, R. C. (2013). The role of facial hair in women's perceptions of men's attractiveness, health, masculinity and parenting abilities. *Evolution and Human Behavior, 34*(3), 236-241.

Ewing, L., Caulfield, F., Read, A., & Rhodes, G. (2014). Perceived trustworthiness of faces drives trust behaviour in children. *Developmental Science, 18*(2), 327-334.

Festekjian, A., Tram, S., Murray, C. B., Sy, T., & Huynh, H. P. (2014). I See Me the Way You See Me: The Influence of Race on Interpersonal and Intrapersonal

Leadership Perceptions. *Journal of Leadership and Organizational Studies, 21*(1), 102-119. doi: 10.1177/1548051813486522

Freeman, J. B., Stolier, R. M., Ingbretsen, Z. A., & Hehman, E. A. (2014). Amygdala responsivity to high-level social information from unseen faces. *Journal of Neuroscience, 34*(32), 10573-10581.

Herrick, R., Mendez, J. M., & Pryor, B. (2015). Razor's Edge: The Politics of Facial Hair. *Social Science Quarterly*. doi: 10.1111/ssqu.12183

Hong, S., & Len-Riós, M. E. (2015). Does Race Matter? Implicit and Explicit Measures of the Effect of the PR Spokesman's Race on Evaluations of Spokesman Source Credibility and Perceptions of a PR Crisis' Severity. *Journal of Public Relations Research, 27*(1), 63-80. doi: 10.1080/1062726x.2014.929502

Hooghe, M., & Oser, J. (2015). Internet, television and social capital: the effect of 'screen time' on social capital. *Information Communication and Society, 18*(10), 1175-1199. doi: 10.1080/1369118x.2015.1022568

Horry, R., Cheong, W., & Brewer, N. (2015). The other-race effect in perception and recognition: Insights from the complete composite task. *Journal of Experimental Psychology: Human Perception and Performance, 41*(2), 508-524. doi: 10.1037/xhp0000042

Howlett, N., Pine, K., Orakçioğlu, I., & Fletcher, B. (2013). The influence of clothing on first impressions: Rapid and positive responses to minor changes in male attire. *Journal of Fashion Marketing and Management, 17*(1), 38-48. doi: 10.1108/13612021311305128

Ito, T. A., & Senholzi, K. B. (2013). Us versus them: Understanding the process of race perception with event-related brain potentials. *Visual Cognition, 21*(9-10), 1096-1120. doi: 10.1080/13506285.2013.821430

Jellesma, F. C. (2013). Do glasses change children's perceptions? Effects of eyeglasses on peer- and self-perception. *European Journal of Developmental Psychology, 10*(4), 449-460. doi: 10.1080/17405629.2012.700199

Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel Psychology, 52*(3), 621-652.

Kumra, S., & Vinnicombe, S. (2010). Impressing for success: A gendered analysis of a key social capital accumulation strategy. *Gender, Work and Organization, 17*(5), 521-546.

Leder, H., Forster, M., & Gerger, G. (2011). The glasses stereotype revisited: Effects of eyeglasses on perception, recognition, and impression of faces. *Swiss Journal of Psychology, 70*(4), 211-222. doi: 10.1024/1421-0185/a000059

Leigh, A., & Susilo, T. (2009). Is voting skin-deep? Estimating the effect of candidate ballot photographs on election outcomes. *Journal of Economic Psychology, 30*(1), 61-70. doi: 10.1016/j.joep.2008.07.008

Leikas, S., Verkasalo, M., & Lönnqvist, J. E. (2013). Posing personality: Is it possible to enact the Big Five traits in photographs? *Journal of Research in Personality, 47*(1), 15-21. doi: 10.1016/j.jrp.2012.10.012

MacDonald, J., & Stokes, R. J. (2006). Race, social capital, and trust in the police. *Urban Affairs Review, 41*(3), 358-375. doi: 10.1177/1078087405281707

Magalhaes, A. L. (2014). Rhetoric and Body Language in Business Communication. *Business Communication Quarterly, 77*(3), 345-346.

Manz, W., & Lueck, H. E. (1968). Influence of wearing glasses on personality ratings: crosscultural validation of an old experiment. *Perceptual and Motor Skills, 27*(3), 704.

Matsumoto, D., & Hwang, H. S. (2011). Evidence for training the ability to read microexpressions of emotion. *Motivation and Emotion, 35*(2), 181-191.

Neave, N., & Shields, K. (2008). The effects of facial hair manipulation on female perceptions of attractiveness, masculinity, and dominance in male faces. *Personality and Individual Differences, 45*(5), 373-377.

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*(5), 625-632. doi: 10.1007/s10459-010-9222-y

Nurmoja, M., & Bachmann, T. (2014). Consistency of the relation between individual facial cues and the perceived suggestibility and trustworthiness across varying facial expressions. *Trames, 18*(2), 105-119. doi: 10.3176/tr.2014.2.01

Oesch, J. M., & Murnighan, J. K. (2003). Egocentric perceptions of relationships, competence, and trustworthiness in salary allocation choices. *Social Justice Research, 16*(1), 53-78. doi: 10.1023/a:1022926111093

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Olivola, C. Y., & Todorov, A. (2010). Elected in 100 milliseconds: Appearance-based trait inferences and voting. *Journal of Nonverbal Behavior, 34*(2), 83-110.

Petrican, R., Todorov, A., & Grady, C. (2014). Personality at Face Value: Facial Appearance Predicts Self and Other Personality Judgments among Strangers and Spouses. *Journal of Nonverbal Behavior, 38*(2), 259-277. doi: 10.1007/s10919-014-0175-3

Praino, R., Stockemer, D., & Ratis, J. (2014). Looking Good or Looking Competent? Physical Appearance and Electoral Success in the 2008 Congressional Elections. *American Politics Research, 42*(6), 1096-1117. doi: 10.1177/1532673x14532825

Rudolph, T. J., & Popp, E. (2010). Race, environment, and interracial trust. *Journal of Politics, 72*(1), 74-89. doi: 10.1017/s002238160999048x

Scharlemann, J. P. W., Eckel, C. C., Kacelnik, A., & Wilson, R. K. (2001). The value of a smile: Game theory with a human face. *Journal of Economic Psychology, 22*(5), 617-640. doi: 10.1016/s0167-4870(01)00059-9

Smith, S. S. (2010). Race and trust. *Annual Review of Sociology, 36*(1), 453-475. doi: 10.1146/annurev.soc.012809.102526

Stanley, D. A., Sokol-Hessner, P., Banaji, M. R., & Phelps, E. A. (2011). Implicit race attitudes predict trustworthiness judgments and economic trust decisions. *Proceedings of the National Academy of Sciences of the United States of America, 108*(19), 7710-7715. doi: 10.1073/pnas.1014345108

Teodorescu, A. (2013). Non-verbal communication in intercultural business negotiations. *Quality - Access to Success, 14*(SUPPL.2), 259-262.

Thornton, G. R. (1944). The effect of wearing glasses upon judgments of personality traits of persons seen briefly. *Journal of Applied Psychology, 28*(3), 203-207. doi: 10.1037/h0055862

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*(1), 519-545. doi: 10.1146/annurev-psych-113011-143831

Walline, J. J., Sinnott, L., Johnson, E. D., Ticak, A., Jones, S. L., & Jones, L. A. (2008). What do kids think about kids in eyeglasses? *Ophthalmic and Physiological Optics, 28*(3), 218-224. doi: 10.1111/j.1475-1313.2008.00559.x

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Whalen, P. J., Rauch, S. L., Etcoff, N. L., McInerney, S. C., Lee Michael, B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. *Journal of Neuroscience, 18*(1), 411-418.

Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science, 17*(7), 592-598.

Wogalter, M. S., & Hosie, J. A. (1991). Effects of cranial and facial hair on perceptions of age and person. *The Journal of social psychology, 131*(4), 589-591.

Yu, M., Saleem, M., & Gonzalez, C. (2014). Developing trust: First impressions and experience. *Journal of Economic Psychology, 43*, 16-29. doi: 10.1016/j.joep.2014.04.004

Appendix B: Letter from supervisor

To Examiners of the Research paper:

Facial appearance manipulations for favourable first impressions in economic interactions

I hereby confirm that I consider the paper to be of sufficient quality and appropriateness to be accepted for publication in the targeted journal and enclose below the covering letter sent to the Editors of the Journal of Economic Psychology. The paper has already been submitted for publication and has been received in good order by the journal concerned.

Supervisor to PJ Venter.

The Editors-in-Chief: Journal of Economic Psychology

Gordon Institute of Business Science, University of Pretoria

4 Nov 2015

Dear Professors Kocher and Schulz-Hardt

Covering Letter for the first submission of the article: Facial appearance manipulations for favourable first impressions in economic interactions

On behalf of Petrus Venter and myself, I hereby submit the abovementioned article for your consideration for publication in the Journal of Economic Psychology. I can confirm that the article has not been published previously, that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere.

I can further confirm that no conflict of interest exists, including any financial, personal or other relationships with other people or organizations within three years of beginning this submitted work that could inappropriately influence, or be perceived to influence, this work.

Yours Sincerely

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Appendix C: Proof of submission to journal

Dear Dr. Price,

Thank you for submitting your manuscript for consideration for publication in Journal of Economic Psychology. Your submission was received in good order.

To track the status of your manuscript, please log into
EVISE® http://www.evise.com/evise/faces/pages/navigation/NavController.jspx?JRNL_ACR=JOEP and go to 'My Submissions'.

Thank you for submitting your work to this journal.

Kind regards,

Journal of Economic Psychology

This message was sent automatically. Please do not reply.

Appendix D: Article checklist

Item	Comments	Pass
Length	*Guide for authors* specify length to be between 6000 and 10000 words. Submitted article consisted of 7806 words.	✓
Referencing format	Citations in the text should follow the referencing style used by the American Psychological Association as specified in the *Guide for authors.*	✓
Structure of article	Subsections were numbered as specified in the *Guide for authors*. Basic structure of *Introduction, Methods, Results and Discussion* and *Conclusions* were followed.	✓

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Appendix E: Expanded literature review and methodology

1. Literature review

Background and purpose of the study

It is fascinating that humans, when meeting someone for the first time, will immediately make unconscious judgments about the person's traits (such as trustworthiness, aggressiveness, likeability and competence) based on their appearance alone (Olivola & Todorov, 2010). Willis and Todorov (2006) found that people make trait inferences from the facial features of others within one tenth of a second. Interestingly, longer exposure to a face only made the observer more confident about their original judgments. It is also known that people's trustworthiness judgments are influenced on an unconscious level by the race of the person under evaluation (Stanley, Sokol-Hessner, Banaji, & Phelps, 2011). The motivation for the proposed research is to determine the impact of facial feature judgments in a culturally diverse business context.

It has been shown that people in the business world manipulate their own behaviour to manage the impressions of others (Kumra & Vinnicombe, 2010). The implication of the studies mentioned in the paragraph above, however, is that lasting first impressions are made by evaluation of facial features which leaves little room for behavioural impression management in short term interactions. Acknowledging that people cannot (barring some extreme medical procedures) transform their physical characteristics like race, gender and facial dimensions to change the way that they are initially perceived, the proposed study will focus on two elements that can be easily controlled but may still alter initial impressions. These are the presence and style of facial hair as well as the presence and style of eyeglasses.

Dixson and Brooks (2013) found that facial hair had a strong influence on the socio-sexual judgments that people make about men. Men with full beards are, for example, regarded as better parents while men with heavy stubble are perceived to be more attractive than those who are clean shaven or have full beards. It seems a logical conclusion that facial hair would also play a role in the way that men are perceived in a business context. Generally, men can fashion different styles of beards in only a few weeks which give them the ability to manipulate the first impressions others will have

of them in a business interaction. Although literature provides some clues as to how a man could go about creating a desired first impression by fashioning their beard in a particular way, it is not yet clear how this should be attempted to convey specific attributes that are important in business.

Facial appearance can also be influenced by wearing eyeglasses. General stereotypes are that glasses make people look less attractive but more intelligent. Leder, Forster, and Gerger (2011) determined that face perception, recognition, distinctiveness as well as the attribution of stereotypes can be affected by wearing glasses. The type of glasses (full-rim or rimless) as well as the amount of face that is covered by the glasses were found to be variables that significantly influence how a person is perceived. It was confirmed that full-rim glasses did allow a person to be perceived as more intelligent and less attractive. Rimless glasses, in turn, made a person appear more trustworthy without diminishing their perceived attractiveness. The proposed study will attempt to determine how both the type of eyeglasses and the style of facial hair influence perceptions.

Problem statement

Measure and analyse the role that different combinations of facial hair and eyeglasses have in the formation of first impressions in a multi-racial business context.

Core Articles

Willis and Todorov (2006) showed that an observer unconsciously makes lasting judgments about the traits of a new acquaintance in less than a second. This is a core article that has sparked much further research (the article has been cited more than 370 times).

Stirrat and Perrett (2010) systematically explored the validity of first impression judgments based on facial features. This was done using trust games where participants could collaborate for mutual financial gain or to exploit for greater personal gain. The study found that men with greater facial width (a testosterone-linked trait predictive of aggression) were more likely to exploit the trust of others. Other participants were less likely to trust male participants with wide (opposed to narrow) faces. This article establishes a base for facial feature judgments in a business context.

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Kumra and Vinnicombe (2010) conducted a study in which they found out that women knew that they had to accumulate social capital to further their careers. It was also found that woman generally used perception management techniques to achieve this. This article provides a link between social capital theory and management of first impressions.

Social capital theory and first impressions

Social capital theory states that individuals can further their careers by establishing influential relationships. Individuals in the business world manipulate their own behaviour to manage the impressions of others with the purpose of accumulating social capital (Kumra & Vinnicombe, 2010). Impression management can be done in verbal and non-verbal ways (Magalhaes, 2014; Matsumoto & Hwang, 2011), but the strong influence that facial features have on perceptions of others means that it may be worthwhile to spend more energy on management of facial appearance to ensure that the desired attributes are projected.

When social capital theory was first developed, face-to-face interaction was thought to be an essential requirement for the development of generalized trust and other pro-social attitudes. It was therefore believed that electronic media such as television would potentially have a negative impact development of social capital development. A recent study by Hooghe and Oser (2015), however, found that there is a positive relationship between internet use and social capital indicators. As online interactions often involves information profiles with photos, it would seem that individuals that project themselves in a way that result in favourable first impressions would be in an advantaged position for the accumulation of social capital.

Personality at face value

It has been known for quite some time that the amygdala (the part of the brain that plays an important role in the processing of emotional reactions and decision-making) reacts to facial features and expressions on a subconscious level (Whalen et al., 1998). Recently, it has been shown that the amygdala's processing of social cues in the absence of awareness may be more extensive than previously described (Freeman, Stolier, Ingbretsen, & Hehman, 2014) which means that decision-making such as deciding whether someone is to be trusted as a business partner might be

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strongly influenced by subconscious judgments based on the person's facial features. In fact, Bonnefon, Hopfensitz, and Neys (2013) found that trustworthiness detection (based on facial features) in an economic interaction is an ability that are possessed in equal amount by people of all cognitive capacities. These findings are supported by Ewing, Caulfield, Read, and Rhodes (2014) who showed that children as young as five years of age use facial features to determine whether an adult may be trusted or not. It has even been shown that electoral success of political candidates can be predicted solely on their physical appearance (Olivola & Todorov, 2010). Facial features that cause specific perceptions about certain personal attributes are predictable and models have been developed to construct faces with specific attributes by changing the shape, form and positions of eyebrows, eyes, cheekbones and mouths. Figure 1 shows an example of an extraverted face (left) and introverted face (right) generated using a model by Todorov and Oosterhof (2011).

Figure 1. Example of an extraverted face (left) and introverted face (right) taken from _Todorov and Oosterhof (2011)._

It turns out that in many cases the unconscious first impressions that result when a person is first exposed to someone's facial features are valid. Borkenau, Brecke, Möttig, and Paelecke (2009) found that people do have the ability to accurately perceive another person's level of extraversion from facial photographs. Stirrat and Perrett (2010) proved that people's initial perceptions of others' trustworthiness were generally valid. They showed that the ratio between facial width and length (measured from the top of the upper lip to the top of the eyelid as shown in Figure 2) determined both perception of trustworthiness and actual trustworthiness. Broader faces are generally perceived as less trustworthy.

Figure 2. Image showing how measurements were taken to determine the facial width ratio (taken from Stirrat and Perrett (2010)).
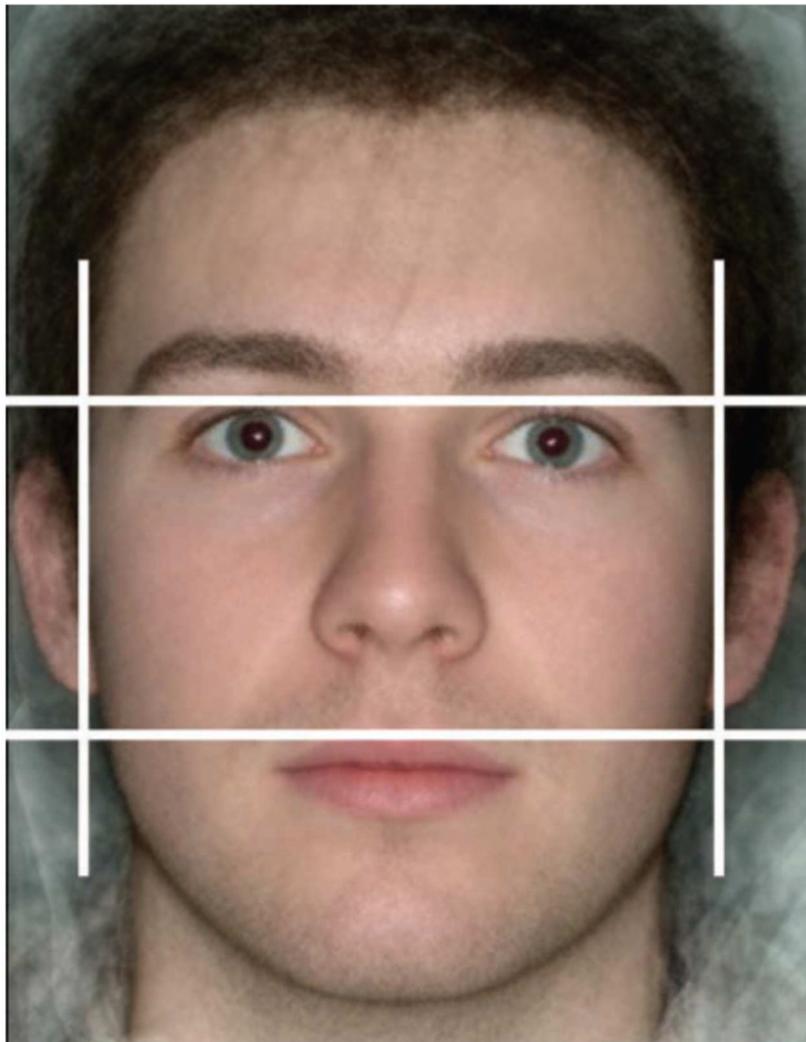
A question that naturally comes to mind is whether perceptions of extraversion as well as positive perceptions of other attributes such as trustworthiness or competence are correlated with attractiveness. If this were to be true, one would only have to measure attractiveness to be able to gauge the perception of a range of other qualities as well. Todorov, Olivola, Dotsch, and Mende-Siedlecki (2015) showed that facial attributes responsible for perceived attractiveness and perceived trustworthiness can be manipulated independently. In Figure 3 below, the top row shows faces in which both trustworthiness and attractiveness increase towards the right. In the middle row, attractiveness was kept constant while trustworthiness increases towards the right hand side. In the bottom row, trustworthiness increases while attractiveness decreases towards the right hand side.

Figure 3. The top row shows faces in which both trustworthiness and attractiveness increase towards the right. In the middle row, attractiveness was kept constant while trustworthiness increases towards the right hand side. In the bottom row, trustworthiness increases while attractiveness decreases towards the right hand side. Figure taken from Todorov, Olivola, Dotsch, and Mende-Siedlecki (2015).
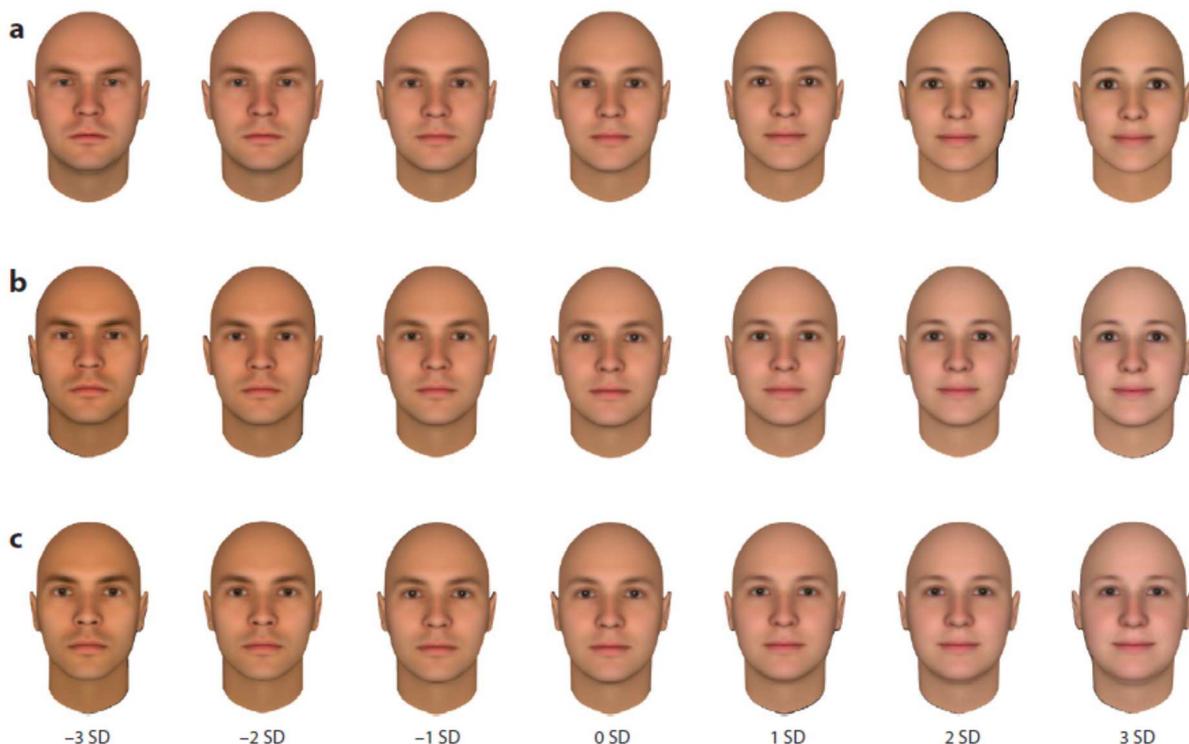
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It seems obvious that, except for facial features, the facial expression of a person on a photograph would also play an important role in how the person is perceived. Leikas, Verkasalo, and Lönnqvist (2013) showed that people can adjust their expression in different photographs to be perceived as extrovert, open, neurotic or non-conscientious. Other attributes such as agreeableness could not be influenced by facial expression. Nurmoja and Bachmann (2014) specifically determined whether facial expressions could mask initial perceptions that are normally formed in reaction to unalterable facial features. Photographs of neutral, happy and serious faces of the same individuals were assessed to determine certain personal attributes. It was found that certain perceived attributes such as trustworthiness remained consistent when measured as responses to photographs containing different facial expressions.

Specific facial features that are used by the brain to determine trustworthiness such as the facial-width ratio mentioned above can be manipulated using computer graphics to control attributions such as trustworthiness (Petrican, Todorov, & Grady, 2014; Todorov et al., 2015). Unfortunately, a person looking for a way to accumulate social capital by managing their impressions of others cannot (short of plastic surgery) change their facial ratios. Even changing their facial expressions cannot significantly change others' first impressions of them. It would therefore make sense to investigate the influence of other techniques that may change facial appearance and accordingly also others' perceptions.

The role of facial hair in personal impressions

It has been known for some time that facial hair influences how a person is perceived (Wogalter & Hosie, 1991). The length and type of male facial hair influences females' judgement of the male's traits (Neave & Shields, 2008). Specifically, males with a light beard were considered most dominant while those with a full beard were seen as more masculine, aggressive and socially mature. Light stubble were viewed as most attractive and were preferred for both long-term and short term relationships. More recently it was found that level of facial hair (such as clean shaven, stubble or full beard) altered both male and female observers' judgement on matters such as health and parenting ability (Dixson & Brooks, 2013).

Interestingly, while bearded men were perceived as better parents by Dixson and Brooks (2013), a study was conducted by Conti and Conti (2004) to find out if criminal

defendants are generally perceived as having facial hair. Participants were shown photographs of two men with similar appearance except that one of the men had facial hair. Participants were asked to choose which of the two men they thought was the defendant in a rape case and 78% of the participants chose the photograph of the man with facial hair. In the second part of the study participants were asked to draw the face of a criminal offender. This time 82% of the drawings depicted a man with some form of facial hair. This seems to indicate that facial hair has strong and sometimes conflicting influences on the perception of an individual's personal attributes.

The role of eyeglasses on the perception of personality

The way in which eyeglasses changes the perceptions about a person has been studied for a long time (Manz & Lueck, 1968; Thornton, 1944). Over the years some stereotypes about wearers of eyeglasses have emerged, e.g. wearers of eyeglasses are generally introverted. Borkenau (1991) conducted a study to determine the validity of some of these stereotypes. It was found that persons who wear eyeglasses were indeed less extraverted and less open to experience. Stereotypes of eyeglasses start at a young age (Jellesma, 2013) and although stereotypes of those who wear glasses are mostly negative, children perceive other children that wear glasses as more intelligent.

Brown, Henriquez, and Groscup (2008) investigated how the presence of eyeglasses would influence juror decisions. Participants were shown a photograph (one version of the photograph where the person did not wear glasses and another were the person did wear glasses) of the "defendant". The incidence of guilty verdicts were less for the photograph in which the person did wear glasses.

Children who wear glasses appear to be more intelligent and honest than their peers (Walline et al., 2008) and these perceived traits endure into adulthood and seem to depend on the type of glasses that a person wears. Individuals with rimless eyeglasses were found to be perceived as more honest while those with full-rim glasses corresponded with decreased attractiveness and increased intelligence (Leder et al., 2011).

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The influence of race on perceptions

Upon seeing a face, racial category membership is automatically encoded in the brain (Ito & Senholzi, 2013). Event-related brain potentials measured by Ito and Urland (2003) suggested that this racial categorisation processing occurs within around 120 millisends after seeing a face. This rapid subconscious encoding of racial in-group and outgroup distinctions affects a range of ensuing racially biased behaviours.

It is well known that race has a notable influence on perceived personal attributes of others such as leadership abilities (Festekjian, Tram, Murray, Sy, & Huynh, 2014) credibility (Hong & Len-Riós, 2015) and trustworthiness (Boyas & Sharpe, 2010; MacDonald & Stokes, 2006; Rudolph & Popp, 2010; Smith, 2010). The impact of race on perceptions of trustworthiness also holds true in the context of economic interactions (Stanley et al., 2011).

In addition to biases in perceived attributes, the proposed study may also be impacted by the fact that individuals are capable of more accurately recognizing faces of their own race than faces from other races, a phenomenon known as the other-race effect (Horry, Cheong, & Brewer, 2015).

First perceptions and gender

The present study focusses on the influence of facial hair and eyeglasses on perception of male faces. One obvious difference between male and females faces is that (most) females cannot grow facial hair which disqualifies them from participation in this study. A second factor that should be kept in mind is that the application of cosmetic make-up can have a significant influence on first perceptions. Nash, Fieldman, Hussey, Lévêque, and Pineau (2006) found that women who wore cosmetic make-up were perceived to have greater earning potential and more prestigious jobs which suggest that make-up can be used by women to manipulate how they are assessed. Cosmetic make-up has also been shown to reduce the perceived age of women (S. H. Dayan, Cho, Siracusa, & Gutierrez-Borst, 2015).

While facial features can be manipulated in ways that allow certain attributes such as attractiveness and trustworthiness to be altered independently (see Figure 4 above), some attributes seem not to be orthogonal. Figure 4 illustrates that features responsible for making a face look male also result in increased perceived domination.

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Figure 4. features responsible for making a face look male also result in increased perceived domination. *Figure taken from Todorov et al. (2015).*

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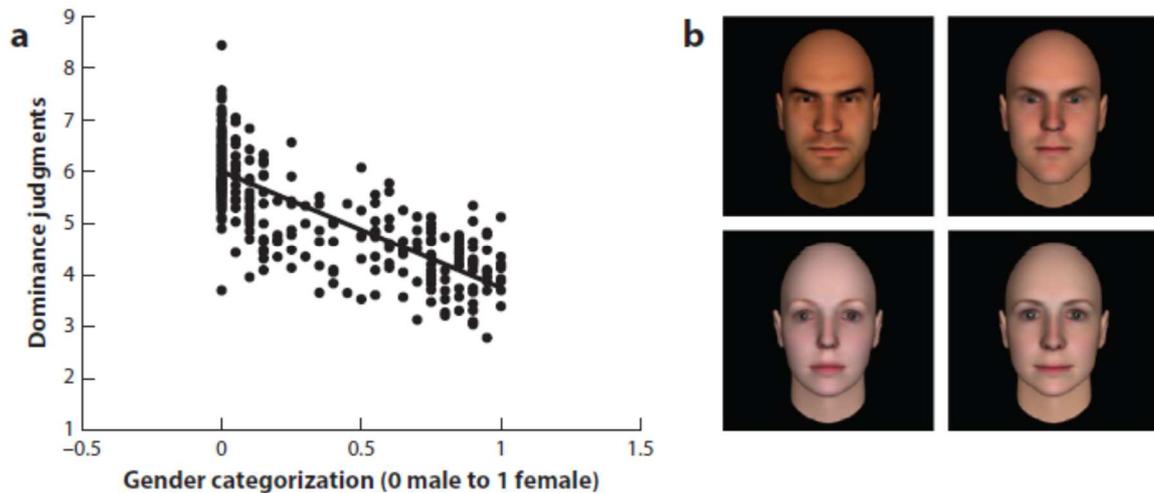
Other ways to change facial features

In the introduction of this document the statement was made that "…*people cannot (barring some extreme medical procedures) transform their physical characteristics like race, gender and facial dimensions to change the way that they are initially perceived*…"

There are, however, instances where first impressions need only be made in the digital world of the internet. With increasing frequency people contract services online and in these cases favourable first impressions made by the photograph of the individual offering to provide the service could result in increased revenues. One facial feature that can easily be manipulated in a digital photograph is the facial width ratio that was demonstrated in Figure 2. Stirrat and Perrett (2010) illustrated how the facial width ratio of a face in a digital photograph can be reduced by simply stretching the photograph (left hand side) in the vertical direction as demonstrated in Figure 5. This simple digital manipulation of a facial photograph increases the perceived trustworthiness of the person in the photograph.

Figure 5. Perceived trustworthiness of a person may be increased by stretching the digital image verically. The face on the left hand side (digitally manipulated to decrease the facial width ratio) are perceived as more trustworthy than in the original picture on the right (Stirrat & Perrett, 2010).

It has also been demonstrated that more extreme measures can be taken to improve first perceptions. S. Dayan, Clark, and Ho (2004) compared the first perceptions resulting from photographs of individuals prior to cosmetic surgery to those when shown photographs of the same individuals after cosmetic surgery (for an example see Figure 6). It was found that after cosmetic surgery, individuals were graded as more financially successful, more attractive, more successful in dating, better in athletic skills, better in relationship skills and better in social skills.

Other cosmetic procedures such as treatment with botulinum toxin A (commonly referred to as "Botox") have also been shown to alter fist perceptions (S. H. Dayan, Lieberman, Thakkar, Larimer, & Anstead, 2008). The change in general first perceptions may range from more positive for some patients to more negative for others who may start to have an unnatural appearance if treatments are excessive.

Figure 6. Plastic surgery can significantly improve first perceptions. The top panel shows front (A) and side (B) angle photographs of a women's face before cosmetic surgery and the bottom panel shows front (A) and side (B) angle photographs of the women's face after cosmetic surgery. The postoperitive photographs lead observers to perceive the woman as more financially succesfull with better social and athletic abilities than the pre-surgery photographs. Taken from S. Dayan et al. (2004).
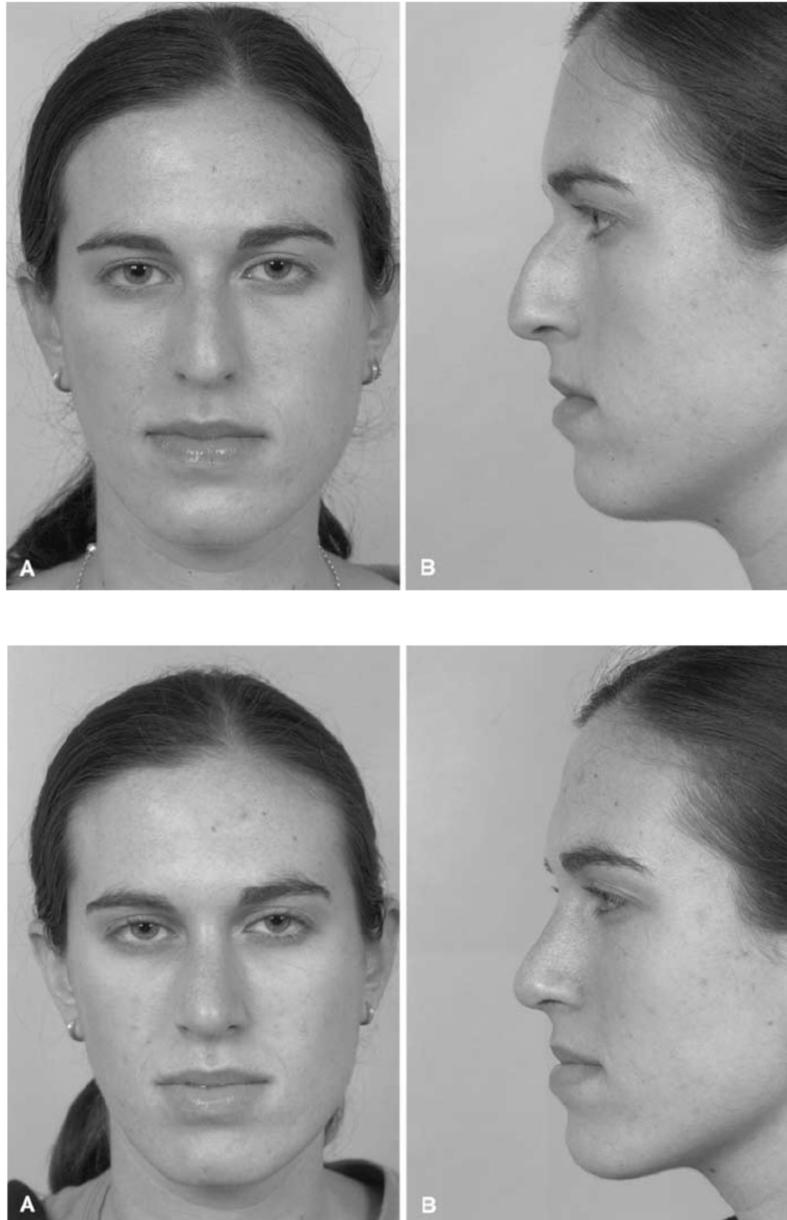
Research questions

It has been established that social capital needs to be accumulated to enhance one's career opportunities. Individuals manipulate their behaviour to manage the impressions of others in the quest to accumulate social capital, but in many situations (e.g. a prospective client first sees a photo of the person they will deal with on the company's website) first impressions cannot be manipulated by behaviour, but rather depends on facial appearance.

The primary research question is to find out if and how different combinations of facial hair styles and types of eyeglasses influences the perception of key personal attributes (to be identified under the subsequent section of this document) that are associated with economic interactions.

A secondary research question is to find out if there are differences in the way people of different cultures/race groups perceive attributes resulting from the facial appearance manipulations mentioned above.

1. METHODOLOGY AND RESULTS

The aim of the study was to determine the effect of manipulating facial appearance by combinations of facial hair styles and types of eyeglasses on the initial perceptions of others. As literature shows that first impressions are a powerful unconscious process, it makes sense to measure this in a way that will preserve the initial impressions that manifests itself in the unconscious mind. If this process is not carefully controlled, the data could become contaminated by conscious modifications from participants who change their responses to be more socially acceptable (e.g. by moderating their initial perceptions when participants realise that their initial perceptions was influenced by stereotypes of race, gender or age to avoid a feeling of guilt). For this reason, anonymity was key in obtaining truthful responses. Secondly, participants had to be able to communicate their impressions with as little interference from their conscious minds as possible. For this reason participants was urged to react on their initial impressions without first having to verbalise or justify reasons for their choices.

Choice of methodology

A quantitative study was done by setting up a set of experiments and a deductive approach used to find answers to the research question posed in the previous section. Numeric data were used to determine the statistical significance of findings.

Experimental design

Six men (two black, two white and two Indian) were photographed for the study. With regards to facial hair, three photographs were taken of the face of each person under evaluation. Three styles of facial hair were used for each person, namely clean shaven (left panel), chin beard (middle panel) and full beard (right panel) as shown in Figure 7. The persons whose faces were used for the photographs were asked to grow a full beard for a period of six weeks. All the photographs will be taken on the same day. The full beard was photographed first, after which the person was asked to shave off a part of his beard so that only the chin beard remains. After photographing the chin beard, the person had to shave clean before the final photograph was taken.

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Figure 7. The influence of three different styles of facial hair on perceived personal attributes will be measured (image: *forum.bodybuilding.com*)

For each facial hair condition, two additional photographs were created to evaluate the effect of rimless and rimmed eyeglasses in addition to the condition where no glasses was worn. Figure 8 illustrates the three eyeglasses conditions). This resulted in a total of nine variations per person and each of these photographs that were used for this study are shown in Table 1 below. For each facial hair condition one set of three photographs were of the person without any glasses. A second set of three photographs were of the person wearing rimless glasses and last a set of three photographs of the person wearing full-rim glasses.

Figure 8. Faces with no eyeglasses will be compared to those with rimless or full-rim glasses (image: *www.glasses2you.co.uk*)

To minimise the risk of introducing unwanted variables that could influence the outcome of the experiments, all photographs were taken in the similar lighting conditions and in front of a similar background.

Table 1. Eyeglasses and facial hair combinations for P1-P6

Glasses	Facial Hair	P1	P2	P3	P4	P5	P6
No glasses	Clean						
No glasses	Chin						
No glasses	Full						
Rimless	Clean						
Rimless	Chin						
Rimless	Full						
Rimmed	Clean						
Rimmed	Chin						
Rimmed	Full						

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Experimental procedure

For this study, data could be measured in one of several possible ways. The simplest way is perhaps to present one photograph at a time and then ask the participant to rate certain attributes (these will be discussed in a paragraph below) of the person in the photograph on a Likert scale. For example, one of the statements may be: "If you lend money to this person, he will pay back the loan on time." (On a scale between 1 and 10 where 1 corresponds to "very unlikely" and 10 to "very likely").

Another procedure that could be followed is to show participants a number of faces at the same time and ask them to rank the faces according to a specified attribute. In this case the question could be, for example: "If you lent money to the individuals in the photograph, who would be most likely to pay back the loan?" (Select the person most likely to pay back the loan first and then the person second most likely to pay back the loan and continue until all photographs have been selected. This method has the advantage that it does not provide the participant an option to give a neutral response.

A ranking procedure will need too many repetitions to obtain a balanced sample (e.g. if photographs of six individuals are presented and for each person nine conditions are available 10 077 696 repetitions will need to be done to ensure that all possible combinations have been presented). For this reason, the first option (rating photographs individually on a Likert scale) will be used for the proposed study.

Attributes under study

Personality is often described using the five-factor model (Digman, 1990) which divides personality into five broad categories namely openness, conscientiousness, extraversion, agreeableness, and neuroticism. Judge, Higgins, Thoresen, and Barrick (1999) found that conscientiousness (which is linked to self-discipline) is positively correlated with success in business while neuroticism (tendency to easily experience unpleasant emotions such as anxiety or anger) is negatively correlated to success.

Each of the broader personality categories can be subdivided into several personal attributes. Attributes that are deemed important in business may include trustworthiness, leadership abilities, competitiveness, integrity, ambition, adaptability, how organised a person is, competency, attention to detail, consistency, level of education, communication skills, level of confidence, enthusiasm, resourcefulness, sense of humour, commitment, decisiveness and focus.

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For the purpose of the current study, the perceived attributes that strongly influence individuals' choices in economic interactions had to be measured. Oesch and Murnighan (2003) found that judgments of competence and trustworthiness had strong effects on how individuals chose to distribute economic resources to others and as such the influence of facial hair and eyeglasses on the perception of these two attributes were measured. Trustworthiness has sometimes been described a s a combination of different dimensions, namely integrity, benevolence and competence (Yu, Saleem, & Gonzalez, 2014). For the present study, trustworthiness were defined as synonymous with integrity while competence were measured separately.

For each of these two attributes, a statement about the person in the photograph was displayed and the participant had to rate how likely they believe the statement to be true (as was described in the previous subsection). To control for any unwanted effects that may arise because of the way a specific statement was posed, three statements (presented to participants at random) were used for measurement of each of the perceived attributes.

Statements were chosen to be as generic as possible so that it may apply to the general population. For the purpose of this study, statements needed to speak to the broad question of "Does this person have integrity?" The first statement tests whether a person can be trusted with your money. The second statement tests if the person handles money in an honest way and the last statement aims to test for trustworthiness without involving the concept of money. The three statements that were used for measurement of perceived trustworthiness are listed below.

- If you lend money to this person, he will pay back the loan on time.
- If this person realised that he received too much change after paying at the till he would return the additional money.
- If this person made a verbal business agreement with you, he would honour the agreement.

Perceived competence were measured using three generic statements speaking to the broad question of "Is this person good at what he does?" The first statement tests whether the person recently won an award for professional excellence. The second statement do not refer to an award, but simply measures whether the person was one

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of the top performers in his class. The final statement is more direct and asks if the person is viewed as highly competent by his colleagues. The three statements that were used for measurement of perceived competency are listed below.

- This person recently won an award for professional excellence.
- This person was one of the top performers of his class in business school.
- This person is viewed by his colleagues as being highly competent.

Control of nuisance variables

It was expected that extraneous variables (e.g. age, gender or race/ethnicity) might impact the dependent variables measured in this study. Information such as age group, gender, race/ethnicity, home language, sexual orientation and religion were recorded for every participant. A multi-factor ANOVA with all of these as treatment factors would indicate which of these factors had large effects on the measured data.

Experimental interface

The experiment was conducted in the form of an online survey. When a participant clicked on the web link to the survey the participant was directed to an information page with basic instructions on how to complete the survey. Participants were then asked to provide the information specified above to assist in the analysis of the data (it was communicated clearly that participants will remain completely anonymous).

Each of the six faces were displayed one at a time and the participant was asked to rate the person in the photograph according to the attributes described above. The particular photograph of each face was randomly selected (with equal probability) to be one of the nine different permutations described above. A flow diagram of the experimental procedure is shown in Figure 9.

Sampling method and size

As it had been shown by Bonnefon et al. (2013) that facial feature judgement is possessed by all people in an equal amount, the assumption was made that the relevant population is all people who are involved in any form of decision making on economic transactions (deciding to buy goods or services). The aim was thus be to obtain as large as possible sample from the general population.

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Figure 9. A flow diagram explaining the flow of the experimental procedure that was used for this study. Both the order of faces and the combination of facial hair and eyeglasses were chosen randomly for each run.
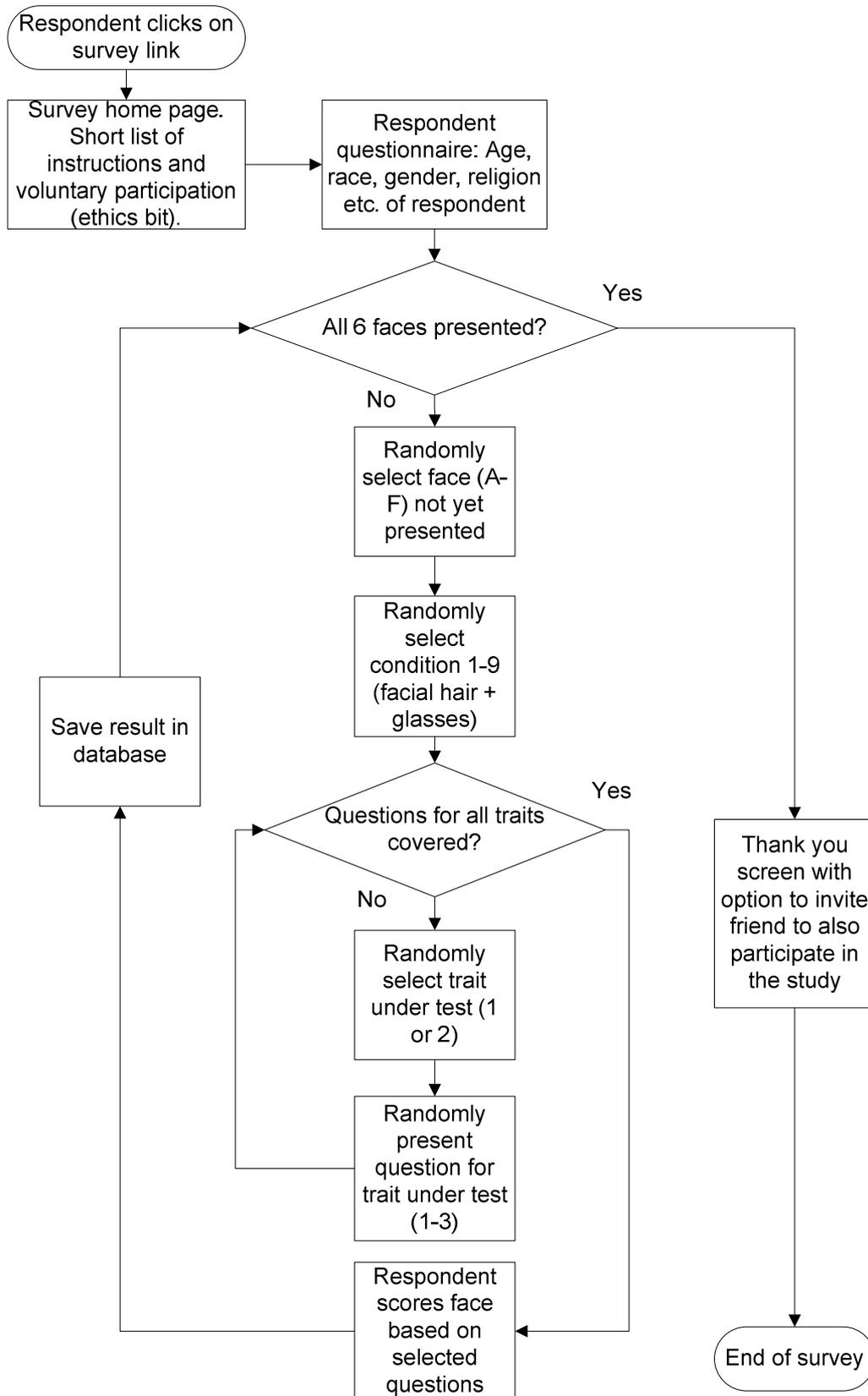
Limitations of the study

This study measured first impressions of participants that were shown photographs of faces with different types of facial hair and eyeglasses. While first impressions that are generated upon the first visual exposure to a face result in strong and lasting judgments about a person (Willis & Todorov, 2006), verbal interactions and non-verbal communication such as body posture, eye contact, gestures and touch also play an important role (Magalhaes, 2014; Teodorescu, 2013) that were measured in this study. As a great number of factors will contribute to first impressions in a real world situation, the findings of the proposed study will be especially applicable in situations where people are forced to make judgments with only a photograph at their disposal. These situations do exist, e.g. choosing a consultant from available photographs on a website or choosing which real estate agent to phone when interested in a property.

Analysis approach

Data obtained from the Likert scale are not interval data as it cannot be shown that, for example, the perceptual difference between a rating of three and four is the same as that between eight and nine. Also, a five out of ten score may be interpreted differently by different participants. It is customary, however, to treat data from the Likert scale as interval data and the use of parametric statistics on Likert scale data has been shown to be robust (Norman, 2010).

Primary analysis

A total of 1241 correspondents completed the experiment in full resulting in 7446 unique data points for each of the perceived attribute measurements. Perceived competence and trustworthiness were analysed separately using multi-factor ANOVAs with treatment factors of facial manipulation (9 combinations of glasses and facial hair), respondent language, religion, sexual orientation, race, age and gender. The question number that was used for measurement were also included as a treatment factor to determine the amount of systematic variation caused by differences in these questions.

The results of the multi-factor ANOVAs for perceived competence and perceived trustworthiness are tabulated in Table 2 and Table 3 respectively. The between groups design allows the effect size to be gauged directly from the treatment sum of squares.

It could be expected that the greatest variation in the data would be caused by respondent scaling differences (the use of a subjective Likert scale) and for this reason an additional column (% of explained systematic variation) was added to the tables to give an indication of the effect size relative to all of the other treatment factors. From this it is clear that the effects of facial manipulations were dominant for both perceived competence (55.57%) and perceived trustworthiness (43.41%). Interestingly, all of the treatment factors had a small but significant ($p<0.005$) influence on perceived competence. All treatment factors except for sexual orientation also significantly influenced perceived trustworthiness.

For both perceived competence and trustworthiness significant differences existed between the questions that were used to gauge perception. Although the mean scores of different questions did differ, there were no significant differences between the ranking order of glasses or facial hair styles and as such the average scores for the three questions were used throughout.

Table 2. Perceived competence

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Facial manipulation (glasses and facial hair)	325.8	55.57%	8	40.7	18.44	<0.0001
Respondent language	43.1	7.35%	5	8.6	3.90	0.0016
Respondent religion	41.6	7.10%	6	6.9	3.14	0.0045
Respondent sexual orientation	14.7	2.51%	1	14.7	6.64	0.01
Respondent racial group	27.3	4.66%	3	9.1	4.11	0.0063
Respondent age group	47.9	8.17%	6	8.0	3.61	0.0014
Respondent gender	10.9	1.86%	1	10.9	4.93	0.0264
Question number	75.0	12.79%	2	37.5	16.98	<0.0001
Error	16369.1		7413	2.2		
Total	17009.0		7445			

Table 3. Perceived trustworthiness

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Facial manipulation (glasses and facial hair)	200.9	43.41%	8	25.1	10.63	<0.0001
Respondent language	84.7	18.30%	5	16.9	7.17	<0.0001
Respondent religion	31.3	6.76%	6	5.2	2.21	0.0394
Respondent sexual orientation	1.3	0.28%	1	1.3	0.57	**0.4519**
Respondent racial group	36.6	7.91%	3	12.2	5.15	0.0015
Respondent age group	47.2	10.20%	6	7.9	3.33	0.0028
Respondent gender	23.8	5.14%	1	23.8	10.07	0.0015
Question number	37.0	7.99%	2	18.5	7.82	0.0004
Error	17520.6		7413	2.4		
Total	18085.4		7445			

Interactions between eyeglasses and facial hair conditions

The main purpose of using a full set of eyeglasses and facial hair style combinations in the experiment was to determine whether the influence of eyeglasses and those of facial hair are orthogonal or if there are interactions between the two conditions, e.g. are certain attributes affected by eyeglasses, but only if the person wears a full beard?

To find an answer to the question posed above the facial manipulation factor were subdivided into two different groups named type of glasses and facial hair. New multi-factor ANOVAs were set up to determine the significance of the interaction between the glasses and facial hair factors. The results of these ANOVAs for perceived competence and trustworthiness are tabulated in Table 4 and Table 5 respectively.

Table 4. Perceived competence

Source	Sum Sq.	% of explained systematic variation	d.f.	Mean Sq.	F	p
Glasses	254.1	79.54%	2	127.0	56.61	<0.0001
Facial hair	44.9	14.05%	2	22.4	10.00	<0.0001
Glasses*Facial hair	20.5	6.41%	4	5.1	2.28	0.0581
Error	16692.0		7437	2.2		
Total	17009.0		7445			

Table 5. Perceived trustworthiness

Source	Sum Sq.	% of explained systematic variance	d.f.	Mean Sq.	F	p
Glasses	138.2	69.10%	2	69.1	28.74	<0.0001
Facial hair	31.9	15.95%	2	16.0	6.64	0.0013
Glasses*Facial hair	29.9	14.95%	4	7.5	3.11	0.0145
Error	17887.5		7437	2.4		
Total	18085.4		7445			

For perceived competence the interaction between the glasses and facial hair factors were not significant (p=0.0581). For perceived trustworthiness, however, a significant (p<0.05) interaction effect were observed. On average, the relative effect size of the glasses factor were large (around 80% for perceived competence and 70% for perceived trustworthiness) in comparison to that of facial hair and interaction effects. This is an encouraging finding as it requires considerably less effort to change eyeglasses than to cultivate a new style of facial hair.

Individual results

It was shown in the previous subsections that the facial manipulations (eyeglasses and facial hair) had a significant influence on perceived competence and trustworthiness and that the effect size was large relative to the other factors that were considered. The obvious question that arises from those findings are whether specific combinations of eyeglasses and facial hair can be identified that lead to improvements in first

perceptions of competence and trustworthiness over a range of different persons. The data pertaining to the individuals in the photographs that were used for the experiment are shown in Figures 10 and 11 (Figures 12 and 13 shows the same data as Figures 10 and 11 respectively, but with error bars indicating the standard error) for perceived competence and trustworthiness respectively.

Figure 10. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived competence. Higher scores indicate more favourable perceptions.

Perceived competence
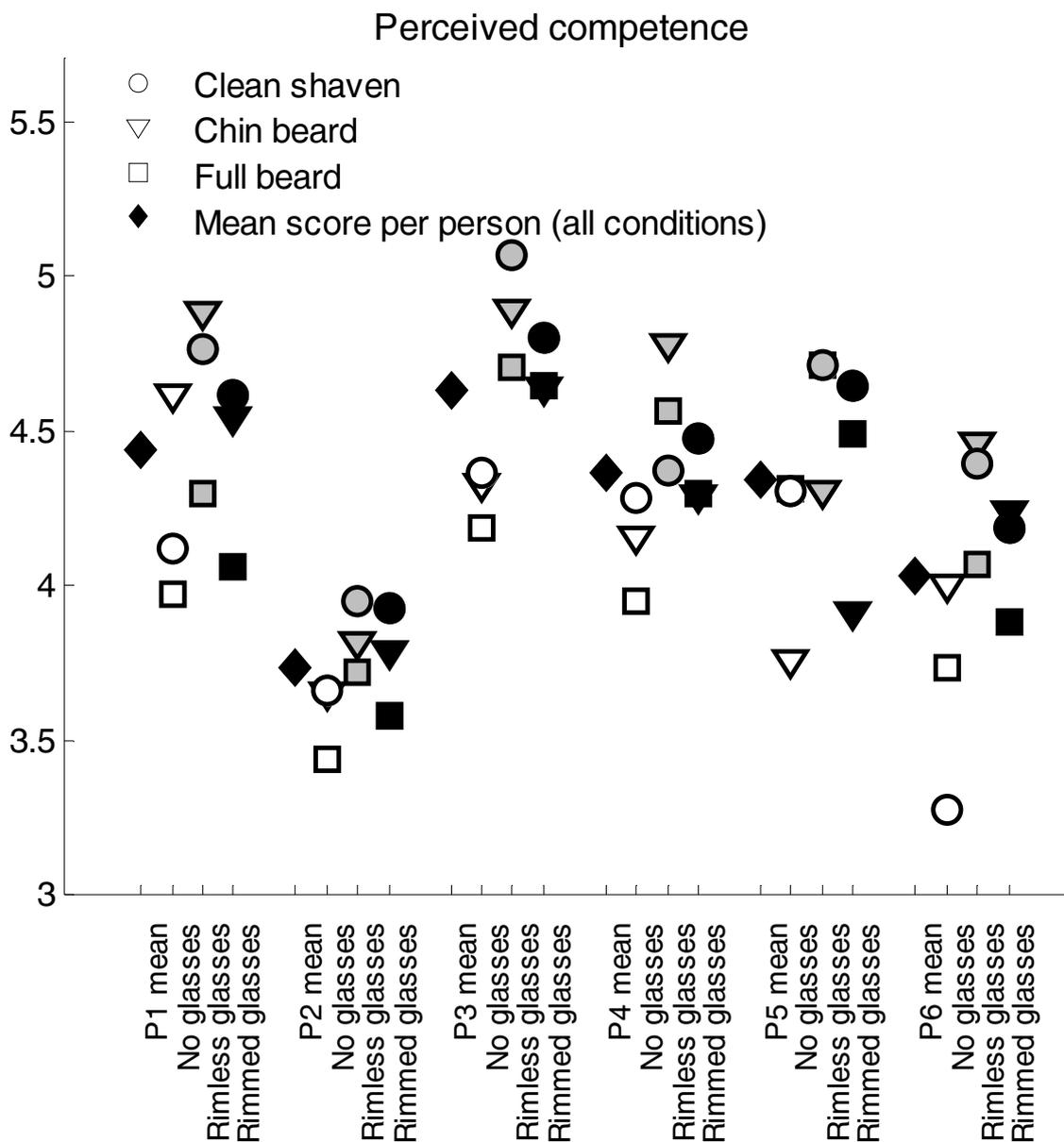
Figure 11. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived trustworthiness. Higher scores indicate more favourable perceptions.
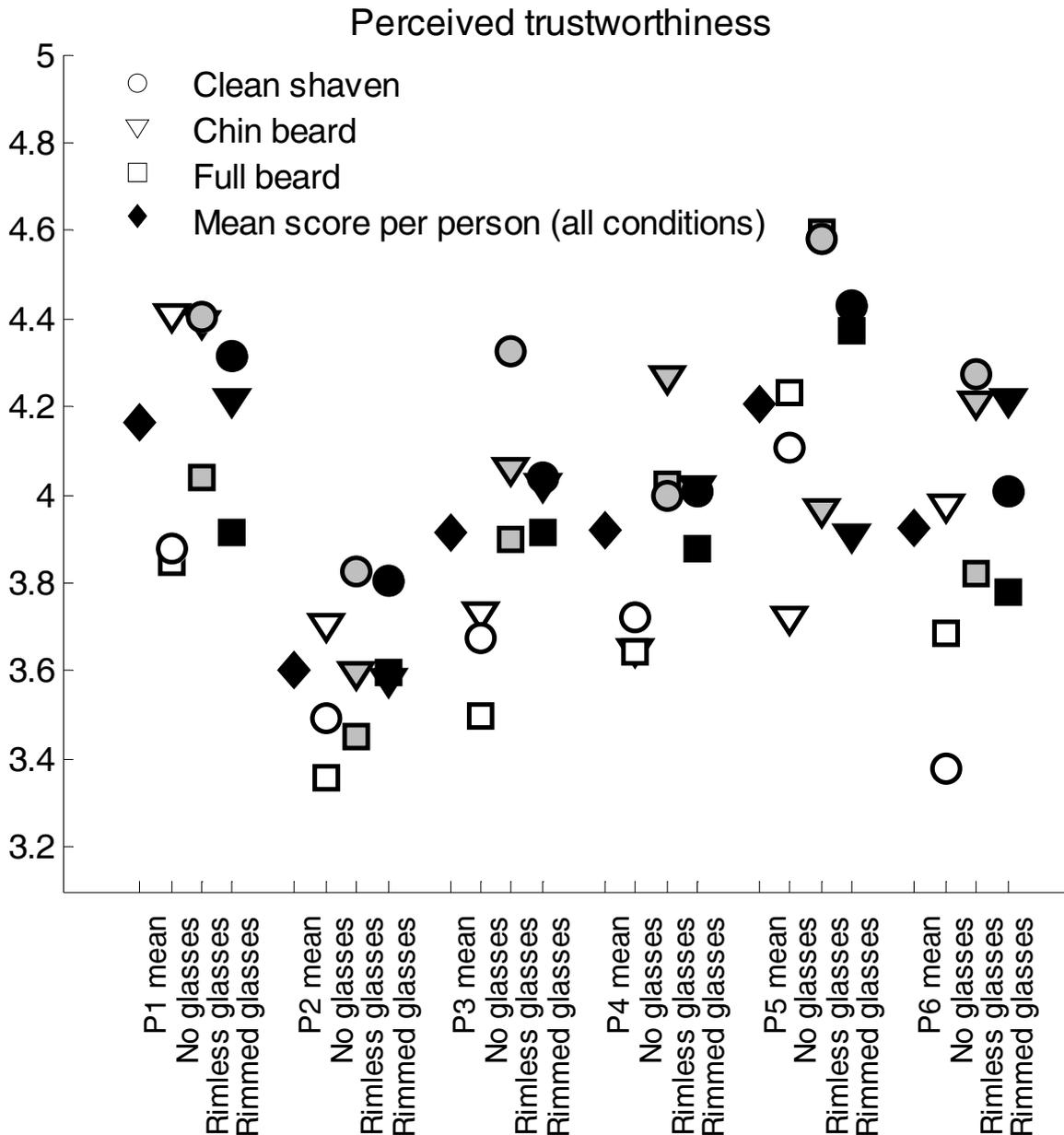
In both figures significant differences in mean scores for individual participants could be due to factors beyond the control of the participant such as facial shape and dimensions. It could be argued that P3 is naturally perceived as more competent than P5 (Figure 10) or that P5 is naturally perceived as more trustworthy than P3 (Figure 11). If this holds true, the implication of the data shown in these figures are that the shift in perceived competence or trustworthiness resulting from the optimal choice of

eyeglasses and facial hair style are larger than the "natural" differences between participants due to factors beyond a person's control.

Figure 12. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived competence. Higher scores indicate more favourable perceptions and error bars indicate the standard error.

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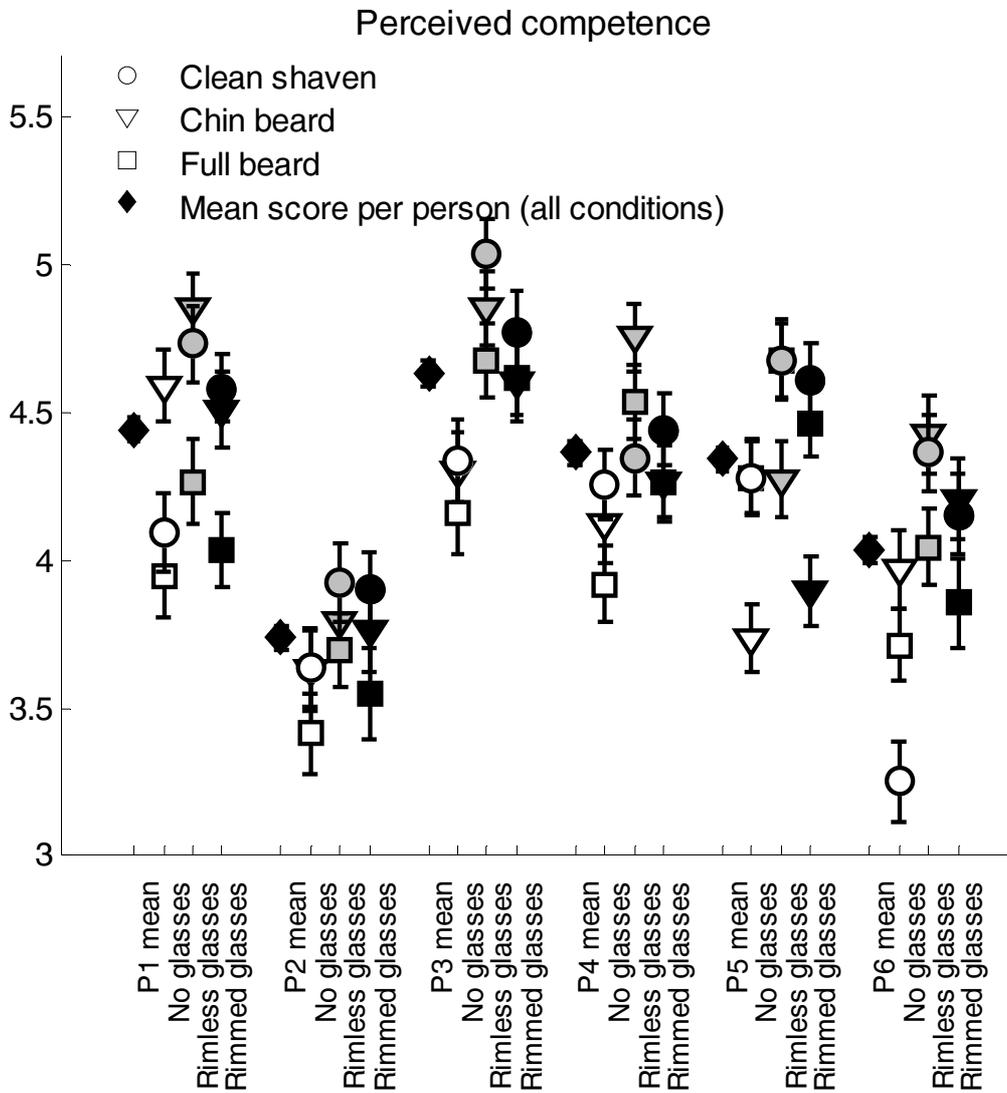
Figure 13. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived trustworthiness. Higher scores indicate more favourable perceptions and error bars indicate the standard error.
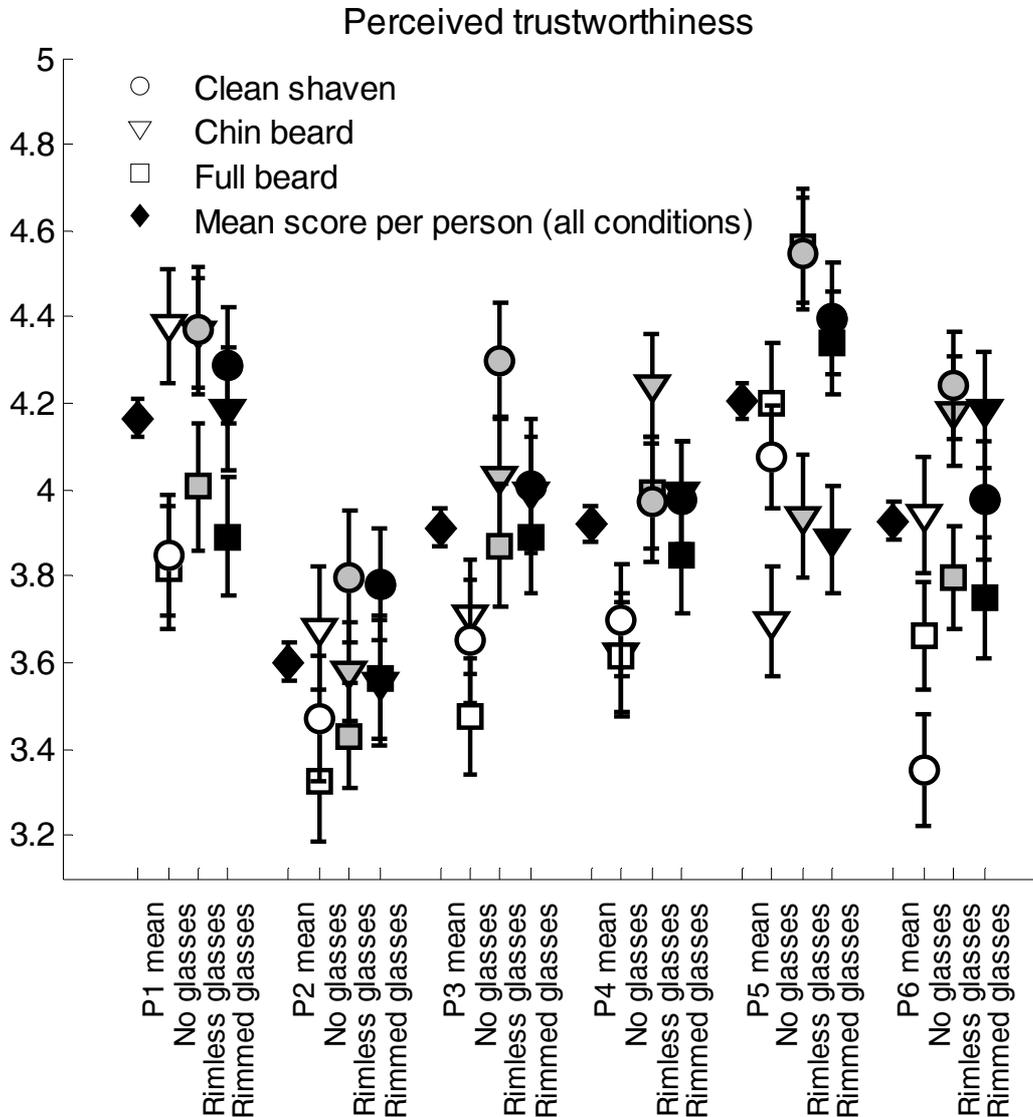
To assist in identifying trends that span the different participants the different conditions for eyeglasses and facial hair were ranked in order from most favourable (1) to least favourable (3) for each of the participants for perceived trustworthiness (Table 6) and competence (Table 7). Superscripts indicate the conditions that were significantly different (p<0.05) according to a post hoc Tukey-Kramer test.

Table 6. Perceived trustworthiness rankings for each of the participants

	Glasses					
Ranking	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
1	Rimless	Rimmed	Rimless [3]	Rimless [3]	Rimmed	Rimless [3]
2	Rimmed	Rimless	Rimmed [3]	Rimmed [3]	Rimless	Rimmed [3]
3	No glasses	No glasses	No glasses [1,2]	No glasses [1,2]	No glasses	No glasses [1,2]
	Facial hair					
Ranking	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
1	Chin [3]	Shaven	Shaven	Chin	Full [3]	Chin [2,3]
2	Shaven [3]	Chin	Chin	Shaven	Shaven [3]	Shaven [1]
3	Full [1,2]	Full	Full	Full	Chin [1,2]	Full [1]

Table 7. Perceived competence rankings for each of the participants

	Glasses					
Ranking	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
1	Rimless	Rimless [3]	Rimless [3]	Rimless	Rimless [3]	Rimless [3]
2	Rimmed	Rimmed [3]	Rimmed [3]	Rimmed	Rimmed	Rimmed [3]
3	No glasses	No glasses [1,2]	No glasses [1,2]	No glasses	No glasses [1]	No glasses [1,2]
	Facial hair					
Ranking	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
1	Chin [2,3]	Shaven	Chin	Chin	Shaven [3]	Chin [2,3]
2	Shaven [1]	Chin	Shaven	Shaven	Full [3]	Shaven [1]
3	Full [1]	Full	Full	Full	Chin [1,2]	Full [1]

Comparison with previous studies

The present study differs from previous studies in that both facial hair and eyeglasses were systematically manipulated for each face in the study. This allowed analysis to determine not only the direct effects of eyeglasses and facial hair on perceived attributes, but also interaction effects between facial hair and eyeglasses. A significant interaction effect between eyeglasses and facial hair was observed for perceived trustworthiness, indicating that effect of eyeglasses and facial hair are not orthogonal.

Leder et al. (2011) found that wearing of full-rimmed glasses made an individual look less attractive, but more intelligent while rimless glasses increased perceived honesty. It seems a logical conclusion that perceived competence would be closely correlated with perceived intelligence and so one might have expected full-rimmed glasses to result in higher perceived competence and rimless glasses to result in higher perceived

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trustworthiness. Somewhat surprisingly, rimless glasses resulted in higher perceived competence scores than full-rimmed glasses for all of the faces in the study. One possible explanation for this is that the negative effect of diminished attractiveness caused by full-rim glasses outweighs the positive effect of increased perceived intelligence in judgement of competence (Praino, Stockemer, & Ratis, 2014).

The literature on the effect of facial hair on perceptions of attributes are somewhat ambiguous. Facial hair could result in a more positive perception of a person as demonstrated by Dixson and Brooks (2013) who found that both men and women perceived men with full beards as having the best parenting abilities. Contrastingly, Conti and Conti (2004) demonstrated that people also associate facial hair with criminality while Herrick, Mendez, and Pryor (2015) found that politicians with facial hair were less likely to be voted. In line with the contrasting findings from literature, the present study do not provide a clear answer to which style of facial hair would result in the most favourable first impressions. The present data indicates that facial hair does have a significant influence on perceived trustworthiness and competence, but while wearing rimless glasses generally seems to produce more favourable perceptions overall the best choice of facial hair style depends on the individual. The situation is, however complicated by the fact that the same style of facial hair would not necessarily produce the most favourable results for both competence and trustworthiness. For example, P5 was perceived as most trustworthy with a full beard, but most competent when clean shaven. A good initial strategy for men who are unsure about which style of facial hair to adopt would probably be to wear rimless glasses on a clean shaven face as De Souza, Baião, and Otta (2003) found a general trend that men with facial hair are less likely to be hired.

While the results of the present study indicate that first perceptions can be improved with the correct choice of eyeglasses and facial hair style it should be kept in mind that many factors that might play an important role in influencing first perceptions in real life interactions was kept constant in the experiments of this study. Non-verbal communications such as facial expressions, eye contact, body posture and gestures may all have a significant influence on first perceptions when meeting someone face to face for the first time (Teodorescu, 2013). While photographs used in the present study contained only faces, the first perceptions of others may also be influenced strongly by attire. Howlett, Pine, Orakçioğlu, and Fletcher (2013) found that small

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changes in clothing choice of a man can result in significant differences in perceived attributes. Finally, it is also important to remember that, while favourable first perceptions can open up many doors, people learn from experience and if your behaviour contrasts with persons' initial impressions they will adapt their impressions to be in line with your behaviour (Yu et al., 2014).

Conclusion

- The data that were measured in this study suggest that perceived trustworthiness and perceived competence are most favourable when wearing rimless glasses and least favourable when not wearing any glasses at all.

- A significant interaction effect exists between type of eyeglasses and facial hair style for perceived trustworthiness.

- Style of facial hair also has a significant influence on perceived trustworthiness and perceived competence, but the optimal choice of facial hair seems to be person specific. A full beard generally resulted in least favourable fist perceptions.

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Reference list

Bonnefon, J. F., Hopfensitz, A., & Neys, W. D. (2013). The modular nature of trustworthiness detection. *Journal of Experimental Psychology: General, 142*(1), 143-150.

Borkenau, P. (1991). Evidence of a correlation between wearing glasses and personality. *Personality and Individual Differences, 12*(11), 1125-1128. doi: 10.1016/0191-8869(91)90074-I

Borkenau, P., Brecke, S., Möttig, C., & Paelecke, M. (2009). Extraversion is accurately perceived after a 50-ms exposure to a face. *Journal of Research in Personality, 43*(4), 703-706. doi: 10.1016/j.jrp.2009.03.007

Boyas, J., & Sharpe, T. L. (2010). Racial and ethnic determinants of interracial and ethnic trust. *Journal of Human Behavior in the Social Environment, 20*(5), 618-636. doi: 10.1080/10911351003673682

Brown, M. J., Henriquez, E., & Groscup, J. (2008). The effects of eyeglasses and race on juror decisions involving a violent crime. *American Journal of Forensic Psychology, 26*(2), 25-43.

Conti, R. P., & Conti, M. A. (2004). Mock jurors' perceptions of facial hair on criminal offenders. *Perceptual and Motor Skills, 98*(3 II), 1356-1358.

Dayan, S., Clark, K., & Ho, A. A. (2004). Altering first impressions after facial plastic surgery. *Aesthetic Plastic Surgery, 28*(5), 301-306. doi: 10.1007/s00266-004-1017-1

Dayan, S. H., Cho, K., Siracusa, M., & Gutierrez-Borst, S. (2015). Quantifying the impact cosmetic make-up has on age perception and the first impression projected. *Journal of Drugs in Dermatology, 14*(4), 366-374.

Dayan, S. H., Lieberman, E. D., Thakkar, N. N., Larimer, K. A., & Anstead, A. (2008). Botulinum toxin a can positively impact first impression. *Dermatologic Surgery, 34*(SUPPL 1), S40-S47. doi: 10.1111/j.1524-4725.2008.34241.x

De Souza, A. A. L., Baião, V. B. U., & Otta, E. (2003). Perception of men's personal qualities and prospect of employment as a function of facial hair. *Psychological Reports, 92*(1), 201-208.

Digman, J. M. (1990). Personality structure: emergence of the five-factor model. *Annual Review of Psychology, 41*(1), 417-440.

Dixson, B. J., & Brooks, R. C. (2013). The role of facial hair in women's perceptions of men's attractiveness, health, masculinity and parenting abilities. *Evolution and Human Behavior, 34*(3), 236-241.

Ewing, L., Caulfield, F., Read, A., & Rhodes, G. (2014). Perceived trustworthiness of faces drives trust behaviour in children. *Developmental Science, 18*(2), 327-334.

Festekjian, A., Tram, S., Murray, C. B., Sy, T., & Huynh, H. P. (2014). I See Me the Way You See Me: The Influence of Race on Interpersonal and Intrapersonal Leadership Perceptions. *Journal of Leadership and Organizational Studies, 21*(1), 102-119. doi: 10.1177/1548051813486522

Freeman, J. B., Stolier, R. M., Ingbretsen, Z. A., & Hehman, E. A. (2014). Amygdala responsivity to high-level social information from unseen faces. *Journal of Neuroscience, 34*(32), 10573-10581.

Herrick, R., Mendez, J. M., & Pryor, B. (2015). Razor's Edge: The Politics of Facial Hair. *Social Science Quarterly*. doi: 10.1111/ssqu.12183

Hong, S., & Len-Riós, M. E. (2015). Does Race Matter? Implicit and Explicit Measures of the Effect of the PR Spokesman's Race on Evaluations of Spokesman Source Credibility and Perceptions of a PR Crisis' Severity. *Journal of Public Relations Research, 27*(1), 63-80. doi: 10.1080/1062726x.2014.929502

Hooghe, M., & Oser, J. (2015). Internet, television and social capital: the effect of 'screen time' on social capital. *Information Communication and Society, 18*(10), 1175-1199. doi: 10.1080/1369118x.2015.1022568

Horry, R., Cheong, W., & Brewer, N. (2015). The other-race effect in perception and recognition: Insights from the complete composite task. *Journal of Experimental Psychology: Human Perception and Performance, 41*(2), 508-524. doi: 10.1037/xhp0000042

Howlett, N., Pine, K., Orakçioğlu, I., & Fletcher, B. (2013). The influence of clothing on first impressions: Rapid and positive responses to minor changes in male attire. *Journal of Fashion Marketing and Management, 17*(1), 38-48. doi: 10.1108/13612021311305128

Ito, T. A., & Senholzi, K. B. (2013). Us versus them: Understanding the process of race perception with event-related brain potentials. *Visual Cognition, 21*(9-10), 1096-1120. doi: 10.1080/13506285.2013.821430

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Jellesma, F. C. (2013). Do glasses change children's perceptions? Effects of eyeglasses on peer- and self-perception. *European Journal of Developmental Psychology, 10*(4), 449-460. doi: 10.1080/17405629.2012.700199

Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel Psychology, 52*(3), 621-652.

Kumra, S., & Vinnicombe, S. (2010). Impressing for success: A gendered analysis of a key social capital accumulation strategy. *Gender, Work and Organization, 17*(5), 521-546.

Leder, H., Forster, M., & Gerger, G. (2011). The glasses stereotype revisited: Effects of eyeglasses on perception, recognition, and impression of faces. *Swiss Journal of Psychology, 70*(4), 211-222. doi: 10.1024/1421-0185/a000059

Leikas, S., Verkasalo, M., & Lönnqvist, J. E. (2013). Posing personality: Is it possible to enact the Big Five traits in photographs? *Journal of Research in Personality, 47*(1), 15-21. doi: 10.1016/j.jrp.2012.10.012

MacDonald, J., & Stokes, R. J. (2006). Race, social capital, and trust in the police. *Urban Affairs Review, 41*(3), 358-375. doi: 10.1177/1078087405281707

Magalhaes, A. L. (2014). Rhetoric and Body Language in Business Communication. *Business Communication Quarterly, 77*(3), 345-346.

Manz, W., & Lueck, H. E. (1968). Influence of wearing glasses on personality ratings: crosscultural validation of an old experiment. *Perceptual and Motor Skills, 27*(3), 704.

Matsumoto, D., & Hwang, H. S. (2011). Evidence for training the ability to read microexpressions of emotion. *Motivation and Emotion, 35*(2), 181-191.

Nash, R., Fieldman, G., Hussey, T., Lévêque, J. L., & Pineau, P. (2006). Cosmetics: They influence more than Caucasian female facial attractiveness. *Journal of Applied Social Psychology, 36*(2), 493-504. doi: 10.1111/j.0021-9029.2006.00016.x

Neave, N., & Shields, K. (2008). The effects of facial hair manipulation on female perceptions of attractiveness, masculinity, and dominance in male faces. *Personality and Individual Differences, 45*(5), 373-377.

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*(5), 625-632. doi: 10.1007/s10459-010-9222-y

Nurmoja, M., & Bachmann, T. (2014). Consistency of the relation between individual facial cues and the perceived suggestibility and trustworthiness across varying facial expressions. *Trames, 18*(2), 105-119. doi: 10.3176/tr.2014.2.01

Oesch, J. M., & Murnighan, J. K. (2003). Egocentric perceptions of relationships, competence, and trustworthiness in salary allocation choices. *Social Justice Research, 16*(1), 53-78. doi: 10.1023/a:1022926111093

Olivola, C. Y., & Todorov, A. (2010). Elected in 100 milliseconds: Appearance-based trait inferences and voting. *Journal of Nonverbal Behavior, 34*(2), 83-110.

Petrican, R., Todorov, A., & Grady, C. (2014). Personality at Face Value: Facial Appearance Predicts Self and Other Personality Judgments among Strangers and Spouses. *Journal of Nonverbal Behavior, 38*(2), 259-277. doi: 10.1007/s10919-014-0175-3

Praino, R., Stockemer, D., & Ratis, J. (2014). Looking Good or Looking Competent? Physical Appearance and Electoral Success in the 2008 Congressional Elections. *American Politics Research, 42*(6), 1096-1117. doi: 10.1177/1532673x14532825

Rudolph, T. J., & Popp, E. (2010). Race, environment, and interracial trust. *Journal of Politics, 72*(1), 74-89. doi: 10.1017/s002238160999048x

Smith, S. S. (2010). Race and trust. *Annual Review of Sociology, 36*(1), 453-475. doi: 10.1146/annurev.soc.012809.102526

Stanley, D. A., Sokol-Hessner, P., Banaji, M. R., & Phelps, E. A. (2011). Implicit race attitudes predict trustworthiness judgments and economic trust decisions. *Proceedings of the National Academy of Sciences of the United States of America, 108*(19), 7710-7715. doi: 10.1073/pnas.1014345108

Stirrat, M., & Perrett, D. I. (2010). Valid facial cues to cooperation and trust: Male facial width and trustworthiness. *Psychological Science, 21*(3), 349-354.

Teodorescu, A. (2013). Non-verbal communication in intercultural business negotiations. *Quality - Access to Success, 14*(SUPPL.2), 259-262.

Thornton, G. R. (1944). The effect of wearing glasses upon judgments of personality traits of persons seen briefly. *Journal of Applied Psychology, 28*(3), 203-207. doi: 10.1037/h0055862

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*(1), 519-545. doi:
10.1146/annurev-psych-113011-143831

Todorov, A., & Oosterhof, N. (2011). Modeling social perception of faces. *IEEE Signal Processing Magazine, 28*(2), 117-122. doi: 10.1109/msp.2010.940006

Walline, J. J., Sinnott, L., Johnson, E. D., Ticak, A., Jones, S. L., & Jones, L. A. (2008). What do kids think about kids in eyeglasses? *Ophthalmic and Physiological Optics, 28*(3), 218-224. doi: 10.1111/j.1475-1313.2008.00559.x

Whalen, P. J., Rauch, S. L., Etcoff, N. L., McInerney, S. C., Lee Michael, B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. *Journal of Neuroscience, 18*(1), 411-418.

Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science, 17*(7), 592-598.

Wogalter, M. S., & Hosie, J. A. (1991). Effects of cranial and facial hair on perceptions of age and person. *The Journal of social psychology, 131*(4), 589-591.

Yu, M., Saleem, M., & Gonzalez, C. (2014). Developing trust: First impressions and experience. *Journal of Economic Psychology, 43*, 16-29. doi: 10.1016/j.joep.2014.04.004

Appendix F: Matlab Code

```matlab
%Matlab code for ANOVA statistics and figure plots

%PJ Venter

close all
All = xlsread('data.xls');
A=All;
ycomp=A(:,5)';
ytrust=A(:,7)';
glan=A(:,14)';
greligion=A(:,13)';
gsexor=A(:,12)';
gracecan=A(:,11)';
gnat=A(:,10)';
gold=A(:,9)';
gsex=A(:,8)';
gqtypecomp=A(:,4)';
gqtypetrust=A(:,6)';
grace=A(:,2)';
gper=A(:,1)';
gftype=A(:,3)';
gglas=A(:,15)';
gbrd=A(:,16)';


p1 = anovan(ycomp,{gftype glan greligion gsexor gracecan gold gsex gqtypecomp},...
     'varnames',{'Facial manipulation (glasses and facial hair)',...
     'Respondent language','Respondent religion',...
     'Respondent sexual orientation','Respondent racial group',...
     'Respondent age group','Respondent gender','Question number'});
p2 = anovan(ytrust,{gftype glan greligion gsexor gracecan gold gsex gqtypetrust},...
     'varnames',{'Facial manipulation (glasses and facial hair)',...
     'Respondent language','Respondent religion',...
     'Respondent sexual orientation','Respondent racial group',...
     'Respondent age group','Respondent gender','Question number'});
[~,~,stats1] = anovan(ytrust,{gglas gbrd},'model','interaction',...
    'varnames',{'Glasses','Facial hair'});
results = multcompare(stats1,'Dimension',[1 2])
[~,~,stat2s] = anovan(ycomp,{gglas gbrd},'model','interaction',...
    'varnames',{'Glasses','Facial hair'});
results = multcompare(stats2,'Dimension',[1 2])

averagesf=zeros(6,9,2);
averages=zeros(6,3,2);
totalsf=zeros(6,9);
sumsf=zeros(6,9,2);
sums=zeros(6,1,2);

means=zeros(6,9,2);
confints=zeros(6,9,2);
for person=1:6
    fc1=0;
fc2=0;
fc3=0;
fc4=0;
fc5=0;
fc6=0;
fc7=0;
fc8=0;
fc9=0;
ft1=0;
ft2=0;
ft3=0;
ft4=0;
ft5=0;
ft6=0;
ft7=0;
ft8=0;
ft9=0;
fn=zeros(2,9);
A=All(1+((person-1)*1241):person*1241,:);
ycomp=A(:,5)';
```

```matlab
ytrust=A(:,7)';
glan=A(:,14)';
greligion=A(:,13)';
gsexor=A(:,12)';
gracecan=A(:,11)';
gnat=A(:,10)';
gold=A(:,9)';
gsex=A(:,8)';
gqtypecomp=A(:,4)';
gqtypetrust=A(:,6)';
grace=A(:,2)';
gper=A(:,1)';
gftype=A(:,3)';
gglas=A(:,15)';
gbrd=A(:,16)';


[~,~,stats] = anovan(ycomp,{gglas gbrd},'model','interaction',...
    'varnames',{'Glasses','Facial hair'});
figure(5+person*10)
results = multcompare(stats,'Dimension',[1 1])
figure(6+person*10)
results = multcompare(stats,'Dimension',[2 2])
[~,~,stats] = anovan(ytrust,{gglas gbrd},'model','interaction',...
    'varnames',{'Glasses','Facial hair'});
figure(7+person*10)
results = multcompare(stats,'Dimension',[1 1])
figure(8+person*10)
results = multcompare(stats,'Dimension',[2 2])
p = anovan(ycomp,{gglas gbrd},'model','interaction',...
    'varnames',{'gglas','gbrd'});
p = anovan(ycomp,{gftype glan greligion gsexor gracecan gold gsex gper gqtypecomp},...

'varnames',{'gftype','glan','greligion','gsexor','gracecan','gold','gsex','gper','gqtypecomp'}
);


for gg=1:1241
    totalsf(person,gftype(gg))=totalsf(person,gftype(gg))+1;
    sumsf(person,gftype(gg),1)=sumsf(person,gftype(gg),1)+ycomp(gg);
    sumsf(person,gftype(gg),2)=sumsf(person,gftype(gg),2)+ytrust(gg);
    switch gftype(gg)
        case 1
            ft1=[ft1 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc1=[fc1 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 2
            ft2=[ft2 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc2=[fc2 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 3
            ft3=[ft3 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc3=[fc3 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 4
            ft4=[ft4 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc4=[fc4 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 5
            ft5=[ft5 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc5=[fc5 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 6
            ft6=[ft6 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc6=[fc6 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 7
            ft7=[ft7 ytrust(gg)];
            fn(1,gftype(gg))=fn(1,gftype(gg))+1;
            fc7=[fc7 ycomp(gg)];
            fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        case 8
```

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```
                ft8=[ft8 ytrust(gg)];
                fn(1,gftype(gg))=fn(1,gftype(gg))+1;
                fc8=[fc8 ycomp(gg)];
                fn(2,gftype(gg))=fn(2,gftype(gg))+1;
                case 9
                ft9=[ft9 ytrust(gg)];
                fn(1,gftype(gg))=fn(1,gftype(gg))+1;
                fc9=[fc9 ycomp(gg)];
                fn(2,gftype(gg))=fn(2,gftype(gg))+1;
        end
end
mult=1;
z=1;
        means(person,z,1)=mean(fc1);
        means(person,z,2)=mean(ft1);
        confints(person,z,1)=mult*(std(fc1)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft1)/sqrt(fn(1,z)));
        z=2;
        means(person,z,1)=mean(fc2);
        means(person,z,2)=mean(ft2);
        confints(person,z,1)=mult*(std(fc2)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft2)/sqrt(fn(1,z)));
        z=3;
        means(person,z,1)=mean(fc3);
        means(person,z,2)=mean(ft3);
        confints(person,z,1)=mult*(std(fc3)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft3)/sqrt(fn(1,z)));
        z=4;
        means(person,z,1)=mean(fc4);
        means(person,z,2)=mean(ft4);
        confints(person,z,1)=mult*(std(fc4)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft4)/sqrt(fn(1,z)));
        z=5;
        means(person,z,1)=mean(fc5);
        means(person,z,2)=mean(ft5);
        confints(person,z,1)=mult*(std(fc5)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft5)/sqrt(fn(1,z)));
        z=6;
        means(person,z,1)=mean(fc6);
        means(person,z,2)=mean(ft6);
        confints(person,z,1)=mult*(std(fc6)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft6)/sqrt(fn(1,z)));
        z=7;
        means(person,z,1)=mean(fc7);
        means(person,z,2)=mean(ft7);
        confints(person,z,1)=mult*(std(fc7)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft7)/sqrt(fn(1,z)));
        z=8;
        means(person,z,1)=mean(fc8);
        means(person,z,2)=mean(ft8);
        confints(person,z,1)=mult*(std(fc8)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft8)/sqrt(fn(1,z)));
        z=9;
        means(person,z,1)=mean(fc9);
        means(person,z,2)=mean(ft9);
        confints(person,z,1)=mult*(std(fc9)/sqrt(fn(2,z)));
        confints(person,z,2)=mult*(std(ft9)/sqrt(fn(1,z)));

averages(person,1,1)=mean(ycomp);
averages(person,1,2)=mean(ytrust);
averages(person,2,1)=std(ycomp);
averages(person,2,2)=std(ytrust);
averages(person,3,1)=std(ycomp)/sqrt(1241);
averages(person,3,2)=std(ytrust)/sqrt(1241);
end
avaragesf(:,:,1)=sumsf(:,:,1)./totalsf(:,:);
avaragesf(:,:,2)=sumsf(:,:,2)./totalsf(:,:);


dots=['v' 's' 'o' 'v' 's' 'o' 'v' 's' 'o'];
cols={[1 1 1] [1 1 1] [1 1 1] [0 1 0] [0 1 0] [0 1 0] [0 0 0] [0 0 0] [0 0 0]};
offs=0;
for hh=1:6
    for jj=1:9
        if jj<4
            offs=0.2;
        elseif jj<7
```

```matlab
            offs=0.4;
        else
            offs=0.6
        end
        figure(20)
        hold on
        plot(hh+offs,sumsf(hh,jj,1)/totalsf(hh,jj),dots(jj),'LineWidth',2,...
                        'MarkerEdgeColor','k',...
                        'MarkerFaceColor',cols{jj},...
                        'MarkerSize',10)
                hold off
                figure(21)
                hold on
                plot(hh+offs,sumsf(hh,jj,2)/totalsf(hh,jj),dots(jj),...
                    'LineWidth',2,...
                    'MarkerEdgeColor','k',...
                    'MarkerFaceColor',cols{jj},...
                    'MarkerSize',10)
                hold off
                                    figure(22)
        hold on
        errorbar([hh+offs-2.5 hh+offs hh+offs+2.5],[0 means(hh,jj,1) 0],...
            [0 confints(hh,jj,1) 0],['k' dots(jj)],'LineWidth',2,...
                        'MarkerEdgeColor','k',...
                        'MarkerFaceColor',cols{jj},...
                        'MarkerSize',10)
                hold off
                figure(23)
                hold on
                errorbar([hh+offs-2.5 hh+offs hh+offs+2.5],...
                    [0 means(hh,jj,2) 0],[0 confints(hh,jj,2) 0]...
                    ,['k' dots(jj)],'LineWidth',2,...
                    'MarkerEdgeColor','k',...
                    'MarkerFaceColor',cols{jj},...
                    'MarkerSize',10)
                hold off
    end
    figure(22)
        hold on
    errorbar([hh-2.5 hh hh+2.5],[0 averages(hh,1,1) 0],[0 averages(hh,3,1) 0],...
        'kd','LineWidth',2,...
                        'MarkerEdgeColor','k',...
                        'MarkerFaceColor','k',...
                        'MarkerSize',10)
                hold off
                    figure(23)
        hold on
    errorbar([hh-2.5 hh hh+2.5],[0 averages(hh,1,2) 0],[0 averages(hh,3,2) 0],...
        'kd','LineWidth',2,...
                        'MarkerEdgeColor','k',...
                        'MarkerFaceColor','k',...
                        'MarkerSize',10)
                hold off
end


figure(22);
hold on
x1=errorbar(-1,9,0,'ko','LineWidth',2,'MarkerFaceColor','w')
x2=errorbar(-1,9,0,'ks','LineWidth',2,'MarkerFaceColor','w')
x3=errorbar(-1,9,0,'kd','LineWidth',2,'MarkerFaceColor','w')
x4=errorbar(-1,9,0,'ko','LineWidth',2,'MarkerFaceColor','k')
hold off
 xlim([0.5 7]);
 ylim([3 5.7]);
title('Perceived competence')
set(gca,'XTick',[1 1.2 1.4 1.6 2 2.2 2.4 2.6 3 3.2 3.4 3.6 4 4.2 4.4 4.6 5...
    5.2 5.4 5.6 6 6.2 6.4 6.6]);
%set(gca,'XTick',[1 1.25 1.5 ]);
t={'P1 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P2 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P3 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P4 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P5 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
     'P6 mean', 'No glasses','Rimless glasses','Rimmed glasses'};
set(gca,'XTickLabel',t);
set(gca,'FontSize',11)
```

73

```matlab
xticklabel_rotate

hleg=legend([x1 x2 x3 x4], {'Chin beard','Full beard','Clean shaven',...
    'Mean score per person (all conditions)'})
set(hleg,'Position',get(hleg,'Position') - [0.2 0.185 0 0])
%set(hleg,'Box', 'Off')
figure(23)
hold on
x1=errorbar(-1,9,0,'kv','LineWidth',2,'MarkerFaceColor','w')
x2=errorbar(-1,9,0,'ks','LineWidth',2,'MarkerFaceColor','w')
x3=errorbar(-1,9,0,'ko','LineWidth',2,'MarkerFaceColor','w')
x4=errorbar(-1,9,0,'kd','LineWidth',2,'MarkerFaceColor','k')
hold off
xlim([0.5 7]);
ylim([3.1 5]);
title('Perceived trustworthiness')
set(gca,'XTick',[1 1.2 1.4 1.6 2 2.2 2.4 2.6 3 3.2 3.4 3.6 4 4.2 4.4 ...
    4.6 5 5.2 5.4 5.6 6 6.2 6.4 6.6]);
%set(gca,'XTick',[1 1.25 1.5 ]);
t={'P1 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P2 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P3 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P4 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P5 mean', 'No glasses','Rimless glasses','Rimmed glasses',...
    'P6 mean', 'No glasses','Rimless glasses','Rimmed glasses'};

set(gca,'XTickLabel',t);
set(gca,'FontSize',11)
xticklabel_rotate
hleg=legend([x1 x2 x3 x4], {'Chin beard','Full beard','Clean shaven',...
    'Mean score per person (all conditions)'})
set(hleg,'Position',get(hleg,'Position') - [0.2 0.185 0 0])
```

Appendix G: Ethical Clearence

Gordon Institute of Business Science
University of Pretoria

Dear Mr Petrus Venter

Protocol Number: **Temp2015-01523**

Title: **Facial appearance manipulations for favourable first impressions in economic interactions**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

GIBS Ethics Administrator

Appendix H: Questionnaire

Welcome

Thank you for participating in this experiment on decision making. This is part of an MBA research study and should not take more than 5 minutes of your time.

Six faces will be displayed (one face per page) and two statements about the person in the photograph will be made (a total of 12 questions). You will be asked to indicate how likely you believe each statement to be true. After completing the questions about the faces, you will be asked to provide some demographic information to assist us in processing the data.

When answering the questions about the faces shown, you are urged to give your honest opinion based on your first perception of the person shown in the photograph.

Please note that you will remain completely anonymous. No information will be collected that could be used to identify you in any way. Your participation is voluntary and if, for any reason, you wish to withdraw before the survey has been completed, you may simply close the browser window.

A 11.12%

B 11.11%

C 11.11%

D 11.11%

E 11.11%

F 11.11%

G 11.11%

H 11.11%

I 11.11%

The following statements relate to the person shown in the photograph above. Please indicate how likely you deem each statement to be true on a scale of 1 to 7, where 1 corresponds to "Very unlikely" and 7 corresponds to "Very likely".

* A 33.34% **This person recently won an award for professional excellence.**
  B 33.33% **This person was one of the top performers of his class in business school.**
  C 33.33% **This person is viewed by his colleagues as being highly competent.**

1. Very unlikely	2	3	4	5	6	7. Very likely
○	○	○	○	○	○	○

* A 33.34% **If you lend money to this person, he will pay back the loan on time.**
  B 33.33% **If this person realised that he received too much change after paying at the till, he would return the additional money.**
  C 33.33% **If this person made a verbal business agreement with you, he would honour the agreement.**

1. Very unlikely	2	3	4	5	6	7. Very likely
○	○	○	○	○	○	○

Collection of demographic information

Please provide us with your demographic information. Please note that you will remain completely anonymous.

* Are you male or female?

◯ Male

◯ Female

* How old are you?

* Nationality?

* Race?

* Sexual orientation?

* Religion?

* Home language?

Appendix I: Journal guide for authors

JOURNAL OF ECONOMIC PSYCHOLOGY

Research in Economic Psychology and Behavioral Economics

Affiliated with the International Association for Research in Economic Psychology

TABLE OF CONTENTS
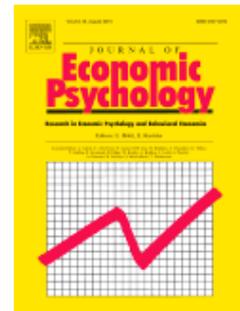
DESCRIPTION

The Journal aims to present research that will improve understanding of **behavioral**, especially **socio-psychological**, aspects of **economic** phenomena and processes.

The Journal seeks to be a channel for the increased interest in using behavioral science methods for the study of **economic behavior**, and so to contribute to better solutions of societal problems, by stimulating new approaches and new theorizing about economic affairs. **Economic psychology** as a discipline studies the psychological mechanisms that underlie consumption and other economic behavior. It deals with preferences, choices, decisions, and factors influencing these, as well as the consequences of decisions and choices with respect to the satisfaction of needs. This includes the impact of external economic phenomena upon human behavior and well-being. Studies in economic psychology may relate to different levels of aggregation, from the household and the individual consumer to the macro level of whole nations. Economic behavior in connection with inflation, unemployment, taxation, economic development, as well as consumer information and economic behavior in the market place are thus the major fields of interest.

The *Journal of Economic Psychology* contains: (a) reports of empirical research on economic behavior; (b) assessments of the state of the art in various subfields of economic psychology; (c) articles providing a theoretical perspective or a frame of reference for the study of economic behavior; (d) articles explaining the implications of theoretical developments for practical applications; (e) book reviews; (f) announcements of meetings, conferences and seminars.
Special issues of the Journal may be devoted to themes of particular interest. The Journal will encourage exchange of information between researchers and practitioners by being a forum for discussion and debate of issues in both theoretical and applied research.

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Facial appearance manipulations for favourable first impressions in economic interactions Pieter J. Venter a, Gavin Price b a, b

49**Gordon Institute of Business Science, University of Pretoria, PO Box 787602, Sandton 2146, South Africa**

Email addresses apjventermail@gmail.com bpriceg@gibs.co.za Corresponding author Gavin Price Tel, +27 11 771 4223 ABSTRACT Strong first impressions are created within a tenth of a second after seeing someone's face for the first time. In business, where deals often need to be made with strangers in a relatively short period of time, creating favourable first impressions are of critical importance. There is little that a person can do to change their facial dimensions, but wearing of eyeglasses and - for men - growing of facial hair are easy ways in which one's appearance may be altered. From the literature, trustworthiness and competence were identified as the most important attributes for success in business and this study endeavoured to experimentally measure the influence of wearing eyeglasses and growing facial hair on how these attributes are perceived. Photographs of men with different combinations of eyeglasses (no glasses, rimless glasses and rimmed glasses) and facial hair (clean shaven, chin beard and full beard) were presented to correspondents and their perception of the trustworthiness and competence of the person in the photograph were measured. Analysis of the results showed that perception of trustworthiness and competence were both most favourable when persons wear rimless glasses. For perceived trustworthiness a significant interaction effect were present between eyeglasses and facial hair. Correspondent demographics such as gender, race, language and age all had significant effects on perceived competence and trustworthiness, but effect sizes of these were small in comparison to that of the facial manipulations (facial hair and eyeglasses). Keywords: Trust, Competence, Facial hair, Eyeglasses, First perceptions 1. Introduction It is fascinating that humans, when meeting someone for the first time, will immediately make unconscious judgments about the person's traits (such as trustworthiness, aggressiveness, likeability and competence) based on their appearance alone (Olivola & Todorov, 2010). Willis and Todorov (2006) found that people make trait inferences from the facial features of others within one

67**tenth of a second.** Interestingly, longer **exposure to** a **face** only **made**

the observer more confident about their original judgments. It is also known that people's judgments of trustworthiness are influenced on an unconscious level by the race of the person under evaluation (Stanley, Sokol-Hessner, Banaji, & Phelps, 2011). The motivation for the proposed research is to determine the impact of facial feature judgments in a culturally diverse business context. It has been shown that people in the business world manipulate their own behaviour to manage the impressions of others (Kumra & Vinnicombe, 2010). The implication of the studies mentioned in the paragraph above, however, is that lasting first impressions are made by evaluation of facial features which leaves little room for behavioural impression management in short term interactions. Acknowledging that people cannot (barring some extreme medical procedures) transform their physical characteristics like race, gender and facial dimensions to change the way that they are initially perceived, the proposed study will focus on two elements that can be easily controlled but may still alter initial impressions. These are the presence and style of facial hair as well as the presence and style of eyeglasses. Dixson and Brooks (2013) found that facial hair had a strong influence on the socio- sexual judgments that people make about men. Men with full beards are, for example, regarded as better parents while men with heavy stubble

58**are perceived to be** more attractive **than those who are clean shaven**

or have full beards. It seems a logical conclusion that facial hair would also play a role in the way that men are perceived in a business context. Generally, men can fashion different styles of beards in only a few weeks which give them the ability to manipulate the first impressions others will have of them in a business interaction. Although literature provides some clues as to how a man could go about creating a desired first impression by fashioning their beard in a particular way, it is not yet clear how this should be

attempted to convey specific attributes that are important in business. Facial appearance can also be influenced by wearing eyeglasses. General stereotypes are that glasses make people look less attractive but more intelligent. Leder, Forster, and Gerger (2011) determined that

> 47**face perception, recognition, distinctiveness** as well as **the attribution of stereotypes**

can be affected by wearing glasses. The type of glasses (full-rim or rimless) as well as the amount of face that is covered by the glasses were found to be variables that significantly influence how a person is perceived. It was confirmed that full-rim glasses did allow a person to be perceived as more intelligent and less attractive. Rimless glasses, in turn, made a person appear more trustworthy without diminishing their perceived attractiveness. The proposed study will attempt to determine how combinations of different types of eyeglasses and the styles of facial hair influence perceptions. 2. Motivation 2.1. Social capital theory and first impressions Social capital theory states that individuals can further their careers by establishing influential relationships. Individuals in the business world manipulate their own behaviour to manage the impressions of others with the purpose of accumulating social capital (Kumra & Vinnicombe, 2010). Impression management can be done in verbal and non-verbal ways (Magalhaes, 2014; Matsumoto & Hwang, 2011), but the strong influence that facial features have on perceptions of others means that it may be worthwhile to spend more energy on management of facial appearance to ensure that the desired attributes are projected. When social capital theory was first developed, face-to-face interaction was thought to be an essential

> 22**requirement for the development of generalized trust and other pro-social attitudes.**

It was therefore believed that electronic media such as television would potentially

> 22**have a negative impact on** development of **social capital.**

A recent study by Hooghe and Oser (2015), however, found that

> 22**there is a positive** relationship **between internet use and social capital indicators.**

As online interactions often involves information profiles with photos, it would seem that individuals that project themselves in a way that result in favourable first impressions would be in an advantaged position for the accumulation of social capital. 3 2.2. Personality at face value It has been known for quite some time that the amygdala (the

> 61**part of the** brain that **plays an important role in** the **processing**

of emotional reactions and decision-making) reacts to facial features and expressions on a subconscious level (Whalen et al., 1998). Recently, it has been shown

> 32**that the amygdala's processing of social cues in the absence of awareness may be more extensive than previously described (Freeman, Stolier, Ingbretsen, & Hehman,**

2014) which means that decision-making such as deciding whether someone is to be trusted as a business partner might be strongly influenced by subconscious judgments based on the person's facial features. In fact, Bonnefon, Hopfensitz, and Neys (2013) found that trustworthiness detection (based on facial features) in an economic interaction is an ability that are possessed in equal amount by people of all cognitive capacities. These findings are supported by Ewing, Caulfield, Read, and Rhodes (2014) who showed

> 73**that children as young as** five **years of age**

use facial features to determine whether an adult may be trusted or not. It has even been shown that electoral success of political candidates can be predicted solely on their physical appearance (Leigh & Susilo, 2009; Olivola & Todorov, 2010). It turns out that in many cases the unconscious first impressions that result when a person is first exposed to someone's facial features are valid. Borkenau, Brecke, Möttig,

and Paelecke (2009) found that people do have the ability to accurately perceive another person's level of extraversion from facial photographs. Stirrat and Perrett (2010) systematically explored the validity of first impression judgments based on facial features. This was done using trust games where participants could collaborate

48**for mutual financial gain or** to **exploit for greater personal gain.** The study found **that men with greater facial width**

(a

79**testosterone-linked trait predictive of aggression)**

42**were more likely to exploit the trust of others. Other** participants **were less likely to trust male** participants **with wide** (opposed to **narrow) faces.**

It seems obvious that, except for facial features, the facial expression of a person on a photograph would also play an important role in how the person is perceived. Leikas, Verkasalo, and Lönnqvist (2013) showed that people can adjust their expression in different photographs to be perceived as extrovert, open, neurotic or non-conscientious. It has also been shown that smiling can increase the level of cooperation between individuals (Scharlemann, Eckel, Kacelnik, & Wilson, 2001). 4 Other attributes such as agreeableness could not be influenced by facial expression. Nurmoja and Bachmann (2014) specifically determined whether facial expressions could mask initial perceptions that are normally formed in reaction to unalterable facial features. Photographs of neutral, happy and serious faces of the same individuals were assessed to determine certain personal attributes. It was found that certain perceived attributes such as trustworthiness remained consistent when measured as responses to photographs containing different facial expressions. Specific facial features that are used by the brain to determine trustworthiness such as the facial-width ratio mentioned above can be manipulated using computer graphics to control attributions such as trustworthiness (Petrican, Todorov, & Grady, 2014; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). Unfortunately, a person looking for a way to accumulate social capital by managing their impressions of others cannot (short of plastic surgery) change their facial ratios. Even changing their facial expressions cannot significantly change others' first impressions of them. It would therefore make sense to investigate the influence of other techniques that may change facial appearance and accordingly also others' perceptions. 2.3. The role of facial hair in personal impressions It has been known for some time that facial hair influences how a person is perceived (Wogalter & Hosie, 1991). The length and type of male facial hair influences females' judgment of the male's traits (Neave & Shields, 2008). Specifically,

55**males with a light beard were considered most dominant** while those **with** a full beard **were** seen **as**

more masculine, aggressive and socially mature. Light stubble were viewed as most attractive and were preferred by women for both long-term and short term relationships. More recently it was found that level of facial hair (such as clean shaven, stubble or full beard) altered both male and female observers' judgment on matters such as health and parenting ability (Dixson & Brooks, 2013). Interestingly, while bearded men were perceived as better parents by Dixson and Brooks (2013), a study was conducted by Conti and Conti (2004) to find out if

72**criminal defendants are** generally **perceived as having facial hair.**

Participants were shown photographs of two men with similar appearance except that one of the men had facial hair. Participants were asked to choose which of the two men they thought was the

70**defendant in a rape case** and 78% **of** the participants **chose the**

photograph 5 of the man with facial hair.

46**In the second part of the study participants were asked to** draw **the face of a criminal offender.** This time 82% **of**

the drawings depicted a man with some form of facial hair. This seems to indicate that facial hair has strong and sometimes conflicting influences on the perception of an individual's personal attributes. 2.4.

The role of eyeglasses on the perception of personality The way in which eyeglasses changes the perceptions about a person has been studied for a long time (Manz & Lueck, 1968; Thornton, 1944). Over the years some stereotypes about wearers of eyeglasses have emerged, e.g. wearers of eyeglasses are generally introverted. Borkenau (1991) conducted a study to determine the validity of some of these stereotypes. It was found that persons who wear eyeglasses were indeed less extraverted and less open to experience. Stereotypes of eyeglasses start at a young age (Jellesma, 2013) and although stereotypes of those who wear glasses are mostly negative, children perceive other children that wear glasses as more intelligent. Brown, Henriquez, and Groscup (2008) investigated how the presence of eyeglasses would influence juror decisions. Participants were shown a photograph (one version of the photograph where the person did not wear glasses and another were the person did wear glasses) of the "defendant". The incidence of guilty verdicts were less for the photograph in which the person did wear glasses. Children

66**who wear glasses** appear **to be more intelligent** and honest **than**

their peers (Walline et al., 2008) and these perceived traits endure into adulthood and seem to depend on the type of glasses that a person wears. Individuals with rimless eyeglasses were found to be perceived as more honest while those with full-rim glasses corresponded with decreased attractiveness and increased intelligence (Leder et al., 2011). 2.5. The influence of race on perceptions Upon seeing a face, racial category membership is automatically encoded in the brain (Ito & Senholzi, 2013). Event-related brain potentials measured by Ito and Urland (2003) suggested that this racial categorisation processing occurs within around 120 millisends after seeing a face. This rapid subconscious

54**encoding of racial** in-group **and outgroup distinctions affects a** range **of** ensuing **racially biased behaviours.**

It is well known that race has a notable influence on perceived personal attributes of others such as leadership abilities (Festekjian, Tram, Murray, Sy, & Huynh, 2014) credibility (Hong & Len-Riós, 2015) and trustworthiness (Boyas & Sharpe, 2010; MacDonald & Stokes, 2006; Rudolph & Popp, 2010; Smith, 2010). The impact of race on perceptions of trustworthiness also holds true in the context of economic interactions (Stanley et al., 2011). In addition to biases in perceived attributes, the proposed study may also be impacted by the fact that individuals are capable of more accurately

44**recognizing faces of their own race than faces from other races, a phenomenon known as the other-race effect**

(Horry, Cheong, & Brewer, 2015). 2.6. Research questions It has been established that social capital needs to be accumulated to enhance one's career opportunities. Individuals manipulate their behaviour to manage the impressions of others in the quest to accumulate social capital, but in many situations (e.g. a prospective client first sees a photo of the person they will deal with on the company's website) first impressions cannot be manipulated by behaviour, but rather depends on facial appearance. The research question is to find out if and how different combinations of facial hair styles and types of eyeglasses influence the perception of key personal attributes (to be identified under the subsequent section of this document) that are associated with favourable economic interactions. 3. Methods The

68**aim of** the **study was to** determine **the effect of**

manipulating facial appearance by combinations of facial hair styles and types of eyeglasses on the initial perceptions of others. As literature shows that first impressions are a powerful unconscious process, it makes sense to measure this in a way that will preserve the initial impressions that manifests itself in the unconscious mind. If this process is not carefully controlled, the data could become contaminated by conscious modifications from participants who change their responses to be more socially acceptable (e.g. by 7 moderating their initial perceptions when participants realise that their initial perceptions was influenced by stereotypes of race, gender or age to avoid a feeling of guilt). For this reason, anonymity was key in obtaining truthful responses. Secondly, participants had to be able to communicate their impressions with as little interference from their conscious minds as possible. For this reason participants was urged to react on their initial impressions without first having to verbalise or justify reasons for their choices. 3.1. Experimental design Six men of different racial backgrounds (two black, two white and two Indian) were photographed for the study. With regards to facial hair, three photographs were taken of the face of each person under evaluation. Three styles of facial hair were used for each person, namely clean shaven (left panel), chin beard (middle panel) and full beard (right panel). The persons whose faces were used for the photographs were asked to grow a full beard for a period of six weeks. All the photographs were taken on the same day. The full beard was photographed first, after which the person was asked to shave off a part of his beard so that only the chin beard remained. After photographing the chin beard, the person had to shave clean before the final photograph was taken. For each facial hair condition, two

additional photographs were created to evaluate the effect of rimless and rimmed eyeglasses which resulted in a total of nine variations per person as shown in Table 1 below. For each facial hair condition one set of three photographs were of the person without any glasses. A second set of three photographs were of the person wearing rimless glasses and finally a set of three photographs of the person wearing full-rim glasses. To minimise the risk of introducing unwanted variables that could influence the outcome of the experiments, all photographs were taken in similar lighting conditions and in front of a similar background. Rimmed Rimmed Rimless Rimless Rimless No glasses No glasses No glasses Glasses Chin Clean Full Chin Clean Full Chin Clean Facial Hair P1 P2 P3 P4 P5 P6 9 Table 1. Eyeglasses and facial hair combinations for P1-P6 Rimmed Full 3.2. Experimental procedure For this study, data could be measured in one of several possible ways. The simplest way might be to present one photograph at a time and then ask the participant to rate certain attributes (these will be discussed in a paragraph below) of the person in the photograph on a Likert scale. For example, one of the statements may be: "If you lend money to this person, he will pay back the loan on time." (On a scale between 1 and 7 where 1 corresponds to "very unlikely" and 7 to "very likely"). Another procedure that could be followed is to show participants a number of faces at the same time and ask them to rank the faces according to a specified attribute. In this case the question could be, for example: "If you lent money to the individuals in the photograph, who would be most

> 77**likely to pay back the loan?"** (Select **the**

person most likely

> 52**to pay back the loan** first **and** then **the**

person second most likely

> 52**to pay back the loan and**

continue until all photographs have been selected. This method has the advantage that it does not provide the participant an option to give a neutral response. A ranking procedure would need too many repetitions to obtain a balanced sample (e.g. if photographs of six individuals were presented on each trial and for each person nine conditions were available, 10 077 696 repetitions would need to be done to ensure that all possible combinations have been presented once). For this reason, the first option (rating photographs individually on a Likert scale) was chosen for the present study. 3.3. Attributes under study Personality is often described using the five-factor model (Digman, 1990) which divides personality into five broad categories namely openness, conscientiousness, extraversion, agreeableness, and neuroticism.

> 65**Judge, Higgins, Thoresen, and Barrick (1999)** found **that** conscientiousness (which **is** linked **to**

self-discipline) is positively correlated with success in business while neuroticism

> 59**(tendency to easily experience unpleasant emotions such as anxiety** or **anger)**

is negatively correlated to success. Each of the broader personality categories can be subdivided into several personal attributes. Attributes that are deemed important in business may include trustworthiness, leadership abilities, competitiveness, integrity, ambition, adaptability, how organised a person is, competency, attention to detail, consistency, level of education, communication skills, level of confidence, enthusiasm, resourcefulness, sense of humour, commitment, decisiveness and focus. For the purpose of the present study, the perceived attributes that strongly influence individuals' choices in economic interactions had to be measured. Oesch and Murnighan (2003) found that judgments of competence and trustworthiness had strong effects on how individuals chose to distribute economic resources to others and as such

> 62**the influence of facial hair** and eyeglasses **on the perception of**

these two attributes were measured. Trustworthiness has sometimes been described as a combination of different dimensions, namely integrity, benevolence and competence (Yu, Saleem, & Gonzalez, 2014). For the present study, trustworthiness were defined to be synonymous with integrity while competence were measured separately. For each of these two attributes, a statement about the person in the photograph was displayed and the participant had to rate how likely they believe the statement to be true (as was described in the previous subsection). To control for any unwanted effects that may arise

because of the way a specific statement was posed, three statements (presented to participants at random) were used for measurement of each of the perceived attributes. Statements were chosen to be as generic as possible so that it might apply to

speak to the broad question of "Does this person have integrity?" The first statement tests whether a person can be trusted with your money. The second statement tests if the person handles money in an honest way and the last statement aims to test for trustworthiness without involving the concept of money. The three statements that were used for measurement of perceived trustworthiness are listed below. ? If you lend money to this person, he will pay back the loan on time. ? If this person realised that he received too much change after paying at the till he would return the additional money. ? If this person made a verbal business agreement with you, he would honour the agreement. Perceived competence were measured using three generic statements speaking to the broad question of "Is this person good at what he does?" The first statement tests whether the person recently won an award for professional excellence. The second statement do not refer to an award, but simply measures whether the person was one of the top performers in his class. The final statement is more direct and asks if the person is viewed as highly competent by his colleagues. The three statements that were used for measurement of perceived competency are listed below. ? This person recently won an award for professional excellence. ? This person was one of the top performers of his class in business school. ? This person is viewed by his colleagues as being highly competent. 3.4. Control of nuisance variables It was expected that extraneous variables (e.g. age, gender or race/ethnicity) might impact the dependent variables measured in this study. Information such as age group, gender, race/ethnicity, home language, sexual orientation and religion were recorded for every participant. A multi-factor ANOVA with all of these as treatment factors would indicate which of these factors had large effects on the measured data. 3.5. Experimental interface The experiment was conducted in the form of an online survey. When a participant clicked on the web link to the survey the participant was directed to an information page with basic instructions on how to complete the survey. Participants were then asked to provide the information specified above to assist in the analysis of the data (it was communicated clearly that participants will remain completely anonymous).

the participant was asked to rate the person in the photograph according to the attributes described above. The particular photograph of each face was randomly selected (with equal probability) to be one of the nine different permutations described above. 3.6. Sampling method and size As it had been shown by Bonnefon et al. (2013) that facial feature judgment is possessed by all individuals in an equal amount, the assumption was made that the relevant population consists of all people who are involved in any form of decision making on economic transactions (deciding to buy goods or services). The aim was thus to obtain a large sample from the general population. 3.7. Limitations of the study This study measured first impressions of participants that were shown photographs of faces with different types of facial hair and eyeglasses. While first impressions that are generated upon the first visual exposure to a face result in strong and lasting judgments about a person (Willis & Todorov, 2006), verbal interactions and

and touch also play an important role (Magalhaes, 2014; Teodorescu, 2013) that was not measured in this study. As a great number of factors will contribute to first impressions in a real world situation, the findings of the proposed study will be especially applicable in situations where people are forced to make judgments with only a photograph at their disposal. These situations do exist, e.g. choosing a consultant from available photographs on a website or choosing which real estate agent to phone when interested in a property. 4. Results and discussion 4.1. Analysis approach Data obtained from the Likert scale are not interval data as it cannot be shown that, for example, the perceptual difference between a rating of three and four is the same as that between eight and nine. Also, a five out of ten score may be interpreted differently by different participants. It is customary, however, to treat data from the Likert scale as interval data and the use of parametric statistics on Likert scale data has been shown to be robust (Norman, 2010). 4.2. Primary analysis A total of 1241 correspondents completed the experiment in full resulting in 7446 unique data points for each of the perceived attribute measurements. Perceived competence and trustworthiness were analysed separately using multi-factor ANOVAs with treatment factors of facial manipulation (9 combinations of glasses and facial hair), respondent language, respondent religion, respondent sexual orientation, respondent race, respondent age and respondent gender. The question number that was used for measurement were also included as a treatment factor to determine the amount of systematic variation caused by differences in these questions. The results of the multi-factor ANOVAs for perceived competence and perceived trustworthiness are tabulated in Table 2 and Table 3 respectively. The between groups design allows the effect size to be gauged directly from the treatment sum of squares. It could be expected that the greatest variation in the data would be caused by respondent scaling differences (the use of a subjective Likert scale) and for this reason an additional column (% of explained systematic variation) was added to the tables to give an indication of the effect

size relative to all of the other treatment factors. From this it is clear that the effects of facial manipulations were dominant for both perceived competence (55.57%) and perceived trustworthiness (43.41%). Interestingly, all of the treatment factors

75**had a small but significant (p<0.** 005) influence **on**

perceived competence. All treatment factors except for sexual orientation also significantly influenced perceived trustworthiness. For both perceived competence and trustworthiness significant differences existed between the questions that were used to gauge perception. Although the mean scores of different questions did fluctuate,

64**there were** no **significant differences between the** ranking order **of** glasses or **facial hair**

styles between the different questions and as such the average scores for the three questions were used throughout. Table 2. Perceived competence Source Facial manipulation (glasses and facial hair) Respondent language Respondent religion Sum Sq. 325.8 43.1 41.6 % of explained systematic variation d.f. 55.57% 7.35% 7.10% Mean Sq. 8 40.7 5 8.6 6 6.9 F 18.44 3.90 3.14 p <0.0001 0.0016 0.0045 Respondent sexual orientation Respondent racial group Respondent age group Respondent gender Question number 14.7 2.51% 27.3 4.66% 47.9 8.17% 10.9 1.86% 75.0 12.79% 1 14.7 3 9.1 6 8.0 1 10.9 2 37.5 6.64 4.11 3.61 4.93 16.98 0.01 0.0063 0.0014 0.0264 <0.0001 Error Total 16369.1 17009.0 7413 2.2 7445 Table 3. Perceived trustworthiness Source Facial manipulation (glasses and facial hair) Respondent language Respondent religion Respondent sexual orientation Respondent racial group Respondent age group Respondent gender Question number Error Total % of explained Sum systematic Sq. variation 200.9 84.7 31.3 1.3 36.6 47.2 23.8 37.0 17520.6 18085.4 43.41% 18.30% 6.76% 0.28% 7.91% 10.20% 5.14% 7.99% Mean d.f. Sq. 8 25.1 5 16.9 6 5.2 1 1.3 3 12.2 6 7.9 1 23.8 2 18.5 7413 7445 2.4 F 10.63 7.17 2.21 0.57 5.15 3.33 10.07 7.82 p <0.0001 <0.0001 0.0394 0.4519 0.0015 0.0028 0.0015 0.0004 4.3. Interactions between eyeglasses and facial hair conditions The main purpose of using a full set of eyeglasses and facial hair style combinations in the experiment was to determine whether the influence of eyeglasses and those of facial hair are orthogonal or if there are interactions between the two conditions, e.g. are certain attributes affected by eyeglasses, but only if the person wears a full beard? 15 To find an answer to the question posed above the facial manipulation factor were subdivided into two different groups named type of glasses and facial hair. Additional multi-factor ANOVAs were set up to determine the significance of the interaction between the glasses and facial hair factors. The results of these ANOVAs for perceived competence and trustworthiness

57**are tabulated in Table 4 and Table 5 respectively. Table 4.**

Perceived competence Source Sum Sq. % of explained systematic variation d.f. Mean Sq. F p Glasses 254.1 79.54% 2 127.0 56.61 <0.0001 Facial hair 44.9 14.05% 2 22.4 10.00 <0.0001 Glasses*Facial hair 20.5 6.41% 4 5.1 2.28 0.0581 Error Total 16692.0 17009.0 7437 7445 2.2 Table 5. Perceived trustworthiness Source Sum Sq. % of explained systematic variance d.f. Mean Sq. F p Glasses 138.2 69.10% 2 69.1 28.74 <0.0001 Facial hair 31.9 15.95% 2 16.0 6.64 0.0013 Glasses*Facial hair 29.9 14.95% 4 7.5 3.11 0.0145 Error 17887.5 7437 Total 18085.4 7445 2.4 For perceived competence the interaction between the glasses and facial hair factors were not significant (p=0.0581). For perceived trustworthiness, however, a significant (p<0.05) interaction effect were observed. On average, the relative effect size of the glasses factor were large (around 80% for perceived competence and 70% for perceived trustworthiness) in comparison to that of facial hair and interaction effects. This is an encouraging finding as it requires considerably less effort to change eyeglasses than to cultivate a new style of facial hair. 4.4. Individual results It was shown in the previous subsections that the facial manipulations (eyeglasses and facial hair) had a significant influence on perceived competence and trustworthiness and that the effect size was large relative to the other factors that were considered. The obvious question that arises from those findings is whether specific combinations of eyeglasses and facial hair can be identified that lead to improvements in first perceptions of competence and trustworthiness over a range of different persons. The data pertaining to the individuals in the photographs that were used for the experiment are shown in Figs. 1 and 2 for perceived competence and trustworthiness respectively. Fig. 1. Summary figure of the results signifying the effect of different combinations of eyeglasses and facial hair styles on perceived competence. Higher scores indicate more favourable perceptions. 18 eyeglasses and facial hair styles on perceived trustworthiness. Higher scores indicate more favourable perceptions. Fig. 2. Summary figure of the results signifying the effect of different combinations of 3 3.5 4 4.5 5 5.5 P1 mean Rimless glasses No glasses Rimmed glasses P2 mean No glasses Rimless glasses Rimmed glasses P3 mean No glasses Rimless glasses Rimmed glasses P4 mean No glasses Rimmed glasses Rimless glasses No glasses P5 mean Rimless glasses Rimmed glasses P6 mean No glasses Rimmed glasses Rimless glasses Mean score per person (all conditions) Full beard Chin beard Clean shaven Perceived competence 5 Perceived trustworthiness Clean shaven 4.8 Chin beard Full beard 4.6 Mean score per person (all conditions) 4.4 4.2 4 3.8 3.6 3.4 3.2 P1 mean No glasses Rimless glasses Rimmed glasses P2 mean No glasses Rimless glasses Rimmed glasses P3 mean No glasses Rimless glasses Rimmed glasses P4 mean No glasses

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Rimless glasses Rimmed glasses P5 mean No glasses Rimless glasses Rimmed glasses P6 mean No glasses Rimless glasses Rimmed glasses In both Figs. 1 and 2 significant differences in mean scores for individual participants could be due to factors beyond the control of the participant such as facial shape and dimensions. It could be argued that P3 is naturally perceived as more competent than P5 (Fig. 1) or that P5 is naturally perceived as more trustworthy than P3 (Fig. 2). If this holds true, the implication of the data shown in Figs. 1 and 2 are that the shift in perceived competence or trustworthiness resulting from the optimal choice of eyeglasses and facial hair style are larger than the natural differences between participants due to factors beyond a person's control. A person with a face that is naturally less trustworthy than someone else may be perceived as more trustworthy than the other person if his face is complemented by an optimal choice of facial hair and eyeglasses. To assist in identifying trends that span over the different participants the different conditions for eyeglasses and facial hair were ranked in order from most favourable (1) to least favourable (3) for each of the participants for perceived trustworthiness (Table 6) and competence (Table 7). Superscripts

51**indicate the** conditions **that** were **significantly different (p<0.05) according to** a **post hoc Tukey-Kramer**

test (a condition ranked first that is significantly different from the condition ranked third will have a superscript containing a "3"). Table 6. Perceived trustworthiness rankings for each of the participants Glasses Ranking P1 P2 P3 P4 P5 P6 1 Rimless Rimmed Rimless 3 Rimless 3 Rimmed Rimless 3 2 Rimmed Rimless Rimmed 3 Rimmed 3 Rimless Rimmed 3 No No

47**No glasses No glasses No** No **glasses** 3 **glasses glasses**

1,2 1,2 glasses 1,2 Facial hair Ranking P1 P2 P3 P4 P5 P6 1 Chin 3 Shaven Shaven Chin Full 3 Chin 2,3 2 Shaven 3 Chin Chin Shaven Shaven 3 Shaven 1

78**3 Full 1,2 Full** Full Full Chin **1,** 2 **Full**

1 Table 7. Perceived competence rankings for each of the participants Glasses Ranking P1 P2 P3 P4 P5 1 Rimless Rimless 3 Rimless 3 Rimless Rimless 3 2 Rimmed Rimmed 3 Rimmed 3 Rimmed Rimmed No No glasses No glasses No No 3 glasses 1,2 1,2 glasses glasses 1 Facial hair Ranking P1 P2 P3 P4 P5 1 Chin 2,3 Shaven Chin Chin Shaven 3 2 Shaven 1 Chin Shaven Shaven Full 3 3 Full 1 Full Full Full Chin 1,2 P6 Rimless 3 Rimmed 3 No glasses 1,2 P6 Chin 2,3 Shaven 1 Full 1 4.5. Comparison with previous studies The present study differs from previous studies in that both facial hair and eyeglasses were systematically manipulated for each face in the study. This allowed analysis to determine not only the direct

43**effects of** eyeglasses **and facial hair on**

perceived attributes, but also interaction effects between facial hair and eyeglasses. A

43**significant interaction** effect **between** eyeglasses **and facial hair** was observed **for**

perceived trustworthiness, indicating that

43**the effects of** eyeglasses and **facial hair on**

perceived trustworthiness are not orthogonal. Leder et al. (2011) found that wearing of full-rimmed glasses made an individual look less attractive, but more intelligent while rimless glasses increased perceived honesty. It seems a logical conclusion that perceived competence would be closely correlated with perceived intelligence and so one might have expected full-rimmed glasses to result in higher perceived competence and rimless glasses to result in higher perceived trustworthiness. Somewhat surprisingly, rimless glasses resulted in higher perceived competence scores than full-rimmed glasses for all of the faces in the study. One possible explanation for this is that the negative effect of diminished attractiveness caused by full-rim glasses outweighs the positive effect of increased perceived intelligence in judgment of competence (Praino, Stockemer, & Ratis, 2014). The literature on the effect of facial hair on perceptions of attributes are somewhat ambiguous. Facial hair could result in a more positive perception of a person as demonstrated by

50**Dixson and Brooks (2013)** who **found that** both men and **women perceived men with full beards as having** the best parenting **abilities.**

In contrast, Conti and Conti (2004) demonstrated that people also associate facial hair with criminality while Herrick, Mendez, and Pryor (2015) found that facial hair could result in a decreased number of votes for politicians. In line with the contrasting findings from literature, the present study do not provide a clear answer to which style of facial hair would result in the most favourable first impressions. The present data indicates that facial hair does have a significant influence on perceived trustworthiness and perceived competence, but while wearing rimless glasses produce more favourable perceptions overall the best choice of facial hair style depends on the individual. The situation is, however complicated by the fact that the same style of facial hair would not necessarily produce the most favourable results for both competence and trustworthiness. For example, P5 was perceived as most 21 trustworthy with a full beard, but most competent when clean shaven. A good initial strategy for men who are unsure about which style of facial hair to adopt would probably be to wear rimless glasses on a clean shaven face as De Souza, Baião, and Otta (2003) found a general trend that men attending job interviews with facial hair were less likely to be hired. While the results of the present study indicate that first perceptions can be improved by the correct choice of eyeglasses and facial hair style it should be kept in mind that many factors that might play an important role in influencing first perceptions in real life interactions was kept constant in the experiments of this study. Non-verbal communications

> 60**such as facial expressions, eye contact,** body **posture and gestures**

may all have a significant influence on first perceptions when meeting someone face to face for the first time (Teodorescu, 2013). While photographs used in the present study contained only faces, the first perceptions of others may also be influenced strongly by attire. Howlett, Pine, Orakçıoğlu, and Fletcher (2013) found that small changes in clothing choice of a man can result in significant differences in perceived attributes. Finally,

> 63**it is** also **important to keep in mind that,** while favourable first **perceptions**

can open up many doors, people learn from experience and if your behaviour contrasts with persons' initial impressions they will adapt their impressions to be in line with your behaviour (Yu et al., 2014). 5. Conclusions The aim of this research was to investigate whether combinations of different types of glasses and styles of facial hair influence how attributes that are important in economic interactions are perceived.

> 74**A number of conclusions** may **be drawn from the**

results of this study. Firstly, while factors such as race, gender and age of correspondents all had a significant influence on perceived attributes, the combined effect of facial hair style and eyeglasses was found to be much larger than any of the aforementioned factors. Secondly, data that were measured in this study showed that perceived trustworthiness and perceived competence are most favourable when wearing rimless glasses and least favourable when not wearing any glasses at all. Thirdly, a significant interaction effect exists between type of eyeglasses and facial hair style for perceived trustworthiness. Finally, the style of facial hair also has a significant influence on perceived trustworthiness and perceived competence, but the optimal choice of facial hair seems to be person specific. A full beard generally resulted in least favourable first perceptions while some individuals are perceived more favourably with chin beards and others when clean shaven. The findings from this study can be condensed as follows: by wearing rimless eyeglasses and (in most cases) not growing a full beard, men make significantly more favourable first impressions in economic interactions.

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> 34**Bonnefon, J. F., Hopfensitz, A., & Neys, W. D. (2013). The modular nature of trustworthiness detection. Journal of Experimental Psychology: General, 142(1), 143-150.**

> 24**Borkenau, P. (1991). Evidence of a correlation between wearing glasses and personality. Personality and Individual Differences, 12(11), 1125-1128. doi: 10.1016/0191-8869(91)90074-I**

9 Borkenau, P., Brecke, S., Möttig, C., & Paelecke, M. (2009). Extraversion is accurately perceived after a 50-ms exposure to a face. Journal of Research in Personality, 43(4), 703-706. doi: 10.1016/j.jrp.2009.03.007

26 Boyas, J., & Sharpe, T. L. (2010). Racial and ethnic determinants of interracial and ethnic trust. Journal of Human Behavior in the Social Environment, 20(5), 618- 636.

18 doi: 10.1080/ 10911351003673682 Brown, M. J., Henriquez, E., & Groscup, J. (2008). The effects of eyeglasses and race on juror decisions involving a violent crime. American Journal of Forensic Psychology, 26(2), 25-43.

4 Conti, R. P., & Conti, M. A. (2004). Mock jurors' perceptions of facial hair on criminal offenders. Perceptual and Motor Skills, 98(3

II),

14 1356-1358. De Souza, A. A. L., Baião, V. B. U., & Otta, E. (2003). Perception of men's personal qualities and prospect of employment as a function of facial hair. Psychological Reports, 92(1), 201-208.

41 Digman, J. M. (1990). Personality structure: emergence of the five-factor model. Annual Review of Psychology, 41(1), 417-440.

15 Dixson, B. J., & Brooks, R. C. (2013). The role of facial hair in women's perceptions of men's attractiveness, health, masculinity and parenting abilities. Evolution and Human Behavior, 34(3), 236-241.

33 Ewing, L., Caulfield, F., Read, A., & Rhodes, G. (2014). Perceived trustworthiness of faces drives trust behaviour in children. Developmental Science, 18(2), 327- 334.

1 Festekjian, A., Tram, S., Murray, C. B., Sy, T., & Huynh, H. P. (2014). I See Me the Way You See Me: The Influence of Race on Interpersonal and Intrapersonal Leadership Perceptions. Journal of Leadership and Organizational Studies, 21(1), 102-119. doi: 10.1177/1548051813486522 Freeman, J. B.,

25 Stolier, R. M., Ingbretsen, Z. A., & Hehman, E. A. (2014). Amygdala responsivity to high-level social information from unseen faces. Journal of Neuroscience, 34(32), 10573-10581.

36 Herrick, R., Mendez, J. M., & Pryor, B. (2015). Razor's Edge: The Politics of Facial Hair. Social Science Quarterly. doi: 10.1111/ssqu.12183

1 Hong, S., & Len-Riós, M. E. (2015). Does Race Matter? Implicit and Explicit Measures of the Effect of the PR Spokesman's Race on Evaluations of Spokesman Source Credibility and Perceptions of a PR Crisis' Severity. Journal of Public Relations Research, 27(1), 63-80. doi:

10.1080/1062726x.2014.929502

30 Hooghe, M., & Oser, J. (2015). Internet, television and social capital: the effect of 'screen time' on social capital. Information Communication and Society, 18(10), 1175-1199.

doi: 10.1080/1369118x.2015.1022568

17 Horry, R., Cheong, W., & Brewer, N. (2015). The other-race effect in perception and recognition: Insights from the complete composite task. Journal of Experimental Psychology: Human Perception and Performance, 41(2), 508- 524.

2 doi: 10.1037/ xhp0000042 Howlett, N., Pine, K., Orakçioğlu, I., & Fletcher, B. (2013). The influence of clothing on first impressions: Rapid and positive responses to minor changes in male attire. Journal of Fashion Marketing and Management, 17(1), 38-48. doi: 10.1108/13612021311305128 Ito, T. A.,& Senholzi, K.

37 B. (2013). Us versus them: Understanding the process of race perception with event-related brain potentials. Visual Cognition, 21(9-10), 1096-1120.

doi: 10.1080/13506285.2013.821430

16 Jellesma, F. C. (2013). Do glasses change children's perceptions? Effects of eyeglasses on peer- and self-perception. European Journal of Developmental Psychology, 10(4), 449-460. doi: 10.1080/17405629.2012.700199

13 Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. Personnel Psychology, 52(3), 621-652.

28 Kumra, S., & Vinnicombe, S. (2010). Impressing for success: A gendered analysis of a key social capital accumulation strategy. Gender, Work and Organization, 17(5), 521-546.

11 Leder, H., Forster, M., & Gerger, G. (2011). The glasses stereotype revisited: Effects of eyeglasses on perception, recognition, and impression of faces. Swiss Journal of Psychology, 70(4), 211-222. doi: 10.1024/1421-0185/a000059 Leigh, A., & Susilo, T.

19 (2009). Is voting skin-deep? Estimating the effect of candidate ballot photographs on election outcomes. Journal of Economic Psychology, 30(1), 61-70. doi: 10.1016/j.joep.2008.07.008

10 Leikas, S., Verkasalo, M., & Lönnqvist, J. E. (2013). Posing personality: Is it possible to enact the Big Five traits in photographs? Journal of Research in Personality, 47(1), 15-21. doi: 10.1016/j.jrp.2012.10.012 MacDonald, J., & Stokes, R. J.

40(2006). Race, social capital, and trust in the police. Urban Affairs Review, 41(3), 358-375. doi: 10.1177/1078087405281707 Magalhaes, A. L.

(2014). Rhetoric and Body Language in Business Communication. Business Communication Quarterly, 77(3), 345-346.

27Manz, W., & Lueck, H. E. (1968). Influence of wearing glasses on personality ratings: crosscultural validation of an old experiment. Perceptual and Motor Skills, 27(3), 704.

35Matsumoto, D., & Hwang, H. S. (2011). Evidence for training the ability to read microexpressions of emotion. Motivation and Emotion, 35(2), 181-191.

21Neave, N., & Shields, K. (2008). The effects of facial hair manipulation on female perceptions of attractiveness, masculinity, and dominance in male faces. Personality and Individual Differences, 45(5), 373-377. Norman, G.

(2010). Likert scales, levels of measurement and the "laws" of statistics. Advances in Health Sciences Education, 15(5), 625-632. doi: 10.1007/s10459- 010-9222-y

2Nurmoja, M., & Bachmann, T. (2014). Consistency of the relation between individual facial cues and the perceived suggestibility and trustworthiness across varying facial expressions. Trames, 18(2), 105-119. doi: 10.3176/tr.2014.2.01

29Oesch, J. M., & Murnighan, J. K. (2003). Egocentric perceptions of relationships, competence, and trustworthiness in salary allocation choices. Social Justice Research, 16(1), 53-78.

doi: 10.1023/a:1022926111093

31Olivola, C. Y., & Todorov, A. (2010). Elected in 100 milliseconds: Appearance-based trait inferences and voting. Journal of Nonverbal Behavior, 34(2), 83-110.

8Petrican, R., Todorov, A., & Grady, C. (2014). Personality at Face Value: Facial Appearance Predicts Self and Other Personality Judgments among Strangers and Spouses. Journal of Nonverbal Behavior, 38(2), 259-277. doi: 10.1007/s10919-014-0175-3 Praino, R.,

20Stockemer, D., & Ratis, J. (2014). Looking Good or Looking Competent? Physical Appearance and Electoral Success in the 2008 Congressional Elections. American Politics Research, 42(6), 1096- 1117. doi: 10.1177/1532673x14532825 Rudolph, T. J.,

&

45Popp, E. (2010). Race, environment, and interracial trust. Journal of Politics, 72(1), 74-89. doi: 10.1017/s002238160999048x

7Scharlemann, J. P. W., Eckel, C. C., Kacelnik, A., & Wilson, R. K. (2001). The

value of a smile: Game theory with a human face. Journal of Economic Psychology, 22(5), 617-640. doi: 10.1016/s0167-4870(01)00059-9

38Smith, S. S. (2010). Race and trust. Annual Review of Sociology, 36(1), 453-475. doi: 10.1146/annurev.soc.012809.102526

5Stanley, D. A., Sokol-Hessner, P., Banaji, M. R., & Phelps, E. A. (2011). Implicit race attitudes predict trustworthiness judgments and economic trust decisions. Proceedings of the National Academy of Sciences of the United States of America, 108(19), 7710-7715. doi: 10.1073/pnas.1014345108
Teodorescu, A.

53(2013). Non-verbal communication in intercultural business negotiations. Quality - Access to Success, 14(SUPPL .2),

259-262.

23Thornton, G. R. (1944). The effect of wearing glasses upon judgments of personality traits of persons seen briefly. Journal of Applied Psychology, 28(3), 203-207. doi: 10.1037/h0055862

12Todorov, 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(1), 519-545. doi: 10.1146/annurev-psych-113011-143831

6Walline, J. J., Sinnott, L., Johnson, E. D., Ticak, A., Jones, S. L., & Jones, L. A. (2008). What do kids think about kids in eyeglasses? Ophthalmic and Physiological Optics, 28(3), 218-224. doi: 10.1111/j.1475-1313.2008.00559.x

3Whalen, P. J., Rauch, S. L., Etcoff, N. L., McInerney, S. C., Lee Michael, B., & Jenike, M. A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. Journal of Neuroscience, 18(1), 411-418. Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after a 100- ms exposure to a face. Psychological Science, 17(

7), 592-598.

4Wogalter, M. S., & Hosie, J. A. (1991). Effects of cranial and facial hair on perceptions of age and person. The Journal of social psychology, 131(4), 589-591. Yu, M., Saleem, M., & Gonzalez, C.

39(2014). Developing trust: First impressions and experience. Journal of Economic Psychology, 43, 16-29. doi: 10.1016/ j .joep.2014.04.004 1 2

6 8 10 11 12 13 14 16 17 19 20 22 23 24 25 26 27 28