

THE EFFECT OF PHOTO SHOPPING ON HETEROSEXUAL MALES'
PERCEPTION OF FEMALES

by

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ABSTRACT

Attractiveness is a phenomenon that is highly prioritised in society and has a variety of implications on the health, mental health, occupational, judicial and economic spheres. The media is known to have an impact on how certain norms, expectations and beliefs in society are formed, including, but not limited to, the creation of beauty ideals. Despite this importance, little research has been done on how men have come to perceive the attractiveness of women as a consequence of daily exposure to the media and photoshopped images of women. This study therefore attempts to address this gap in research by studying the impact that media and the use of photoshopping might have on males' perception of female attractiveness. A mixed-method approach was followed. Accordingly, both qualitative and quantitative data was collected during this study. The quantitative data entailed a comparison of heart rate, breathing rate, heart rate variability and viewing time for 24 participants between non-photoshopped and photoshopped images. The qualitative section comprised eye tracking data and a questionnaire for 25 male participants on the topic of media, photoshopping, features of attractiveness and what impact these three constructs might have on each other. The results indicate that on a physiological level there are limited and sporadic changes in how men view, and respond to, photoshopped images of women. Despite this finding, most participants report that on a psychological level media and photoshopping has an impact on their perceptions of beauty and their experience of interpersonal attraction.

Key Words:

Attractiveness, implications of attractiveness, perception of attractiveness, media exposure, photoshop, mixed-method design, attraction, physiological arousal, heart rate variability, beauty ideals.

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CHAPTER 1: AN INTRODUCTION TO THE STUDY

1.1 Introduction

Physical attractiveness is not only essential in society, but is also prescribed by society in detail - women are to be thin, with symmetrical faces, small waists, long legs and big breasts (Holmqvist & Frisen, 2012). Westernised societies are generally inclined to objectify women through media, thereby creating unrealistic expectations regarding how a woman should look (Daniels & Wartena, 2011). Accordingly, the media has an impact on what is deemed attractive and consequently could have an effect on interpersonal attraction (Daniels & Wartena, 2011; Hatoum & Belle, 2004).

Even though attraction itself is a widely studied phenomenon in psychology, little research has been done with regards to the combination of the physiological and psychological aspects of attraction (Clark & Fiske, 2014). Research shows that people subjectively associate physical attractiveness with their own experience of sexual or physiological arousal – for example, an increased heart rate (Hughes, Farley, & Rhodes, 2010). Accordingly, most research regarding a person's physiological responses to another individual focuses specifically on arousal, rather than on attraction (Clark & Fiske, 2014). Nevertheless, research conducted in the early 1980's showed that the greater the intensity of arousal experienced, the greater the strength of subjective attraction (Kerber, 1981).

Research on the digital editing of photographs (photoshopping) indicates that very little research has been conducted on how men have come to view women through media. One study, however, found that men are more likely than women to judge potential partners based on physical attractiveness (Hatoum & Belle, 2004). Furthermore, this study also illustrated that an increase in media consumption - both television-watching and skimming over male-directed magazines - increased males' standard of beauty regarding women

(Hatoum & Belle, 2004). Women are mostly aware that both societal values and men in general tend to prioritise thinness as being symbolic of beauty (Hatoum & Belle, 2004). This knowledge has added a great deal of pressure on women to actively work towards these unrealistic media ideals (Markey & Markey, 2012).

Additional research on this topic has revealed that ‘physical attractiveness’ has a larger impact on societal systems than one might initially realise. For instance, research shows that physical attractiveness is often related to favourable treatment within the occupational sphere – influencing aspects such as recruitment and promotion opportunities (Crow & Payne, 1992). The importance placed on beauty also has an impact on women's self-esteem and mental health, as exposure to extremely thin models in the media has been linked *inter alia* to the presence of eating disorders (Jordaan, 2009).

1.2 Problem Statement

Although a significant amount of research exists on how the media and photoshopping have influenced women’s perceptions of themselves (Crow & Payne, 1992; Haas, Pawlow, Pettibone, & Segrist, 2012; Holmqvist & Frisen, 2012; LaWare & Moutsatsos, 2013), little has been done to determine how men have come to view women as a result of exposure to such images (Markey & Markey, 2012). The flawless type of women presented in almost all media mediums, has led men to believe that these beauty ideals could be attained by all women in society (Markey & Markey, 2012). Men’s expectations of what the “perfect” woman should look like have thus become quite high and somewhat unrealistic (Hatoum & Belle, 2004; Holmqvist & Frisen, 2012; Markey & Markey, 2012).

Images where more subtle photoshopping has been used are normally perceived as the most attractive, since the information contained in such an image is more subliminal and, accordingly, is more likely to be unconsciously processed (Haas et al., 2012). This results in

the images being more readily internalised, thereby becoming an acceptable ideal and point of reference for attractiveness (Haas et al., 2012). As a result of the dearth of information on the issue, this study will compare images before photoshopping and after subtle photoshopping was applied, to determine if male perceptions are influenced by these changes.

1.3 Aims and Objectives

1.3.1 Primary aim

This research aims to study and evaluate the effect that media has on a variety of aspects, including the perception and experience of attraction. Specifically, the study will focus on how men view attractiveness and experience attraction towards women within the context of daily exposure to different sources of media.

1.3.2 Objectives

The objectives of this study are threefold. Firstly, the researcher aims to determine how the participants perceive a woman's portrait presented in a non-photoshopped image. Secondly, to determine how the participants view a photoshopped version of the same woman. Finally, to compare the perceptions of the above-mentioned in order to ascertain whether there is a significant difference between the two.

1.3.3 Hypothesis

This research study is guided by two hypotheses:

H0: There is no significant difference in how men perceive the attractiveness of women in normal and photoshopped images.

H1: There is a significant difference in how men perceive the attractiveness of women in normal and photoshopped images.

1.4 Definition of Terms

1.4.1 A portrait: Refers to a photograph which includes the face, or the face and shoulders of an individual (Costa & Bitti, 2000). Interestingly, positive qualities such as attractiveness, ambition, intelligence, independence and dominance are more easily attributed to close-ups or portrait photographs than whole figure photographs (Costa & Bitti, 2000).

1.4.2 Photoshopping: In this research study refers to the routine changes made to images such as airbrushing, tinting, limb lengthening, the removal of unwanted features – such as pimples, cellulite, wrinkles and so forth – and general editing (Haas et al., 2012).

1.4.3 Male and female: In this particular study, 'male' and 'female' strictly refers to the biological sex of the participants and the individuals in the photographs. Although gender roles and stereotypes do have an impact on how men view women (Daniels & Wartena, 2011), it is not the focus of this study.

1.4.4 Male perception: Within this context, refers to the way in which men look at the photographs presented – where and in which order they look at the face, how long their gaze lingers at each specific point and how these aspects might change from non-photoshopped to photoshopped women.

1.4.5 Physical attractiveness: Is generally seen as a subjective assessment of aesthetics (Levy et al., 2008). Research has shown that an individual comes to the conclusion on whether a face is physically attractive or not within 150 milliseconds (Dunstan & Lindell, 2012).

1.4.6 Interpersonal attraction: From a psychological standpoint, is seen as the positive affective response towards another human being (Clark & Fiske, 2014).

1.4.7 Media: In this study, 'media' refers to any form of material that displays photoshopped images of women - including, but not limited to, magazines, advertisements, internet, social networking sites etc.

1.4.8 Media exposure: In this study, is understood as the everyday exposure that people are subjected to – such as walking past a magazine stand, seeing billboards, viewing male-directed magazines, and so forth. This particular study focuses on the possible effects of photoshopping static images such as those that can be found in a magazine, rather than moving images such as filmed advertisements and movies.

1.5 Chapter Outline

The research conducted is presented within the context of the following chapters:

Chapter Two consists of a literature review that focuses on current research regarding what is seen as attractive, the consequences in society of being attractive or unattractive, as well as the findings and writings with regards to media, photoshopping and the effects of both on perceptions of attractiveness.

Chapter Three discusses the chosen research methodology, with specific reference to the research design, sampling techniques as well as the sample chosen, measures used, data collection and the method of data analysis.

Chapter Four provides a detailed description of the findings from this study.

Chapter Five integrates and analyses the findings of this research study, and links these findings to literature on the topic, followed by an exploration of the limitations of the study and recommendations for future research.

1.6 Conclusion

Chapter One indicated that males' perception regarding the attractiveness of a woman might be subconsciously influenced by photoshopped static images presented in the media. Since little research has been conducted on this issue, it is the aim of this study to determine how men view and experience attraction towards women within the context of daily exposure to different sources of media. In Chapter Two a literature review provides an in-depth discussion of the constructs under investigation.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The media has been shown to play a very important role in enhancing, maintaining or changing ideologies and different aspects of society (Daniels & Wartena, 2011; Parikka, 2012; Quigg & Want, 2011). This includes *inter alia* perceptions of beauty and attractiveness (Parikka, 2012). Facial beauty is regularly viewed as the most important aspect of attractiveness and is often the focus of research regarding attraction (Little, Burt, & Perrett, 2006; Naini, Moss, & Gill, 2006). The face has been talked about for several years by some of the most influential and famous writers and philosophers such as Shakespeare, Immanuel Kant and Christopher Marlowe (Naini et al., 2006). In gathering information, it became apparent that what makes a face attractive is a subject of controversy, change and dispute.

Attractiveness, and the external factors that have an influence on how attractiveness is perceived and portrayed, is important, as research shows that whether one is perceived as attractive or not has an impact on interpersonal relationships, mental and medical health systems (Jordaan, 2009; LaWare & Moutsatsos, 2013), as well as general commerce (Reaves, Hitchon, Park, & Yun, 2004). Therefore, collectively, it has repercussions for the economy as a whole (Montemurro & Gillen, 2013).

Despite the above mentioned importance, little research has been done on the effect that the media and photoshopping, as an external factor, might have had on how people have come to view each other. This is also specifically relevant to how male perceptions of women and attractiveness may have been influenced by the media.

This chapter will hence explore the available research on the following topics: the definition of human attractiveness, the physiological response of attraction, the features and ideas that have been researched around facial attractiveness in women, the prevalence and

importance of the media in today's society as a whole, the effect of the media specifically on the perception of attractiveness and finally, the consequences in society for being perceived as attractive or unattractive. Throughout this thesis, physical attractiveness and perceived attractiveness will be used interchangeably (Amos & McCabe, 2015).

2.2 Definition of Attractiveness

Literature generally lacks one mutual and theoretically conceptualised definition of attractiveness (Amos & McCabe, 2015; Griffin & Langlois, 2006). Physical attractiveness is commonly seen as a subjective assessment of aesthetics (Levy et al., 2008), and a compilation of features that bring pleasure to the senses and mind of the perceiver (Naini et al., 2006). Research has shown that it only takes 150 milliseconds to reach a conclusion on whether a face is physically attractive or not (Dunstan & Lindell, 2012). Physical appearance and attractiveness - as the first information generally received about a stranger, is vital to a subjective experience of attraction (Lewandowski, Aron, & Gee, 2007).

During the 1980's, the definition of physical attractiveness was found to rely heavily on the "truth-of-consensus" methodology (Donovan, Hill, & Jankowiak, 1989). In this way, if a significant amount of people judge an individual as physically attractive, then he or she is identified as attractive (Donovan et al., 1989). This definition of attractiveness does not, however, specify how many individuals need to agree on a particular judgement, nor does it allow for individual or unique preferences. Nonetheless, there appears to be greater consistency and consensus in what is deemed attractive in women than in men (Donovan et al., 1989) and continued research has identified certain features that are commonplace in attractive female faces. These will be discussed in sections 2.3.1-2.3.3 below.

From a psychological point of view, interpersonal attraction is seen as the positive affective response towards another human being (Clark & Fiske, 2014; Montoya & Horton,

2014). Interpersonal attraction has typically had different areas of focus, namely behaviour, in being drawn to and increasing positive efforts towards another; affection, in having positive feelings towards another; and cognition, through ascribing certain positive attributes to another (Montoya & Horton, 2014).

After conducting an extensive literature review, very little was found on the combined psychological and physiological impact of attraction. The same problem has been experienced by Clark and Fiske (2014), who confirm that little research has been done on this specific aspect. This void in literature indicates a need for research within the area of attraction, especially research that combines both the psychological and the physiological aspects of attraction, as is the case with this particular study. The discussion in section 2.2.1 integrates some of the research that has been done on the physiological aspects of attraction.

2.2.1 Physiological signs of attraction

Attraction is generally measured through the immediate physiological response experienced while being exposed to another individual, as well as the self-reported reactions of attraction made by the viewer (Montoya & Horton, 2014).

Studies that have used neuro-imaging to compare beauty, attractiveness, cuteness, prettiness and so forth, have shown that attractiveness and specifically attractive faces, activate the reward and emotion areas of the brain (Geldart, 2010; Xiuping & Meng, 2014). The reward circuitry in the brain lies within the nucleus accumbens which plays a significant role in the cognitive processing of motivation, pleasure, reward and reinforcement (Aharon et al., 2001). In other words, attractiveness elicits a biological response of pleasure, reward and in some cases, physiological arousal. This is especially true when looking at an individual who suits the sexual orientation of the viewer, for instance, a heterosexual man looking at an attractive woman (Geldart, 2010). Furthermore, according to Geldart (2010), an increase in

the facial attractiveness of women in the static images given to participants, resulted in an increase in viewing time and visual attention paid to the images. This was true for both men and women. In other words, both men and women would spend a greater amount of time looking at attractive images and less time on the less attractive images.

Research has also shown that pupil dilation may be linked to heart rate variability in the viewer when observing pleasant material (Bradley, Miccoli, Escrig, & Lang, 2008). This confirms the notion that physiological arousal, which is subjectively linked to attraction, seems to cause an increase in heart rate as well as pupil dilation when viewing strongly pleasant photographs (DeLamater, 2014; Hughes et al., 2010).

Generally, physiological arousal such as an increased heart rate, sweating and muscle tension, tends to be a similar response towards a variety of situations such as excitement, anger and fear (DeLamater, 2014). It is the context within which the physiological response is experienced that will guide the affective label applied (DeLamater, 2014). For instance, when an individual is in an armed robbery, he or she will ascribe the physiological arousal experienced to fear, while when involved in a romantic setting he or she might ascribe the physiological response to sexual desire.

Research done by Hughes et al. (2010) showed that providing a person with false feedback of a physiological response can change the affective experience of that individual. In this study, the researcher presented the participants with a variety of images and afterwards provided artificial feedback regarding heart rate instability on certain photographs, while in reality they had not actually been affected by the images on a physiological level (Hughes et al., 2010). This false knowledge caused the participants of the study to re-evaluate that same photograph as more attractive than originally rated (Hughes et al., 2010). This finding supports the idea that attraction is often experienced subjectively and physiologically.

With regards to the three components of attractiveness and attraction discussed above (Montoya & Horton, 2014), along with the design of this research, the findings will be mostly related to the affective component of attraction. The cognitive component is inherently part of perception and specifically the perception of attractiveness (Goldstein, 2011; Montoya & Horton, 2014), and will therefore also be discussed briefly below, but it will not be the focus of this study.

As mentioned above in section 2.2, certain facial features and stereotypes have been found to remain relatively consistent throughout those who have been identified as attractive. These aspects will now be discussed in the following section.

2.3 A Face that Launched a Thousand Ships

Whether a face is deemed physically attractive or not seems to be dependent on a number of aspects. There are certain facial features that are considered to be attractive, such as facial symmetry and averageness (Kagian et al., 2008; Kloth, Altmann, & Schweinberger, 2011). Symmetry refers to a lateral mirror image of the face, in other words, the sameness between the left and right side of a person's face (Noor & Evans, 2003). Alternatively, averageness refers to how close a face is to the majority of faces within a specific population - this is tested by compositing various faces of people with similar demographics, such as sex, age, etcetera, unto each other with the assumption that the more faces are composited, the closer that face is to being 'typical' or average (Baudouin & Tiberghien, 2004; Komori, Kawamura, & Ishihara, 2009). Interestingly, as research continues to study the effect of symmetry on perceptions of attractiveness, mixed results are emerging (Komori et al., 2009; Noor & Evans, 2003). Noor and Evans (2003) found that although an asymmetrical face was judged as more neurotic and less conscientious, which according to Baudouin and Tiberghien (2004) would decrease perceptions of attractiveness, in this particular study it did not have an

impact on perceived attractiveness. Averageness, however, produces uniform results as a prediction of attractiveness (Komori et al., 2009). In other words, studies, such as those done by Noor and Evans (2003) and Komori et al. (2009), have found that symmetry or asymmetry did not consistently have a significant impact on perceptions of attractiveness, whereas averageness in faces shown to the participants were consistently rated as more attractive (Komori et al., 2009).

Homogeneous skin colour and texture has also been shown to significantly increase the rate of attractiveness (Fink, Grammer, & Matts, 2006). Additional ‘attractive’ aspects include youthful or neonatal facial features (Naini et al., 2006). This consists of large eyes, a narrow jaw and a small nose and chin (Baudouin & Tiberghien, 2004; Naini et al., 2006). Other features, which conversely symbolise sexual maturity, such as a wider mouth, prominent cheekbones and fuller lips are also deemed attractive (Baudouin & Tiberghien, 2004; Geldart, 2010; Naini et al., 2006). Interestingly, deviation from averageness can sometimes enhance the attractiveness of a face, as long as it deviates within the last described features and the qualities of those features (Komori et al., 2009). For instance, a nose slightly smaller than the norm will not necessarily decrease attractiveness as a small nose is seen as aesthetically pleasing, while a nose larger than the norm might decrease perceptions of attractiveness.

There is, however, some disagreement about what can be constituted as attractive (Amos & McCabe, 2015). Margaret Hungerford (1878) believed that beauty was in the eye of the observer. This implies that there is no set, objective evaluation of attractiveness but rather that facial appeal is a subjective experience (Baudouin & Tiberghien, 2004) based on a variety of desirable traits that the face seems to possess (Little et al., 2006). On the other hand, some theorists disagree and postulate uniformity and objectivity in perceptions of attractiveness (Naini et al., 2006). Both these approaches, the objective and subjective, have

received support in research and will be discussed separately in sections 2.3.1 and 2.3.2, followed by a possible reconciliation between these two approaches in section 2.3.3.

2.3.1 The objective approach to attractiveness

Baudouin and Tiberghien (2004), as well as Komori et al. (2009), found that there is some agreement about what is seen as attractive within and across sexes, ethnic groups and ages, thereby indicating a more universal criteria of attractiveness. Additionally, babies and infants have the ability to distinguish attractive from unattractive faces, indicating that there might be a genetic or evolutionary explanation for the objective experiences of attraction (Geldart, 2010; Naini et al., 2006). Baudouin and Tiberghien (2004) conducted a study on attractiveness, which contained eight male participants with the mean age of 24, looking at 62 images of unknown women. It was consistently found by all the participants, that generally, an attractive face has smaller and neonatal facial features in the middle – in other words a small nose and big eyes - and sexually mature features on the more peripheral planes of the face – namely prominent cheekbones, full lips and high eyebrows.

Despite the findings in Baudouin and Tiberghien's study (2004), a variety of artists and plastic surgeons argue for an even more quantifiable analysis of the proportions of an aesthetically pleasing face in order to guide their work (Naini et al., 2006). Accordingly, there is now a variety of theories on the necessary proportions of an attractive face, such as the golden ratio (Prokopakis et al., 2013). The golden ratio implies that a well-proportioned face should be easily divided into five vertical sections and three horizontal sections (Prokopakis et al., 2013), while Naini et al. (2006) argue that a face should be divided into thirds, both vertically and horizontally, as the golden ratio is extremely difficult to obtain and not always an accurate predictor of attractiveness. A well-proportioned face is demonstrated in Figure 2.1 below, where one can see the vertical and horizontal thirds as indicated, as well as the vertical fifths in line with the golden ratio.

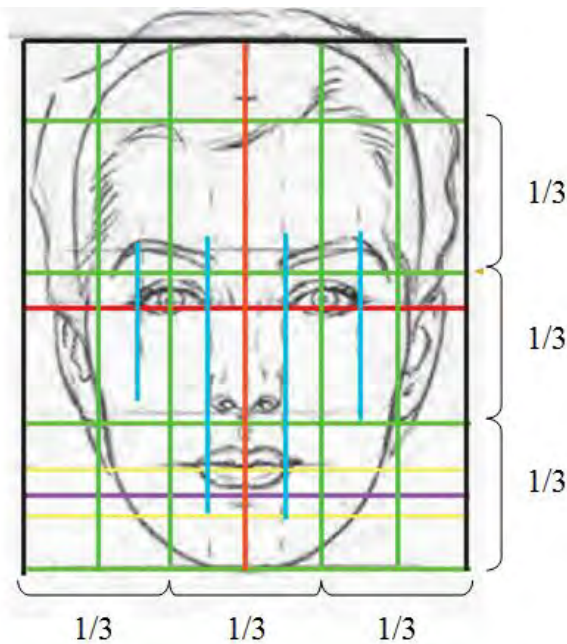


Figure 2.1. Proportions of the face. (Image retrieved from <http://www.beginnersschool.com/sculpting/facial-proportions-and-sculpting-a-face/>).

2.3.2 The subjective approach to attractiveness

Another set of studies (Baudouin & Tiberghien, 2004; Little et al., 2006; Snyder, Tanke, & Berscheid, 1977; Zeiger-Hill, Britton, Holden, & Besser, 2015) show that perceived attractiveness might be influenced by assumptions regarding the possession of certain desirable traits, rather than a set compilation of facial features. Little et al. (2006) as well as Baudouin and Tiberghien (2004) highlight the notion that specific emotions and characteristics are ascribed to certain facial features, as discussed below in 2.3.3. However, how these characteristics are initially ascribed to a specific facial feature is not understood or explained and therefore should be generalised with caution as it leaves room for individual differentiation in terms of what feature symbolises which trait.

In line with the assignment of certain characteristics to certain traits, there is an idea that ‘what is beautiful is good’ (Baudouin & Tiberghien, 2004; Little et al., 2006; Snyder et al., 1977). Assumptions are made that attractive people are more honest, sociable, adjusted,

humorous, kind, happy, better romantic partners and more prestigious in the work sphere (Baudouin & Tiberghien, 2004; Little et al., 2006; Snyder et al., 1977; Zeiger-Hill et al., 2015). Little et al. (2006) found that in evaluating the attractiveness of a face, a favourable evaluation is based on the perceived possession of sought-after traits, as determined by the observer, such as kindness, honesty and happiness etcetera. In other words, a male who is interested in finding a partner who is kind, honest and agreeable, will find a face seeming to possess these traits as attractive, while a face that portrays assertiveness or aggression will be subjectively evaluated as less attractive. This re-introduces subjectivity to attraction as people differ in their ideas surrounding what an ideal partner constitutes (Little et al., 2006; Montoya & Horton, 2014). These findings also put into question whether the notion of ‘what is beautiful is good’, should not be reversed to ‘what is good is beautiful’ (Little et al., 2006).

2.3.3 A combination of the objective and subjective approaches to attractiveness

Some researchers postulate that there is a way to combine the objective and subjective approaches to attractiveness, even though they are different from one another. As mentioned above, certain facial features, such as averageness, symmetry, neonatal features and sexually mature features have been regarded as the cornerstones of attractiveness. Baudouin and Tiberghien (2004) have shown that specific facial features viewed for most as objectively attractive, also have a subjective element to them as each feature also represents specific traits and characteristics. For instance, neonatal features such as a small nose and chin and high, wide eyes, have been linked to open-mindedness, agreeableness, liveliness, honesty, sincerity and warmth (Baudouin & Tiberghien, 2004; Little et al., 2006; Naini et al., 2006). Sexually mature features such as narrow cheeks, prominent cheekbones and fuller lips (Geldart, 2010) are believed to indicate strength, competence, dominance and status (Baudouin & Tiberghien, 2004; Little et al., 2006). Furthermore, on a more evolutionary note, mature features are believed to indicate a healthy immune system and the ability to

adapt to the environment, thereby suggesting that the person possessing these traits would be an appropriate mate choice (Baudouin & Tiberghien, 2004). Expressive features, in other words features that demonstrate non-verbal emotions, such as a wider smile, dilated pupils and higher eyebrows, indicate happiness, approachability and excitement (Baudouin & Tiberghien, 2004; Kagian et al., 2008). Finally, if the individual seems groomed and well taken care of, it is said to suggest group membership and status which is also attractive on an evolutionary level (Baudouin & Tiberghien, 2004).

It should be noted that all the above mentioned features and stereotypes attributed to these features, are only perceived as attractive when presented in harmony and moderation (Baudouin & Tiberghien, 2004; Naini et al., 2006).

As mentioned above in section 2.1, the media plays an important role in the formation of ideologies, stereotypes and the development of new ideals (Daniels & Wartena, 2011), including but not limited to beauty ideals, and will therefore be discussed next as relevant to this particular study.

2.4 Media

2.4.1 The prevalence and importance of the media in society

Media, on a large scale, refers to the communication channels that are utilised to distribute news, entertainment, data, education and promotional messages (Parikka, 2012). Media, and specifically different forms of social media, are used on a daily basis by the vast majority of young adults (Sampasa-Kanyinga & Lewis, 2015). Statistics show that up to 93% of young adults, ages ranging from 18-29 are on the internet (Briones, 2015). Over the past few decades, research has shown that exposure to media is increasing on a yearly basis (Potter, 2014). This increase is especially significant in social media, showing a 37% increase in exposure yearly on computers and a 63% increase in exposure per year on mobile phones

(Potter, 2014). Research shows that the age group most exposed to marketing media and magazines in particular, are individuals between the ages of 18 and 24 (Reaves et al., 2004). This age group is particularly relevant as it is also the age group of the participants of this study.

Media has been known to have an impact on the decision-making processes, ideologies and opinions within a variety of areas, including but not limited to health, political and social spheres (Ramo, Thrul, Chavez, Delucchi, & Prochaska, 2015; Yamamura & Sabatini, 2015). This can be seen, not only in the impact that the media has on issues such as smoking habits, voting and self-esteem etcetera, but also in the fact that the media is increasingly used as a platform to reach young adults with a variety of mental and physical health-related interventions (Bergstrom, Neighbors, & Lewis, 2004; Briones, 2015; Ramo et al., 2015; Yamamura & Sabatini, 2015).

2.4.2 Photoshop in the media

Photoshop has become common practice within media and entails the retouching, airbrushing and digital enhancement of images and videos depicted in the media (Reaves et al., 2004; Quigg & Want, 2011). New technology is making it increasingly easy to modify images in order to make them more aesthetically pleasing, while at the same time creating misleading representations of the products and models used in the media (Holmqvist & Frisen, 2012; Reaves et al., 2004). These changes in media images that enhance the beauty of the image, is supported by research that has shown that as a marketing strategy, beauty sells products (Reaves et al., 2004). However, due to the powerful influence of the media on society, questions have been raised on the impact of photoshopping. As research increases on the various negative impacts of photoshopping (see section 2.4.4 and 2.5), people have started to generate discussions regarding its use in the media, in both the academic realms (Quigg & Want, 2011) and within more informal social spheres, such as song lyrics,

interviews with models and actresses who are against the retouching of images, and the launch of informal petitions on social networks (Lynch, 2011).

Within the parameters of this study specifically, the focus will be on photoshopped, static images, within magazines, social networks, advertisements and the internet, along with the impact that these images might have on male's perception of female attractiveness, as discussed in section 2.4.3 below.

2.4.3 Media's effect on current beauty ideals and perceptions of attractiveness

As mentioned in section 2.4.1, the media is viewed as one of the most potent and pervasive forms of social influence in creating or maintaining beliefs, including but not limited to the production of an 'ideal' woman (Parikka, 2012; Quigg & Want, 2011).

The media is known for promoting women as tall and thin, with long legs, small waists and big breasts (Dawson-Andoh, Gray, Soto, & Parker, 2011; Holmqvist & Frisen, 2012). Research shows that thinness is increasingly crucial for feminine beauty (Dawson-Andoh et al., 2011). While the average size of women in the media decreased significantly during the 1960's-1970's, the average woman's size and weight in the real world was actually on the increase (Reaves et al., 2004; Sypeck et al., 2006; Quigg & Want, 2011). This differentiation created an even bigger discrepancy between what is portrayed in media as the ideal physique and how most women actually look (Reaves et al., 2004). Research shows that less than five percent of women can achieve the unrealistic weight goals set by media (Quigg & Want, 2011).

Interestingly, however, research shows that women actually overestimate the thinness that men find appealing. In other words, men generally prefer women slightly bigger than what women tend to believe (Bergstrom et al., 2004; Sypeck et al., 2006). Nevertheless, men

may still be influenced by the thinness ideal in media images and could therefore have unrealistic expectations regarding how a woman should look (Markey & Markey, 2012).

Markey and Markey (2012) suggest that people's perceptions of female beauty changes as exposure to media increases. That is, both men and women's ideas surrounding beauty becomes increasingly similar to that portrayed in the media (Markey & Markey, 2012; Reaves et al., 2004). In other words, they might find everyday women less attractive due to the high standards created within media (Markey & Markey, 2012; Potter, 2014). Society's standing on thinness is therefore difficult to disregard and difficult to achieve (Sypeck et al., 2006).

In order to understand the effect that media can have on people's perception of attractiveness, it is first important to understand how perception occurs and which factors have an effect on how people and objects are perceived.

Reality is complicated by the fact that cognitively, people still tend to believe what they see (Reaves et al., 2004). Perception is a phenomenon that is thoroughly examined within cognitive psychology (Gerrig & Zimbardo, 2002). Generally, it is understood that perception is influenced by three main aspects (Goldstein, 2011). Firstly, on a neurological level, perception occurs due to the stimulation of certain receptors. Secondly, what is perceived, and how it is interpreted by the individual, is dependent on additional information such as the context in which an object or phenomenon is perceived. Finally, perception is effected by the knowledge, history and expectations of the perceiver (Goldstein, 2011). Each of these aspects will now be discussed in relation to attraction and its appropriateness to this study.

With regard to the first aspect and within an evolutionary view, certain qualities - in all species - evolved in order to attract the opposite sex and foster reproduction (Fisher, Aron,

& Brown, 2006). As a result, certain features in opposite sex partners activate parts of the brain affiliated with 'mate selection'. This evolutionary instinct, mate choice, encourages attraction whereby energy and motivation is directed towards a specific mate, whom if successfully courted, preludes a more long-term attachment (Fisher et al., 2006). As discussed above, the media has an effect on what is seen as attractive. Therefore, it is hypothesised that certain unrealistic physical qualities might become necessary in order to foster interest in mate choice, attraction and eventual romantic attachments.

The second and third contributing factors of perception as identified above by Goldstein (2011) can, for the purposes of this study, be grouped and discussed together. Research has shown that despite the emerging critical views of beauty ideals portrayed in media (Holmqvist & Frisen, 2012) (see section 2.4.4), a significantly small amount of males experienced the images provided in the media as idealistic and unnatural (Markey & Markey, 2012). Furthermore, it seems that photoshopping and the individual expectations created by it have moved beyond the context of media - where it might initially have been appropriate or necessary - and has now infiltrated the general social sphere, thereby creating unrealistic expectations of women (Markey & Markey, 2012). This finding creates the impression that, due to the lack of contextualised perception (Goldstein, 2011), men have internalised the media images of women as a realistic and attainable ideal which could be crucial for interpersonal attraction (Daniels & Wartena, 2011; Hatoum & Belle, 2004).

2.4.4 Consequences of the criticism of media and photoshopping

The increased attention on the negative impact that the media and photoshopping has on how women feel about themselves, and the possible consequences of the unrealistic beauty ideals created (see section 2.4.2 and 2.5.1), has had certain implications. Recent studies are picking up new trends in media images, such as changes in the body types of the models and an increase in the use of plus size models (Lynch, 2011). Sypeck et al. (2006)

evaluated male-directed magazines over the past 21 years and found that recently, the trend towards thinness has stabilised and might even have started reversing. It is suggested that this stabilisation and reversal in model weight, could be ascribed to an increasing awareness of the over-evaluation of thinness in both men and women (Bergstrom et al., 2004; Lynch, 2011; Sypeck et al., 2006). This being said, the significant decrease in the weight and size of women during the 1960's-1970's, has still left the current models significantly underweight and out of reach for most women in today's society (Sypeck et al., 2006; Quigg & Want, 2011).

Due to the increased awareness and criticism of the media, a variety of projects, both formal and informal (such as Operation Beauty and #loveyourlines respectively), have been launched to bring into question the hegemonic beauty ideals promoted in the media (Lynch, 2011; Quigg & Want, 2011). These projects call for a change in perception, where a wide variety of different shapes, sizes and features are accepted and celebrated as different types of attractive (Johnston & Taylor, 2008; Lynch, 2011). These projects have had a positive effect on many individuals, particularly women and have increased awareness of photoshopping and the negative impacts thereof, thereby decreasing ignorance (Quigg & Want, 2011). Nonetheless, many projects that question hegemonic beauty ideals have also been criticised for ignoring the intricacies of changing societal norms and perceptions (Lynch, 2011). For instance, these projects often exclude males in both the impact they have on women's self-image, as well as the impact that the media has on their own self-image (De Jesus et al., 2015; Lynch, 2011). Furthermore, these projects are often funded by campaigns that still endorse hegemonic discourses by, for example, advertising and selling anti-ageing products (Johnston & Taylor, 2008; Lynch, 2011). Finally, although these projects bring into question current societal perceptions on beauty, there is often little consideration for the impact that culture, age, socio-economic status and so forth, might have on views surrounding female

beauty (Lynch, 2011). Even more worrisomely, these projects still focus mainly on physical beauty and often ignores the promotion of other attributes, such as intelligence or morality (Lynch, 2011; Quigg & Want, 2011). Studies, where interventions were used to illustrate the changes that are made to models through photoshopping in media, were shown to foster critical thinking about the legitimacy of these images for both men and women, but did not diminish all the negative effects that come along with viewing these images (Holmqvist & Frisen, 2012; Reaves et al., 2004; Quigg & Want, 2011). Both men and women still had a tendency to internalise these images as realistic and achievable (Markey & Markey, 2012; Reaves et al., 2004).

As mentioned in section 2.1, perceptions of attractiveness have a large impact on how people, and particularly women, are perceived, benefited and disadvantaged, in society. These implications of attractiveness will be discussed in section 2.5.

2.5 Implications of Attractiveness

2.5.1 The implications on interpersonal attraction

Research shows that physical attractiveness is becoming increasingly significant for men in selecting a romantic partner (Bale & Archer, 2013; Bergstrom et al., 2004; Buss, Shackelford, Kirkpatrick, & Larsen, 2001). The importance of attraction in positive interpersonal evaluations is important for men from as young as fifteen (Hatoum & Belle, 2004). Moreover, research regarding online social networks has shown that individuals pay more attention to an attractive profile - including the photographs and information provided - than unattractive ones, indicating that the participants were more interested in getting to know an individual purely based on their level of attractiveness (Seidman & Miller, 2013).

As physical attractiveness becomes more important in society, women are becoming more sensitive to what men find attractive (Bale & Archer, 2013; Bergstrom et al., 2004).

Generally, women's awareness of men on a romantic level and the desire to appeal to men peaks around puberty (Louw & Louw, 2007). It is also within this time that girls naturally flesh out and specifically deposit fat around their hips and chest (Bergstrom et al., 2004). This natural process is contradictory to the thinness ideal promoted in the media and accordingly causes great distress and body dissatisfaction in a countless number of girls (Dawson-Andoh et al., 2011; Holmqvist & Frisen, 2012). In fact, women's identities very often revolve around their physique and perceived attractiveness, which increases their vulnerability to low self-esteem (Bale & Archer, 2013; Lynch, 2011). In order to acknowledge the serious impact of attractiveness on people and their lives, there have been discussions around classifying facial deformity as a social disability due to the mass of negative appraisals from others and the consequences thereof (Naini et al., 2006), see 2.5.2.

A literature search on the topic of media and photoshopping revealed that ample amounts of research has been done on the effects of the media on a woman's own body-image, body satisfaction, self-esteem and identity (Bergstrom et al., 2004; Maniglio, 2012; Reaves et al., 2004; Sypeck et al., 2006). Viewing a single image that has been retouched lowered the participants' self-esteem and brought into question what the ideal women should look like (Bergstrom et al., 2004). Even if women are not exposed to images in male-directed magazines where photoshopping had been used, they were still affected by it through males' perception of women and what is seen as desirable interpersonally (Sypeck et al., 2006). Interpersonal attraction and relationship development can therefore also be indirectly influenced by the media.

Research that shows that the media especially exacerbates low or unstable self-esteem and self-worth in women who feel a discrepancy between how they look and what is perceived as attractive (Bale & Archer, 2013; Zeiger-Hill et al., 2015). These women, who view themselves as less desirable for their partners, typically engage in love styles that foster

superficial interactions, require constant validation from their social environment, and often do not have the courage to show interest in and pursue a relationship (Bale & Archer, 2013; Maniglio, 2012; Zeiger-Hill et al., 2015). Women with low self-confidence also often engage in unhealthy problem-solving within a relationship and both partners proclaim lower interpersonal satisfaction (Zeiger-Hill et al., 2015). These relationships are often characterised by lower levels of intimacy and higher levels of hostility, aggression and withdrawal (Maniglio, 2012; Montemurro & Gillen, 2013). Additionally, men have typically been found to appreciate women who are confident and socially adjusted, thereby increasing the attractiveness of women who possess these traits (Baudouin & Tiberghien, 2004). The assumption can therefore be made that as women's self-esteem decreases due to the discrepancy between their own appearance and the 'ideal' as portrayed in media, they start to act and express themselves in a manner that even further decreases men's attraction to them, thereby creating a self-fulfilling prophecy (Baudouin & Tiberghien, 2004; Bale & Archer, 2013; Lewandowski et al., 2007).

In line with this self-fulfilling prophecy, it has been known since the 1970's that certain stereotypes about attractiveness have formed and are constantly being maintained and enhanced (Snyder et al., 1977). A study done by Snyder et al. (1977) focused specifically on researching the 'what is beautiful, is good' notion that was discussed in section 2.3.2 (Little et al., 2006). Within Snyder et al.'s study, male participants were asked to interact telephonically with different women (Snyder et al., 1977). Each male participant was provided with an overview of the background and accomplishments of the woman that they would talk to; along with a fake photograph (the women were also given a biographical form but did not receive photographs of the men and did not know that the men had received the images). The photographs provided had been previously rated by another group of men as attractive or unattractive. The participants were asked to rate how they think the telephone

conversation will go prior to the discussion commencing. The participants, who received a photograph of a woman rated previously as unattractive, believed that the conversation would be awkward, serious and unsociable. They then phoned the women and interacted with them in a way that strengthened that stereotype. The women reported having an unpleasant conversation and thereby not giving an accurate portrayal of how they actually perceive themselves (Snyder et al., 1977). The opposite is true with men who received attractive photographs. They believed that the woman would be sweet, kind, humorous and sensitive and found the women had acted within those boundaries. These women also reported a more accurate portrayal of themselves (Snyder et al., 1977). In other words, what had initially been reality only within the male participants' mind had become a self-fulfilling prophecy in the women, in that the men interacted in a manner that set off a chain of events which eventually confirmed the initial stereotype.

2.5.2 Implications of attractiveness in society

Physical attractiveness also seems to play a fundamental role in job procurement and promotions (Johnson, Sitzmann, & Nguyen, 2014), to the extent that weight gain is viewed as a loss of ambition and determination within the corporate setting (Reaves et al., 2004). In most cases, attractiveness has a positive impact on employment prospects (Johnson et al., 2014; Little, Jones, & DeBruine, 2011). However, when attractiveness is not seen as beneficial for job performance or when women apply to masculine gender-typed jobs, it may actually have a negative impact on career opportunities as it defies gender roles while increasing the stereotype that a woman cannot do a man's job (Johnson et al., 2014). Attractiveness has also been found to influence the judicial system, indicating lower bail fees and more lenient judgements regarding the seriousness of crimes committed by attractive individuals (Little et al., 2011).

Another consequence of the emphasis placed on attractiveness relates to one of the largest and fastest growing industries: beauty and cosmetics (Crow & Payne, 1992; LaWare & Moutsatsos, 2013; Montemurro & Gillen, 2013). The media promotes the view that ageing is ‘bad’ (LaWare & Moutsatsos, 2013) which coincides with the use of photoshopping in order to lessen the signs of ageing in most forms of social media (Haas et al., 2012). Accordingly, millions of women and men attempt to hide their physical signs of ageing through a variety of anti-ageing skin care products and dangerous surgeries (LaWare & Moutsatsos, 2013). Above and beyond surgeries that slow the ageing process, it has been found that in 2013, 15.1 million cosmetic surgeries were performed in America alone, 91% of which were female patients (Markey & Markey, 2015). The amount of surgeries performed per year in 2013 had increased by 104% since year 2000 (Markey & Markey, 2015). With America totalling approximately 21% of worldwide surgeries, it can be estimated that over 71.9 million cosmetic surgeries have been done worldwide in 2013 alone (Markey & Markey, 2015).

The health care industry is further affected as anxiety, depression and eating disorders are on the increase and have in some instances been linked to media exposure (Bergstrom et al., 2004; Jordaan, 2009; Reaves et al., 2004; Watson et al., 2012). Issues, such as the development of eating disorders and other mental health illnesses, as well as the dramatic increase in risky surgical procedures, indicate what lengths people are willing to go to in order to obtain the beauty ideals as portrayed in the media, and what impact these ideals are having on society.

2.6 Conclusion

In this chapter, attractiveness has been defined and discussed. It was shown that the media is highly prevalent in most people's everyday lives and affects opinions, views and

decision-making in general. More specifically, it has been revealed that the media has a powerful influence on what people deem attractive. The images shown by the media are typically photoshopped and are thus not a true representation of reality. As a result, unrealistic levels of thinness, blemish-free skins and youthfulness appear to be attractive. Certain facial features that are regularly linked to physical attractiveness have been discussed. Research, however, has further shown that personality traits are also taken into account when attraction takes place and might influence the initial perception of attractiveness. Lastly, it was demonstrated that the media's portrayal of attractiveness might have a negative influence on females' self-esteem and could lead to certain psychological disorders, extreme actions and self-sabotaging behaviours within a romantic relationship.

The following chapter will focus on the research methodology used in the present study to determine the physiological reactions towards untouched and photoshopped women's images along with self-reported preferences and views on photoshopping.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The objective of the present study was to examine the effects of exposure to the media and photoshopping on males' perception of female attractiveness. Additionally, the researcher wanted to investigate males' views and knowledge surrounding the topic of photoshopping and the self-reported impact thereof on their view of women, specifically the physical attractiveness of women. For this reason, a mixed-methods research design was used, as both quantitative and qualitative measures were necessary. A discussion of this research design is followed by an exploration of the theoretical paradigm and sampling techniques used to attain these goals. The characteristics of the sample acquired are discussed thoroughly in order to provide the researcher and the reader with more clarity. The measurement instruments, data collection procedure and a brief description of the method used in the data analysis phase will then be presented. The chapter concludes with a short exploration of the ethical considerations taken into account with the implementation of this study.

3.2 Research Design

Some scientists believe that a mixed-methods approach to research provides a more holistic picture regarding human experience and offers statistical evidence or support for one's hypothesis (Johnson & Onwuegbuzi, 2004). A mixed-methods approach involves gathering and interpreting both qualitative and quantitative data within a single research study in the hope of gaining a better understanding of the topic researched (Arcidiacono & De Gregorio, 2008). This method is very popular within social sciences as the issues studied are often rather complex and require as much flexibility and information as possible, which can be obtained and analysed on different levels (Povee & Roberts, 2015; Tashakkori & Teddlie,

2003). Accordingly, this research study followed a mixed-methods approach in order to understand the complexities surrounding attractiveness and photoshopping.

Within the framework of mixed-methods, this research utilised the Triangulation design and, more specifically, the ‘Validating Quantitative’ model. In other words, the qualitative data is collected in order to substantiate the quantitative data elicited (Barnes, 2012; Cooper, Porter, & Endacott, 2011). The incorporation of the quantitative and qualitative findings may also act to increase confidence in the results of the study (Povee & Roberts, 2015). In this study, the quantitative and qualitative data were collected and analysed separately with neither building upon, nor reliant upon, the other during this phase (Onwuegbuzi & Collins, 2007). The two sets of results were then brought together during the interpretation of the results in order to draw meta-inferences from both sets of findings (Arcidiacono & De Gregorio, 2008).

The quantitative data was gathered first, by measuring specifically where the participants looked on the portrait images and how long their gaze lingered at each point (Geldart, 2010). The relevant physiological reactions that have been found to come with attraction were also considered (Bradley et al., 2008). The measurement instruments used to obtain this data are discussed in detail in section 3.5.2. The qualitative data were then gathered through two measures, namely the main questionnaire and the subjective report questionnaire (discussed in 3.5.3). The main questionnaire was designed to elicit the participants’ emotions and thoughts concerning attractiveness, as well as their opinions regarding the possible effect that exposure to media and photoshopping could have on how the participants perceived the women presented in the slideshow, and how women in the real world are perceived. The subjective report measure required the participants to indicate whether the women presented during the study had increased in attractiveness after photoshopping had been applied.

3.3 Theoretical Paradigm

As discussed in 2.4.3, perception is guided by three aspects, namely the actual sensory stimulation, the context in which the stimulation occurs and lastly the history and expectations of the perceiver (Goldstein, 2011). Each of these aspects will now be briefly related to attraction and its relevance to this study, see 2.4.3 for a detailed description.

The evolutionary view postulates that certain physical qualities evolve in order to attract the opposite sex (Fisher et al., 2006). When these features are present in the opposite sex, the reward systems in the brain are activated (Aharon et al., 2001). This activation stimulates attraction and encourages mate-selection and courtship (Fisher et al., 2006). The portrayal of women in media has an impact on how the beauty ideals in society evolve, and might therefore have an impact on the perception of attractiveness (Parikka, 2012).

With regards to the context within which perception occurs, and the impact that history and expectations have on the perceiver, media exposure becomes increasingly relevant. As mentioned in 1.2, subtle editing of women in the media, and the increased attractiveness of these women, is easily internalised as the norm that women in the real world should ascribe to (Haas et al., 2012). In this way, constant exposure to media and the artificial end product of photoshopping has become de-contextualised and may have an impact on the future expectations of the perceiver, with possible consequences for interpersonal attraction (Daniels & Wartena, 2011; Hatoum & Belle, 2004).

3.4 Sampling

3.4.1 Sampling technique

Non-probability sampling refers to a sampling technique in which participants are chosen to participate in a study based on the ease or availability of a certain group of individuals (Gravetter & Forzano, 2012). Purposive sampling is frequently used in

behavioural sciences and is dependent on the accessibility and willingness of the participants. It is also a relatively effortless approach since it is cost- and time-efficient (Collins, Onwuegbuzie, & Jiao, 2006; Gravetter & Forzano, 2012). Very little research has been done with regards to sampling strategies and sample size in relation to a mixed-method research design (Collins et al., 2006). Research conducted on those studies that have used mixed-methods has, however, found that purposive sampling is a commonly used sampling technique (Collins et al., 2006). Purposive sampling has also been shown to yield appropriate and useful results, provided that the goal of the study is not to generalise the findings to other populations, but rather to understand the phenomenon at hand (Onwuegbuzi & Collins, 2007).

3.4.2 Sample

The current research study was done alongside Professor Du Toit, as a co-supervisor, in collaboration with the Physiology Department of the University of Pretoria, South Africa. Therefore, this study focused specifically on undergraduate physiology students, due to their accessibility. The relationship of the qualitative and quantitative sample was identical – in other words, the same participants were used in the collection of both sets of data (Onwuegbuzi & Collins, 2007). The aim of the study was to obtain 25 volunteers who had met the following inclusion criteria:

- The participant had to be a male, undergraduate physiology student emerging into adulthood or late adolescence;
- The participant needed to be of a self-identified heterosexual orientation; and
- The participant had to be fluent in English due to the use of English questionnaires and instructions.

The inclusion criteria were put in place in order to assure as much uniformity as possible within the sample, thereby limiting the effects of potential confounding variables

(Gravetter & Forzano, 2012). University students have been chosen due to their age group, and consequential emergence into late adolescence or adulthood. Furthermore, students are generally required to develop an increased level of maturity, self-regulation and emotional intelligence during their studies (Park, Edmondson, & Lee, 2012). Self-identified heterosexual males have also been selected, due to the quantitative measures used to detect attraction to the women portrayed in the images (Donovan et al., 1989). The aim, therefore, of the inclusion criteria was to elicit an examination of the perception of women that was as accurate as possible and not affected by external matters such as maturity, language capabilities or sexual preference.

The sample was obtained in three rounds. During the first round, the co-supervisor made an announcement in his undergraduate classes, calling for participants. The second round consisted of e-mails placed on the participating University's intranet with the contact details of the researcher. These two rounds, however, only yielded six participants – which is insufficient to be considered a valid sample size (Collins et al., 2006), thereby necessitating the introduction of a third round. During this last round, the researcher personally went to the classes and asked for volunteers to participate in the study. A list was presented to students which detailed the times and dates available for those who had indicated that they wished to participate. Eventually, these three rounds yielded a sample of 25 participants.

The sample characteristics are summarised in Figures 3.1-3.4 in order to provide a general view of the sample population.

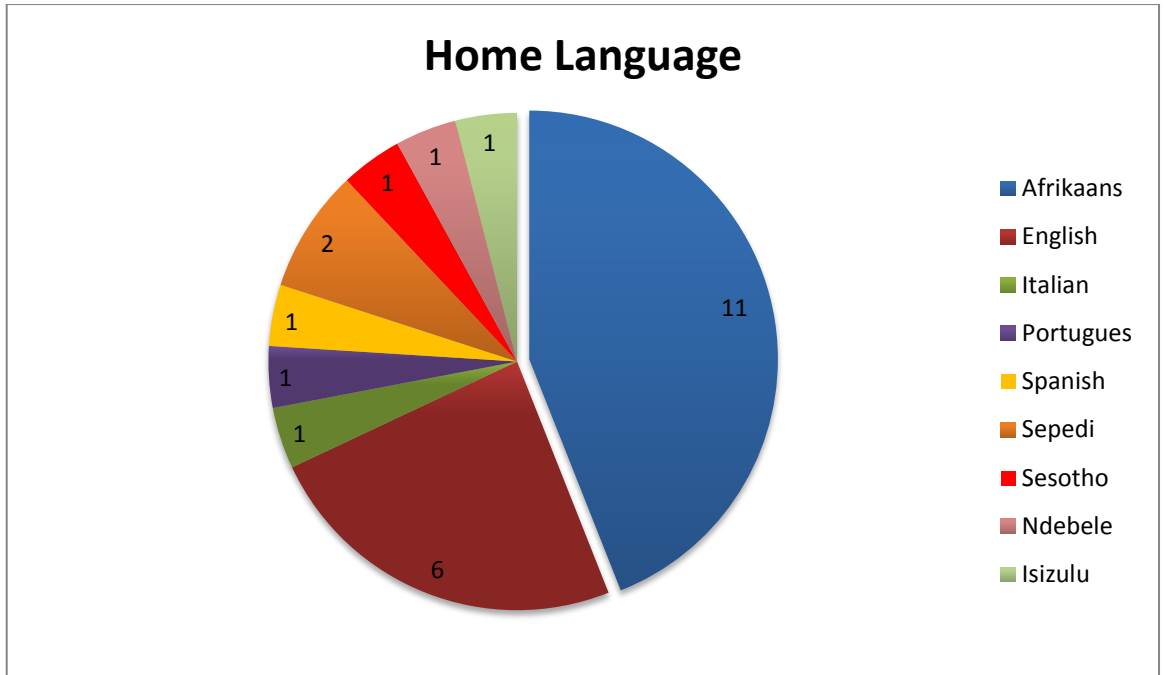


Figure 3.1. Home language of the participants

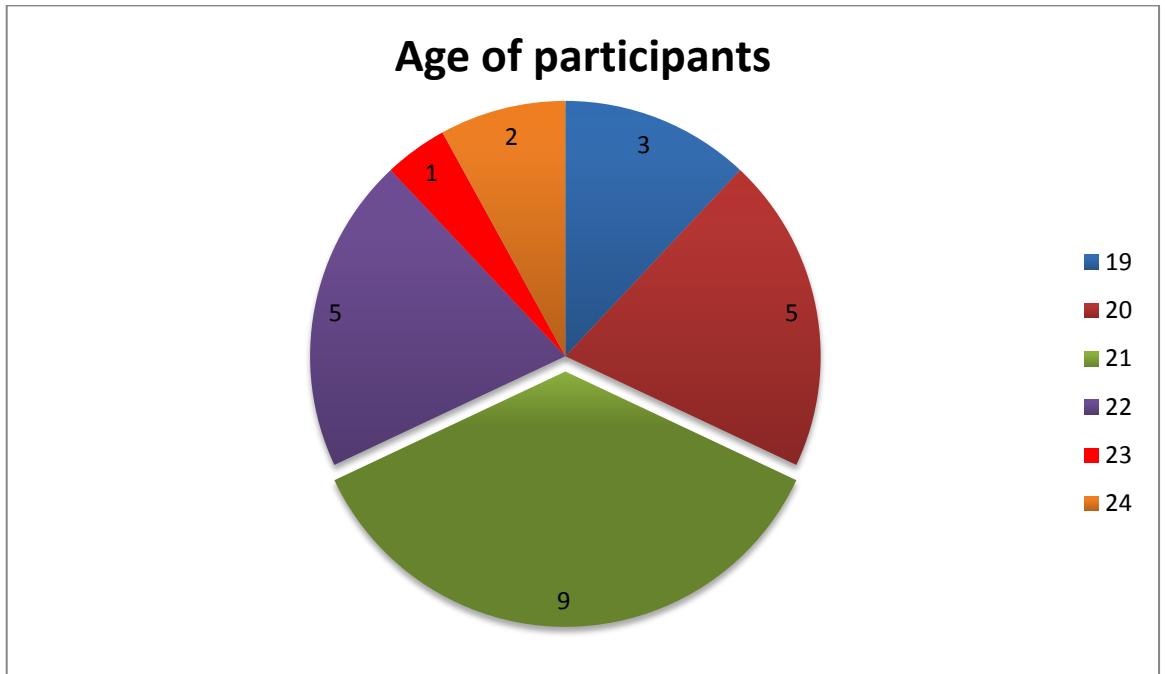


Figure 3.2. Age of the participants

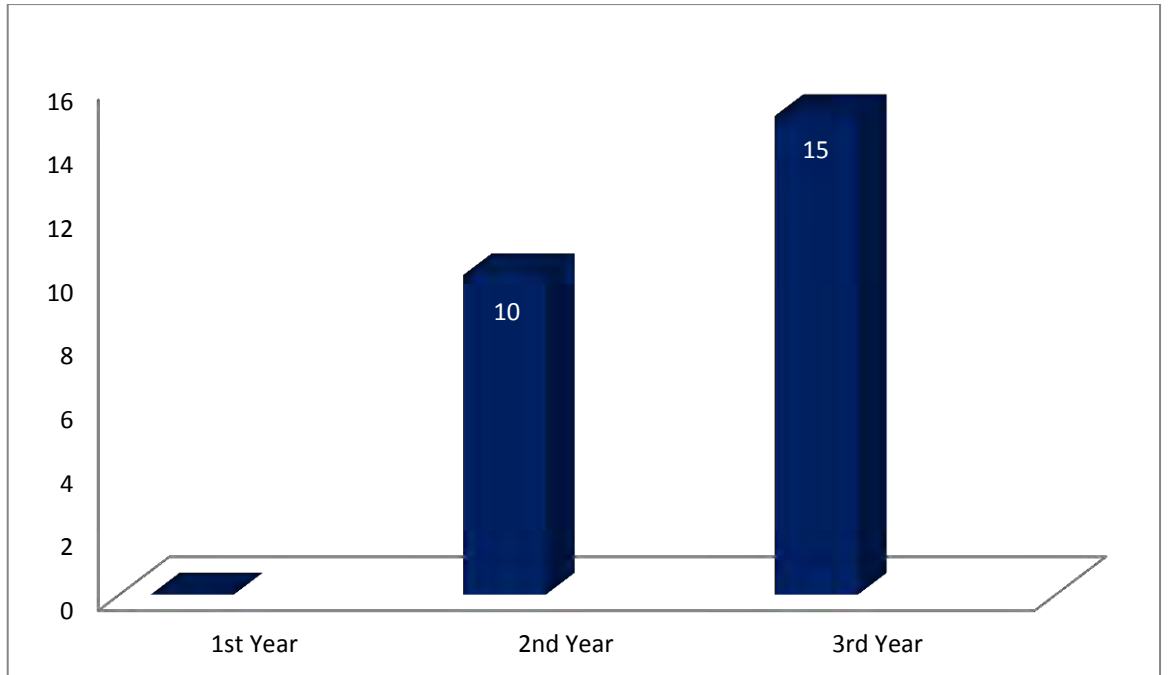


Figure 3.3. Academic year of the participants

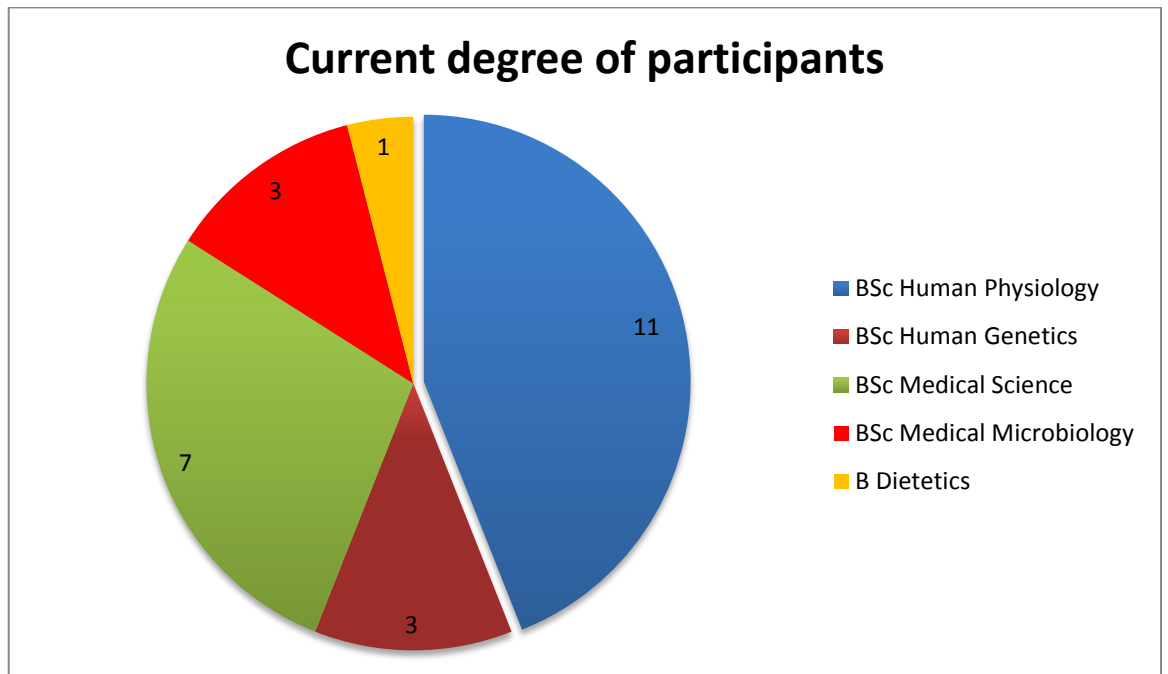


Figure 3.4. Current degree of the participants

3.4.3 Deception

Due to the nature of this study, the information provided to the participants about the aims and objectives contained an element of passive deception (Kimmel, 2011). The researcher did not initially convey to participants that the purpose of the study was to compare the reactions towards photoshopped and non-photoshopped women, as this might have influenced how the participants looked at, and reacted towards, the images. Instead, the participants were told that the purpose of this study was to evaluate males' perception of female attractiveness.

3.5 Measurement Instruments

3.5.1 Biographical questionnaire

The aim of this questionnaire (see Appendix 1) was to ensure that the inclusion criteria were met and to obtain the relevant demographic information such as age, degree and academic year of the participants.

3.5.2 Quantitative measures

Past research has shown that people engage in a 'social gaze' when viewing a pleasant face (Goman, 2008). A 'social gaze' refers to an imaginary triangle, where the base of the triangle touches both eyes and the apex of the triangle reaches the mouth. A gaze that falls within this area is often interpreted as flirtatious (Goman, 2008). Geldart (2010) has also found that the amount of time spent looking at an image of another person correlates with an increased rating of attractiveness. Research has furthermore confirmed the notion that physiological arousal, which is subjectively linked to attraction, seems to cause an increased heart rate when viewing pleasant photographs (Bradley et al., 2008; Hughes, et al., 2010). In order to measure the gaze and time spent looking at an image, eye movement was monitored

using the Grinbath Eye Tracker. This was paired with a measure of physiological arousal, obtained using the Zephyr BioHarness.

3.5.2.1 The Grinbath Eye Tracker (henceforth to be referred to as the 'Eye-tracker') is attached to the head and produces data on any eye movements on the screen – such as which parts of an image the individual looked at and for how long.

The Eye-tracker was calibrated and used according to the specifications of the manufacturer. To ensure a full set of data for each participant viewing the slideshow, it was confirmed that the batteries were charged. It should be noted that although the Eye-tracker provides quantitative and objective information regarding any eye movements on the screen, it could only be analysed subjectively. The Eye-tracker therefore provided quantitative data that was qualitatively analysed.



Figure 3.5. Grinbath Eye Tracker. (Image retrieved from <http://www.otshow.com/?filename=eyeguide-assist-eye-tracking-technology>)

3.5.2.2 The Zephyr BioHarness (henceforth to be referred to as the 'BioHarness') is strapped around the torso and produces data regarding the participant's heart rate, respiration rate, body temperature, electrocardiography, body orientation and activity. For the purposes of this study, only heart rate, breathing rate and heart rate variability were measured since it is postulated that fluctuations in these three constructs would represent physiological arousal

(Bradley et al., 2008; Hughes, et al., 2010). The body orientation readings may have produced interesting data (Hughes, et al., 2010), but it could not be used, as the Eye-tracker required minimal movement.

The BioHarness was calibrated and used according to the specifications of the manufacturer. To ensure a full set of data for each participant, the two sensors for the BioHarness were used interchangeably and were charged before each session.



Figure 3.6. Zephyr BioHarness. (Images retrieved from <http://wearablesandapps.com/Search/Listing/zephyr-bioharness-3>)

3.5.3 Qualitative measures

The qualitative section consisted of two measures, namely the main questionnaire and the subjective report questionnaire. All the participants received and completed the two questionnaires in the presence of the researcher in case there were any enquiries to attend to. These two measures will be discussed separately below.

3.5.3.1 The qualitative questionnaire (see Appendix 2) contained mostly open-ended questions with specific relevance to the research hypotheses and to discoveries made during the literature review. A questionnaire was chosen as it is a cost-effective method of data collection which, furthermore, provides a higher level of anonymity than some of the other methods (Tashakkori & Teddlie, 2003). It also allowed the participants to respond in their own words (Gravetter & Forzano, 2012). This implies that the participants had the freedom to

give their real opinions and thoughts regarding the topic under investigation. The information gleaned from the questionnaire is intended to add to, and explain, the quantitative results.

3.5.3.2 The subjective report questionnaire is the second qualitative measure, which consisted of 'yes or no' questions regarding an increase in attractiveness of the photoshopped women in the slideshow (see Appendix 3 for the images and Appendix 4 for the corresponding questions). It should be noted, that the order of the images provided in the subjective report questionnaire differed from the order of the images in the slideshow (compare Appendix 3 and Appendix 5). Therefore, throughout the research report, when mentioning the image sets from the subjective report questionnaire, the researcher will provide the corresponding image set number from the slideshow.

3.6 The Intervention

Each participant was asked to look at a slideshow consisting of nineteen slides, see Appendix 5. The sequence of the slides were as follows: a non-photoshopped image of woman number 1 (1A), a blank slide, a photoshopped image of woman number 1 (1B), a blank slide, a non-photoshopped image of woman number 2 (2A), and so forth. This sequence continued until all five sets, in other words ten images, were seen. Each blank slide was programmed to stay on the screen for ten seconds before changing automatically to the next image. The blank slide allowed for any physiological arousal in response to the previous image to dissipate before viewing the next image. The blank slide contained two diagonal lines crossing at the centre. The participants were asked to look at the point where the lines intersect for the full ten seconds of each blank slide in order to ensure continued precision of the Eye-tracker and accuracy of the results it yielded. The participants were instructed to view each image of the women for as long as they wished before using the side arrow on the keyboard to advance to the next blank slide. The photographs used in this study were

gathered from the public domain. This study did not use images that appeared excessively photoshopped, so that the participants would not consciously pick up the difference between the photographs (Haas et al., 2012). The photographs also required both the “before” and “after photoshop” images of the same woman. From all the images gathered that met these requirements, ten images were randomly selected. Ten images were seen as a suitable number of photographs to be viewed without tiring the eyes, as suggested by a professional photographer (J. G. M. Oosthuizen, personal communication, October 28, 2014). See Appendix 3 for the final ten images chosen.

3.7 Data Collection Procedure

The data were collected in a laboratory situated in the Department of Physiology at the University of Pretoria. Each participant was provided with a pen and clipboard to fill in the biographical questionnaire and to sign the consent form (see Appendix 1 and Appendix 6 respectively). After signing the consent form, each participant underwent a Dominant Eye Test in order to ensure proper calibration of the Eye-tracker (P. Du Toit, personal communication, August 3rd, 2015). The information gathered from this test was used to guarantee that the camera of the Eye-tracker was pointed to the pupil of the dominant eye for data accuracy purposes. In order to fit the Zephyr BioHarness, information regarding each participant’s height, weight and birth year had been collected. The weight and height of the each participant was respectively measured with a Seca Scale and a Leicester Height Measure. The information was entered into the Omnisense Live programme before attaching the BioHarness to the participant. In order to increase the conductivity of the impulses received, the pads on the BioHarness were slightly moistened. The use and functioning of the BioHarness was explained to the participants. Each individual was offered the opportunity to attach the BioHarness (on the torso underneath the clothes) in a private room with the researcher on the outside. This was done in order to respect the privacy of each participant.

Each participant was then asked to enter the room where the necessary computer and instruments were set up. The room was relatively dark in order to enhance the efficiency of the Eye-tracker's calibration. Each participant was asked to switch off their cellular phones due to the Eye-tracker's sensitivity to different network signals. The participants were informed that the session would be video recorded in order to provide the researcher with time-stamped footage regarding the proceedings. All procedures were explained to the participants and it was made clear that if they felt uncomfortable at any point, they could withdraw from participation without prejudice.

The researcher activated the BioHarness recording once the harness was fitted properly. The first set of data measured by the BioHarness was used to obtain the baseline activity for each participant, this takes approximately five minutes. While the BioHarness was recording a baseline, each participant was introduced to the Eye-tracker and the rest of the research procedure was explained. The instructions regarding the slideshow, as discussed in section 3.6, were also explained in detail.

The participants were asked whether they understood the instructions and were still comfortable. The Eye-tracker was switched on and attached to the forehead of each participant with the camera pointed to the pupil of their dominant eye. From there, the researcher and an associate from the Department of Physiology, who is an expert in the use of the measuring instruments, adjusted the camera and LED light in order to calibrate the instrument. The EyeGuide capture programme has a short test which ensures the proper calibration of the Eye-tracker. The majority of participants had to do the aforementioned test at least twice. The participants were reminded not to move their heads once the Eye-tracker was attached, as this would compromise the calibration. Once calibrated, the participants were asked whether their eyes were tired or whether they would be comfortable continuing. At this point, the slideshow commenced together with the video recording.

Upon completion, the files were saved and the instruments removed. The participants then received the questionnaire and were asked to answer it in as much detail as possible. For the subjective report questionnaire, the participants were shown the same sets of images from the slideshow (in a different order, see Appendix 3) side by side, thereby highlighting the photoshopped nature of the images. The participants were asked to indicate on the questionnaire whether the photoshopping had increased the attractiveness of these women.

Once this was completed, the participants received the opportunity to ask any questions which were noted by the researcher. The real purpose of the study and the reason for the deception was discussed. Thereafter, participants were afforded the opportunity to withdraw from the study.

3.8 Data Analysis

As mentioned in 3.2, the data gathered during the study were analysed separately and then compared, combined and summarised during the interpretation phase of the research. Accordingly, the processes followed for the quantitative and qualitative data analysis will be described separately.

3.8.1 Quantitative data analysis

The statistical analysis was conducted on SPSS® version V.23. The data analysis consisted of descriptive statistics and a repeated measures t-test in order to establish whether there were significant differences with regards to participants' perception for the two measures – in other words, the non-photoshopped image and the photoshopped image. A repeated measure t-test was necessary as each participant was required to view ten different stimuli, in this case five sets of images, while the physiological responses of the participants for each of these stimuli were being measured in order to compare the various data sets. This

study can therefore be seen as having a repeated-measures design (Gravetter & Forzano, 2012). As a result the Wilcoxon Signed Rank test was used to compute the statistical data.

3.8.2 Qualitative data analysis

Thematic analysis was conducted on the qualitative data retrieved from the questionnaire. The main aim of thematic analysis is to determine themes or patterns within the data (Vaismoradi, Turunen, & Bondas, 2013).

Thematic analysis is a popular method in qualitative research and specifically in the field of psychology (Braun & Clarke, 2006; Marks & Yardley, 2004). One of the great advantages of thematic analysis lies in its flexibility (Brooks, McCluskey, Turley, & King, 2015), which *inter alia* lends itself to working effectively within a wide variety of theoretical frameworks (Braun & Clarke, 2006; Holloway & Todres, 2003). In qualitative research, and specifically with this research study, this method is particularly appropriate when delving into the participants' meanings and experiences whilst acknowledging that these experiences might operate within social discourses and contexts (Braun & Clarke, 2006; Marks & Yardley, 2004). This study followed the Six-Phase Approach to Thematic Analysis as described by Braun and Clarke (2006).

In the first step the researcher became familiar with the data gathered by thoroughly reading through it, making notes and considering possible patterns (Braun & Clarke, 2006). Since the qualitative data in this research study was gathered through questionnaires and not interviews, transcription of the data was not necessary.

In the second phase, the researcher systematically produced a few initial codes by re-reading the data and utilising the notes made in the previous phase (Braun & Clarke, 2006). The data was then organized under all the appropriate codes (Vaismoradi et al., 2013).

The third phase consisted of the interpretive analysis of the data (Braun & Clarke, 2006). The researcher searched for themes - or repeated patterns - within the data by classifying related codes into broader categories (Braun & Clarke, 2006; Marks & Yardley, 2004).

The fourth phase entailed reviewing and refining the themes (Braun & Clarke, 2006). The researcher needed to ensure that the data within each individual theme correlated with one another, while the different themes had clear and distinguishable differences (Braun & Clarke, 2006). It is also important to examine whether the themes correlate with the entire data set – in other words, are the themes (or the parts), representative of the whole (Thomas & Harden, 2008).

During the next phase, the researcher named and defined each theme according to its essence (Braun & Clarke, 2006). The researcher was required to analyse each theme and find the narrative within, thereby clearly defining them, and finally providing all themes with short and powerful names (Braun & Clarke, 2006; Vaismoradi et al., 2013).

Throughout the final phase, the researcher compiled a detailed, coherent and concise report (Braun & Clarke, 2006). This report should include vivid and compelling data extracts in order to support and provide evidence of any statements made (Braun & Clarke, 2006; Brooks et al., 2015; Vaismoradi et al., 2013).

3.9 Validity and Reliability of the Quantitative Section of this Research

Research validity refers to whether a research study accurately answers the questions that are set out at the beginning of the study (Gravetter & Forzano, 2012). Various precautions were put in place with regards to internal validity, which in turn ensured, as much as possible, that this study provided an unambiguous relationship between the variables analysed (Gravetter & Forzano, 2012). Firstly, the researcher attempted to eliminate as many

confounding variables as possible, since these external variables often compromise the ability to identify a single explanation for changes in behaviour (Gravetter & Forzano, 2012). In choosing a very specific sample, many confounding variables were removed, as mentioned in 3.4.2. Furthermore, the effect of environmental variables - namely the room size and lighting, the time of day, the gender and power relations of the examiner and so forth - were taken into account (Gravetter & Forzano, 2012). Accordingly the researcher attempted to provide uniformity during the data collection process by using the same procedure with each participant, including the laboratory set-up and the explanation of the instruments used and the research process to be followed. Additionally, the instruments used to collect the quantitative data were calibrated and used in accordance with the manufacturers guidelines. Finally, a specialist in the physiology department assisted with the correct use of the instruments.

According to Gravetter and Forzano (2012), reliability refers to the extent to which a study can be replicated while producing the same results. The data collection procedure, the data analysis and the interpretation of the data is described in detail throughout this document, therefore allowing for the replication of this study.

3.10 Credibility and Trustworthiness of the Qualitative Section of this Research

While quantitative research requires validity and reliability (Gravetter & Forzano, 2012), qualitative research requires credibility and trustworthiness (Smith, Flowers, & Larkin, 2009; Willig 2008). The credibility of the qualitative data analysis can be partly addressed through the utilisation of an analysis method that has been widely applied and supported, such as the thematic analysis used in this particular study (Braun & Clarke, 2006; Brooks et al., 2015). The researcher further ensured ‘importance of fit’, which refers to the notion that the data groupings should be an appropriate and accurate reflection of the data set

as a whole (Willig, 2008). This was done by constantly comparing the created data categories to the data set in its entirety and interpreting these collated codes and themes in line with available research and literature. Furthermore, the supervisor of this study scrutinised the resulting codes and themes of the qualitative data analysis, thereby further ensuring the accuracy of how the data was organised into groups and the relevance of each code and theme.

As mentioned in 3.2, a mixed-methods design allows for the comparison of qualitative and quantitative results with regard to similarities and contradictions (Povee & Roberts, 2015). This further increased the credibility and trustworthiness of the qualitative section of this research study. Finally, the research process, the data analysis method and the interpretation of the results are discussed in an open and transparent manner, thereby ensuring that this section of the research can be fully understood and replicated (Yardley, 2000).

3.11 Ethical Considerations

The first point of departure in research entails the acquirement of informed consent. This is generally managed through a document which encloses significant information concerning the research study, and thereby encourages the participant to make an informed decision on whether to partake in the study or not (Guillemin & Gillam, 2004; Ponterotto, 2013). The consent form (see Appendix 6) discussed the rights of the participant and also clearly stated that the participant could withdraw from the study at any point. The consent form also specified that the participants give consent for the data gathered in this study to be used in future research.

A consent form generally conveys the aims and objectives of the study and outlines any potential risks that may arise (Wester, 2011). Due to the nature of this research, passive deception was used (Kimmel, 2011), as the researcher withheld information regarding the

aims of the study. Deception was necessary to ensure the accuracy of the results of the study (Pascual-Leone, Singh, & Scoboria, 2010). For instance, if the participants knew that this study focused on photoshopped images, they may have purposefully looked for the changes in the images, which would skew the results obtained.

This leads to an important ethical issue to be discussed, namely debriefing, which happened once the participants had completed the study (Pascual-Leone et al., 2010). During the debriefing interview, the researcher revealed the deception used, along with its above-mentioned purpose. The real aims and objectives of the study were explained, whilst offering the participant the opportunity to ask any questions (Gravetter & Forzano, 2012). The informed consent was re-negotiated, giving each participant the opportunity to nullify the consent previously given, lest the new information altered their willingness to participate. None of the participants were uncomfortable with the deception and reaffirmed consent for the use of the information they provided.

The participants were reassured that their names would not be attached to the data and quotations used during the publication of the results in order to ensure privacy (Smith et al., 2009). Confidentiality was further guaranteed by providing each participant with a number, not documenting the names of the participants on the forms or questionnaires, and by leaving a fifteen minute interval between participants where possible.

As the participants for this study were over the age of 18, they were eligible to sign the consent form (see Appendix 6) independently of their parents' or legal guardians' consent (Wester, 2011).

The photographs used in the study had been retrieved from the public domain; therefore the researcher did not require consent from the individuals in the images used for this study.

In choosing a research topic and research methodology, it is important that the researcher assesses the risks and ensures that firstly, these risks are minimised as much as possible, and secondly, that the potential advantages gained from the study outweigh the possible risks (Ponterotto, 2013; Wester, 2011). In this particular study, the participants were highly unlikely to sustain any physical harm. If, however, the participants felt uncomfortable due to the measuring techniques and devices used, they were offered the opportunity to withdraw. In order to limit the likelihood of discomfort, the different apparatuses and reasons for their importance was explained.

Finally, the participants were informed of the opportunity to follow up on the results once the research has been concluded. Participants were informed that collected data will be stored for a minimum of 15 years in the archives of the Department of Physiology, housed in the Natural Sciences Building on the University of Pretoria's main campus. This data storage is the University's policy and the archives are kept safe and secure.

3.12 Conclusion

This chapter provided a discussion on the research methodology used to obtain the desired aims of the study. A mixed-methods research design was used and the participants were recruited through purposive sampling. The final sample size was 25 males, who were predominantly Afrikaans-speaking, BSc Human Physiology students currently in their third year of study. The measurement instruments used, entailed a purpose-designed qualitative questionnaire, the subjective report questionnaire, the calibrated Zephyr BioHarness and the Grinbath EyeTracker. Care was taken to address the appropriate ethical considerations (Wester, 2011) by *inter alia* obtaining informed consent and ensuring that proper debriefing and explanations were provided to each participant regarding the deception used. The results of the study will be discussed in Chapter 4.

CHAPTER 4: RESULTS

4.1 Introduction

In order to evaluate the effect that the media and photoshopping might have on male's perception of female attractiveness, and the consequential experience of interpersonal attraction, this research study used a mixed-method design. In line with the mixed-method triangulation technique (see 3.2), this chapter will discuss the analysis of the quantitative and qualitative results separately. Chapter Four will therefore highlight the results regarding the statistics, the results obtained from the Eye-tracker and the subjective reports on attractiveness. Additionally, an in-depth discussion will be presented on the thematic analysis performed on the qualitative data retrieved from the questionnaires. Interpretation and integration of the results will occur in Chapter Five.

4.2 The Zephyr BioHarness and Viewing time

The aim of the quantitative analysis in this study was to compare the physiological responses (measured by the Zephyr BioHarness), that participants experienced while viewing the un-photoshopped images (images 1A, 2A, 3A, 4A and 5A) and the photoshopped images (images 1B, 2B, 3B, 4B and 5B). In other words, any physiological responses while viewing image 1A was compared to the physiological responses while viewing 1B. The same was done for 2A and 2B, 3A and 3B and so forth. This analysis was done on the physiological measures identified in 3.5.2.2, namely, heart rate, breathing rate and heart rate variability. A further comparison was drawn between the viewing time of the un-photoshopped images and the photoshopped images. As with the physiological constructs, this was done for each image set - in other words the viewing time for image 1A was compared with the viewing time for 1B, 2A to 2B etcetera. See Figure 4.1 for an example of an image set from the slideshow (in other words an image 'A', the un-photoshopped image, and the coinciding image 'B', the

photoshopped image), and Appendix 3 for all five the image sets viewed during the slideshow.



Figure 4.1. Image 1A compared to image 1B

4.2.1 Outliers

Before the statistical analyses were conducted, any outliers were identified and removed because it could skew the data (Gravetter & Forzano, 2012). A boxplot was used to locate the outliers. See Figure 4.2 below for one example of the outliers identified, in this case for image 2A heart rate, and Appendix 7 for all the other relevant boxplots. Interestingly, the outliers were consistently related to participant 3, 5 and 23. However, the reason for this is unclear.

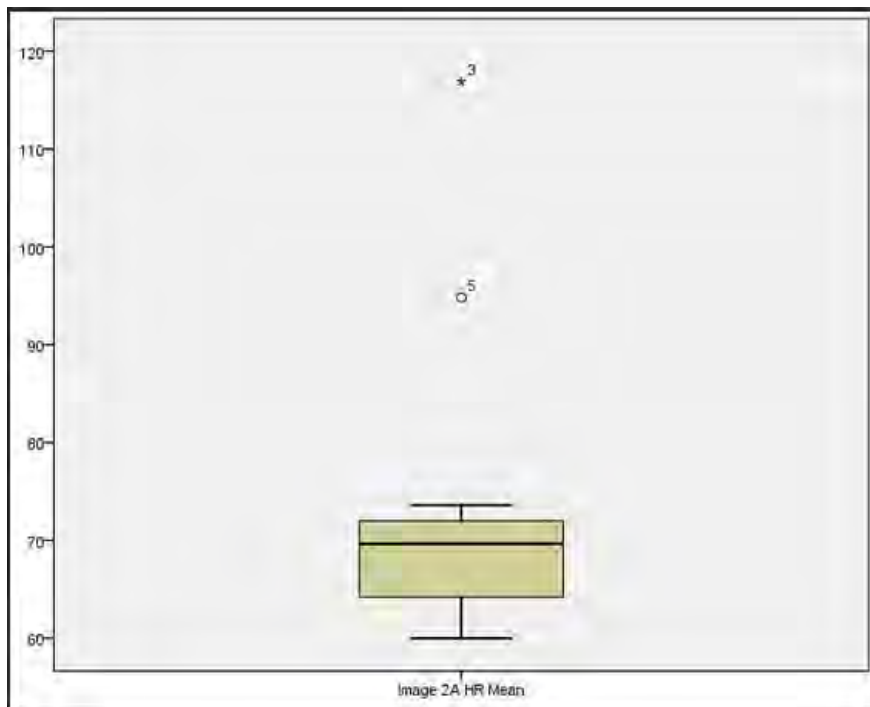


Figure 4.2. Outliers for image 2A for heart rate

Descriptive statistics were computed for each variable under investigation before inferential statistics were conducted (see 4.2.2 below). Due to the small sample size obtained, the inferential statistics required the use of a non-parametric technique to analyse the data retrieved (Corder & Foreman, 2014). As mentioned in section 3.8.1, this study also required a repeated measure-test as the same group of individuals, or the same sample, was tested during different treatment conditions (Gravetter & Forzano, 2012).

Accordingly, a non-parametric test for repeated measures for two groups, namely the Related-Samples Wilcoxon Signed Rank Test, was used to determine whether there was a significant difference in participants' physiological response when viewing image 1A versus 1B, 2A versus 2B and so forth. A 5% level of significance was used and thus significance values smaller than 0.05 were regarded as significant. The effect size (r) of the difference was also calculated by dividing the Standardized test statistic by the square root of $2*N$ (N being the number of observations). In this study, using Cohen's criteria, an effect size of 0.1 was

regarded as small, 0.3 – 0.5 as medium, and larger than 0.5 was regarded as a large effect size (Pallant, 2007). Effect sizes smaller than 0.1 were regarded as negligible (Pallant, 2007). The analysis was done using the mean rank scores for each image. Due to difficulties experienced with the BioHarness, only 24 of the 25 participants' data were analysed.

4.2.2 Descriptive statistics

As was mentioned previously, descriptive statistics were computed for heart rate, breathing rate, heart rate variability and viewing time before any other analyses were conducted. Tables 4.1-4.4 present the raw data analysed within the study. The significance of these changes in relation to this study will be discussed in Chapter Five.

Table 4.1: *Mean rank changes for Heart Rate*

Image set	Mean Rank for Image A	Mean Rank for image B
1	73.51	72.78
2	69.23	68.62
3	71.13	71.85
4	69.87	69.28
5	72.39	72.76

Table 4.1 shows that the mean rank for heart rate decreased from the non-photoshopped image to the photoshopped image for image sets one, two and four, while the heart rate for image sets three and five increased. Image set one shows the largest difference in heart rate, showing a significant decrease.

Table 4.2: *Mean rank changes for Breathing Rate*

Image set	Mean Rank for Image A	Mean Rank for image B
1	16.47	16.87
2	17.35	17.14
3	16.38	15.85
4	15.96	15.88
5	16.68	16.87

Similar to the findings in Table 4.1, Table 4.2 indicates that the mean rank for breathing rate decreased, from the non-photoshopped image to the photoshopped image, for the majority of images sets, namely image set two, three and four. Image sets one and five however showed an increase in the mean rank for breathing rate. Image set three elicited the largest change, although this decrease in breathing rate was not large enough to be considered significant.

Table 4.3: *Mean rank changes for Heart Rate Variability*

Image set	Mean Rank for Image A	Mean Rank for image B
1	64.37	64.86
2	66.87	65.33
3	62.38	60.78
4	59.64	60.36
5	59.14	58.16

Table 4.3 shows a large decrease in the mean rank for heart rate variability from the non-photoshopped image to the photoshopped image for image sets two, three and five. Image sets one and four elicited an increase in heart rate variability, however these increases were deemed too small to be considered as significant changes.

Table 4.4: *Mean rank changes for Viewing Time*

Image set	Mean Rank for Image A	Mean Rank for image B
1	18.00	16.42
2	13.33	13.54
3	12.62	12.92
4	16.54	16.71
5	11.29	13.54

Table 4.4 illustrates an increase of the mean rank for viewing time from the non-photoshopped image to the photoshopped image for all the image sets, except for image set one. Image set five elicited the largest increase in viewing time.

4.2.3 Results: Wilcoxon Signed Rank Test

The results from the Wilcoxon Signed Rank Test will now be discussed individually for each physiological construct analysed in order to determine whether there were any significant differences in the participants' physiological responses to the various images. This discussion will be supported and illustrated with the use of tables that indicate the significance level, the direction of significance, the sample size, the effect size for the significant differences and the interpretation of the effect size. Each table will also indicate whether the research hypothesis was rejected or accepted. A possible explanation for the physiological findings in this study will be thoroughly discussed in Chapter Five, section 5.2.1.

4.2.3.1 Results yielded for heart rate

The results of the analysis on heart rate indicated one significant difference between two time points, namely between image 1A and 1B. An evaluation of this difference indicated a significant decrease in heart rate from image 1A, the non-photoshopped image, to image 1B, the photoshopped image, with a large effect size ($r = .50$). No other significant differences were found. The results for this variable are displayed in Table 4.5.

Table 4.5: Results, significance level and effect size for Heart Rate

Heart Rate	Significance level	Conclusion	Higher score (where relevant)	Sample size	Effect size	Effect size interpretation
Image 1A vs. 1B	0.02	Accept the research hypothesis	Image 1A	19*	0.50	Large
Image 2A vs. 2B	0.54	Reject the research hypothesis		22**		

Image 3A vs. 3B	0.128	Reject the research hypothesis		24		
Image 4A vs. 4B	0.270	Reject the research hypothesis		22**		
Image 5A vs. 5B	0.317	Reject the research hypothesis		24		

* Missing values = 5

** Missing values = 2

4.2.3.2 Results yielded for breathing rate

No significant differences were found in the breathing rate of the participants at a significance level of 5% ($p < .05$). The results are reported in Table 4.6.

Table 4.6: Results, significance level and effect size for Breathing Rate

Breathing Rate	Significance level	Conclusion	Sample size
Image 1A vs. 1B	0.309	Reject the research hypothesis	17*
Image 2A vs. 2B	0.219	Reject the research hypothesis	24
Image 3A vs. 3B	0.391	Reject the research hypothesis	24
Image 4A vs. 4B	0.513	Reject the research hypothesis	24
Image 5A vs. 5B	0.339	Reject the research hypothesis	22**

*Missing values = 7

** Missing values = 2

4.2.3.3 Results yielded for heart rate variability

The Zephyr BioHarness did not record the heart rate variability data for one of the participants until image 4B in the slideshow. Accordingly, the sample size for heart rate variability is 23 participants for image set one, two, three and four, while image set five had 24 participants with a full data set.

The results with regards to heart rate variability indicate that there were three instances, specifically for image set 2, 3 and 5, where there was a significant difference across the two time points measured. In all three instances, there was a significant reduction in heart rate variability from image A (the non-photoshopped images) to image B (the photoshopped images), with all three indicating a medium effect size (see Table 4.7).

Table 4.7: Results, significance level and effect size for Heart Rate Variability

Heart Rate Variability	Significance level	Conclusion	Higher score (where relevant)	Sample size	Effect size	Effect size interpretation
Image 1A vs. 1B	0.931	Reject the research hypothesis		18*		
Image 2A vs. 2B	0.031	Accept the research hypothesis	Image 2A	22**	0.33	Medium
Image 3A vs. 3B	0.011	Accept the research hypothesis	Image 3A	23***	0.38	Medium
Image 4A vs. 4B	0.114	Reject the research hypothesis		23***		
Image 5A vs. 5B	0.019	Accept the research hypothesis	Image 5A	24	0.34	Medium

*Missing values = 6

**Missing values = 2

*** Missing values = 1

4.2.3.4 Results yielded for viewing time

After the different physiological constructs from the Zephyr BioHarness were measured and compared, the researcher decided to determine whether the difference in viewing time of the un-photoshopped images (1A-5A) and the photoshopped images (1B-5B), was statistically significant. This information was important as an increase in viewing time has been linked to higher rating of attractiveness, as mentioned in 2.2.1. In other words,

the viewing time for image 1A was compared to the viewing time of image 1B, 2A compared to 2B, and so forth. It was found that there was a significant increase in viewing time for image set 5, with a medium effect size ($r = .35$). No other significant differences were found. The results are reported in Table 4.8.

Table 4.8: *Results, significance level and effect size for Viewing time*

Viewing Time	Significance level	Conclusion	Higher score (where relevant)	Sample size	Effect size	Effect size interpretation
Image 1A vs. 1B	0.201	Reject the research hypothesis		19*		
Image 2A vs. 2B	0.741	Reject the research hypothesis		24		
Image 3A vs. 3B	0.551	Reject the research hypothesis		24		
Image 4A vs. 4B	0.517	Reject the research hypothesis		24		
Image 5A vs. 5B	0.016	Accept the research hypothesis	Image 5B	24	0.35	Medium

*Missing values = 5

4.2.4 Summary of the quantitative analysis

Looking at the results from the non-parametric analysis, five significant differences were found. The first significant difference was found for heart rate in image set 1, in other words, there was a significant difference in the heart rate measured between image 1A and 1B. Heart rate variability as a physiological construct had three significant differences, namely for image sets 2, 3 and 5. Finally, a significant difference was found for image set 5 when comparing the viewing time between image 5A and 5B. These findings indicate the presence of some physiological response to the photoshopped and non-photoshopped images of women shown to the participants, with the most frequent physiological changes occurring

in heart rate variability. See Table 4.9 for a summary of the five significant differences identified in this study.

Table 4.9: *Summary of the five significant differences found*

Physiological Construct	Image Set	Description
Heart Rate	1	There was a significant decrease in Heart Rate from image 1A to image 1B
Heart Rate Variability	2	There was a significant decrease in Heart Rate Variability from image 2A to image 2B
	3	There was a significant decrease in Heart Rate Variability from image 3A to image 3B
	5	There was a significant decrease in Heart Rate Variability from image 5A to image 5B
Viewing Time	5	There was a significant increase in Viewing Time from image 5A to image 5B

4.3 Analysis of the Eye-tracker

As mentioned in 2.2.1, pupil dilation is an important measurement of physiological arousal. Unfortunately, the tool used to measure pupil dilation was not working when the data was collected and could not be used along with the Eye-tracker. Due to time and cost constraints, the researcher could not wait for it to be fixed and it was hence excluded as a physiological construct.

The Eye-tracker records any eye movement on the screen and illustrates this movement through a variety of different styles such as the Heatmap, Gaze Plot, Clusters and Bee Swarm (see Figure 4.3).

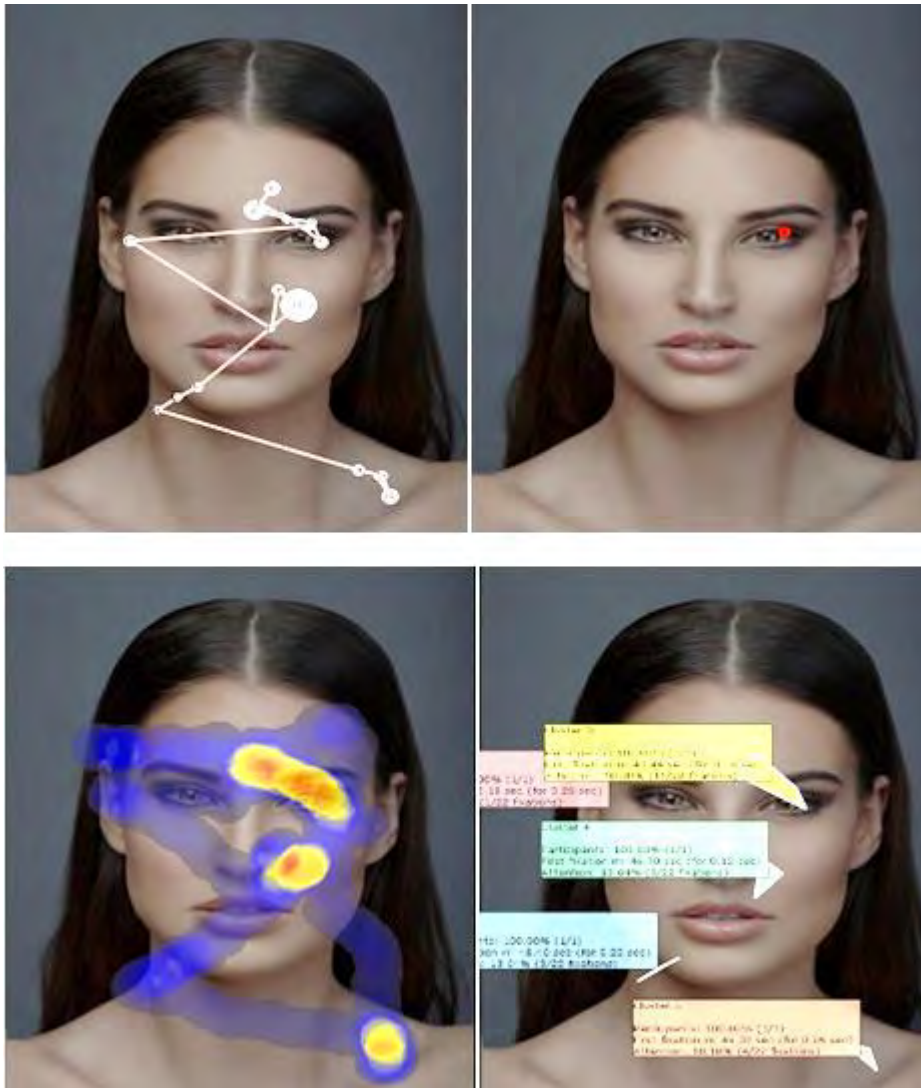


Figure 4.3. Styles of analysis available for the Eye-tracker data

*Figure 4.3 is an illustration of the different styles. Top left: Gaze Plot; Top right: Bee Swarm; Bottom left: Heatmap and Bottom right: Clusters

In this study, the data yielded by the Heatmap was used for interpretative purposes. The Heatmap provided a visually compelling indication of where the participants looked on the image and more specifically, for how long the gaze lingered at each point. As illustrated in Figure 4.3, the Heatmap shows a progression from blue to yellow to orange to red, with the

red areas indicating where the image was looked at the most often and/or for the longest time for each participant.

4.3.1 Results of the Eye-tracker

The results of the Eye-tracker indicated that the majority of participants engaged in a 'social gaze', as discussed in section 3.5.2. Accordingly, they mostly focused on the eyes and mouth of the women in the images shown. This was true for both the non-photoshopped images and the photoshopped images, with little variance in the areas viewed for each participant respectively. In other words, each participant generally followed the same viewing patterns for the non-photoshopped images as they did for the photoshopped images. Consequently, a point of saturation was quickly reached as the vast majority of videos produced by the Eye-tracker indicated similar patterns. An example of a resulting 'social gaze' Heatmap is displayed in Figures 4.4 and 4.5. Appendix 8 contains more of the examples illustrating the social gaze.



Figure 4.4. Eye-tracker data for image 3A versus 3B



Figure 4.5. Eye-tracker data for image 5A versus 5B

One noticeable difference in the viewing patterns between the non-photoshopped and photoshopped images was that some participants paid more attention to the eyes of the photoshopped women. See Figures 4.6 and 4.7 as an example and Appendix 9 for more illustrations of this tendency.



Figure 4.6. Eye-tracker data for image 2A versus 2B

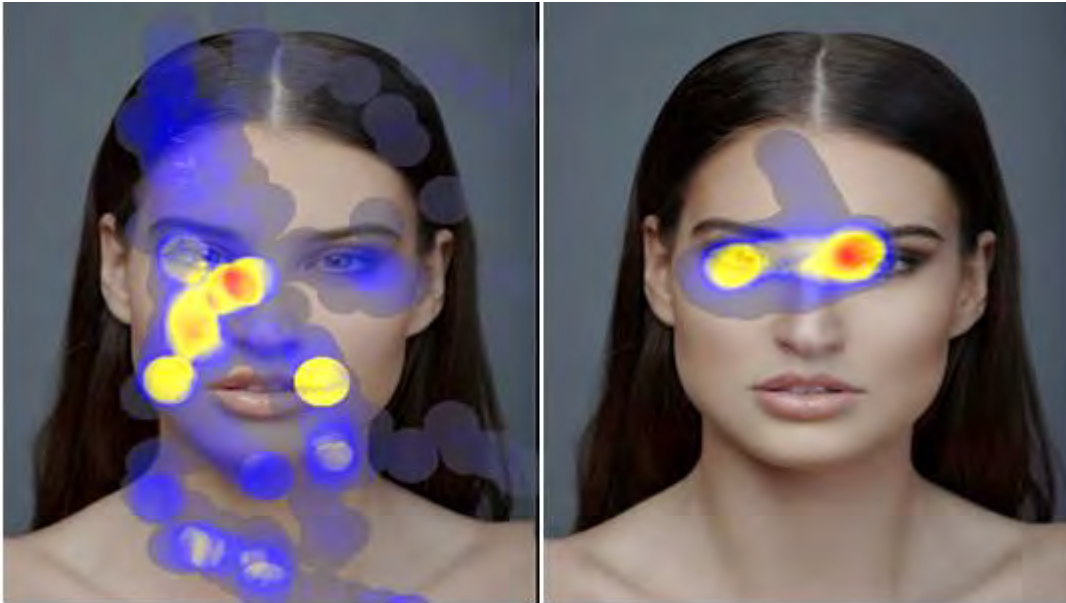


Figure 4.7. Eye-tracker data for image 1A versus 1B

4.4 Thematic Analysis Results

4.4.1 The analysis process followed

As mentioned in 3.8.2, the questionnaire (see Appendix 2) was analysed using the Six-Phase Approach to Thematic Analysis as described by Braun and Clarke (2006). Each phase will be discussed as relevant to this particular study. This discussion will then be followed by a description of the data, including the themes, sub-themes, response codes and data extracts as relevant to the data set and the goals of this study, with each theme thoroughly defined and discussed. It should be noted that during each phase of the analysis, the codes and themes were driven by the content of the data and the aims of the study. Resulting codes and themes were therefore not theoretically driven.

In the first phase, as prescribed by Braun and Clarke (2006), it was important to become familiar with the data. The questionnaires were first read and re-read in its entirety for all 25 participants. As initial thoughts and possible patterns in the data became known, they were recorded. The questionnaires were then read one question at a time for all 25

participants - in other words, all the responses to question one was read, then all the responses for question two, and so forth. This allowed further note taking and a stronger identification of possible patterns.

Throughout the second phase (Braun & Clarke, 2006) initial codes were created manually and data extracts were collated under each relevant code. This was done using the notes in phase one and any interesting features within the data. There are too many response codes and data extracts to list here, however Table 4.10 below will contain some of the response codes regarding photoshop, with a supporting data extract for each, in order to illustrate the process followed.

Table 4.10: *Illustration of response codes and supporting data extracts*

Response Codes	Supporting data extract
Beauty perceptions in media	"It's deceiving to society since most people believe what they see on media sources and in this case people believe that beauty is what they see in media..." - Participant 21
Impact on women	"...make women live up to unreachable goals that effect their self-worth" - Participant 24
Conflicting opinions	"...first is an appreciation for the beauty intended. The second...is annoyance that the image is false..." - Participant 4
Beauty preferences	"...often, (it) is those flaws that make them beautiful and stand out, to me" - Participant 14
Marketing value	"It is a good marketing strategy and from a business point of view...creating a market for 'self-enhancers'..." - Participant 20
Skin	"...removes blemishes and wrinkles, any irregularity of the skin" - Participant 2

The response codes were separated or merged in order to ensure an accurate portrayal of the data as the questionnaire was re-read. For instance, some response codes (see Tables 4.15, 4.16, 4.18 and 4.19) were merged into 'others' as the codes individually did not have enough data to support its own grouping. Conversely, in the sub-theme 'How is photoshop used', the response codes 'Enhancement of beauty' and 'Decrease in imperfections' were initially grouped together under one code but this single code was later separated in order to emphasise the insight participants had on the use of photoshopping and to demonstrate that photoshop is not only used to increase certain attractive features, but also to remove certain unattractive features (Haas et al., 2012). Various response codes made up a sub-theme. For example, the sub-theme 'How is photoshop used?' contains four different response codes, namely the 'Enhancement of beauty', a 'Decrease in imperfections', an 'Increased appeal of products and models', and 'Digital adjustments'.

As recommended by Braun and Clarke (2006), the third phase involved the creation of themes. The various data codes were actively interpreted and grouped into a variety of themes and sub-themes ensuring an internal coherence within each theme and a distinction between themes. Creating specific themes was made easier by the structure provided through the questionnaire, as various questions on similar topics were read and re-read together. Here, however, it was important to ensure that the researcher did not limit the themes to the questions asked, but rather to the data retrieved from the questionnaire as a whole. Accordingly, after reading the participants responses to specific questions, the entire questionnaire was read to check for any further relevant data extracts for each theme. The themes were then divided into sub-themes where relevant. For instance 'Exposure to photoshop' was divided into 'Intentional exposure' and 'Coincidental exposure' sub-themes. See Table 4.11 for the initial themes and sub-themes.

Table 4.11: *A summary of the initial themes and sub-themes created*

Themes	Sub-themes
1. Exposure to photoshop	Intentional exposure
	Coincidental exposure
2. Photoshop usage in media	Knowledge of usage
	How is photoshop used
	Frequency of usage
	Targeted areas
3. Opinion of photoshop	Negative opinion
	Positive opinion
4. Features of attractiveness	Features highlighted
5. Impact of photoshopped women on men	Negative impact
	No impact

During the fourth phase, the various themes and sub-themes were reviewed (Braun & Clarke, 2006). Certain themes were separated. The theme 'Photoshop usage in media' initially entailed the sub-themes 'Knowledge of usage', 'How is photoshop used', 'Frequency of usage' and the 'Targeted areas'. However, given the importance in this particular study of the features that are changed through photoshop, the researcher divided this theme into two separate entities, namely 'Knowledge of photoshop' and 'Photoshop usage in media', with the last having its own sub-theme of targeted areas. Furthermore, the theme 'Features of attractiveness' was divided into the 'Facial features' and the 'Bodily features' of attractiveness, as both the facial and bodily characteristics were mentioned to a great extent in relation to attractiveness and the use of photoshop in media. Conversely, the sub-theme 'Knowledge of usage' was removed completely as it did not have enough substantial data to support its own sub-theme and did not add value to the study. See Table 4.12 for a summary of the final themes and sub-themes.

Table 4.12: *A summary of the final themes and sub-themes created*

Themes	Sub-themes
1. Exposure to photoshop	Intentional exposure
	Coincidental exposure
2. Knowledge of photoshop	How is photoshop used
	Frequency of usage
3. Photoshop usage in media	Targeted areas
4. Opinion of photoshop	Negative opinion
	Positive opinion
5. Features of attractiveness	Facial features
	Bodily features
6. Impact of photoshopped women on men	Negative impact
	No impact

The fifth phase involved defining and describing each theme as a separate entity, while also relating it to the aims and objectives of the study (Braun & Clarke, 2006) (see 4.4.2). Data extracts were incorporated in support of each theme and sub-theme as identified during phase three and four of the process.

In the final phase of the thematic analysis, the researcher was required to write a detailed analysis of the data extracted from the questionnaires (Braun & Clarke, 2006). The themes and sub-themes are discussed in detail in 5.2.3 as it relates to the aims and objectives of the study, relevant literature on the topic and the data gathered from the other methods of data collection. As mentioned in 3.2 above, the triangulation design of this study entails the separate analysis of quantitative and qualitative data, with the exploration and integration of these findings occurring during the interpretation of results, which will be presented in Chapter Five.

4.4.2 Defining and describing the final themes, sub-themes and codes

This section will adhere to the following structure; a discussion on the themes related to the media and photoshopping, such as frequency of exposure to media, understanding of photoshopping and opinions on photoshop and its consequences; the responses regarding what is perceived as female attractiveness; and then the effect that the media and photoshop has on these perceptions of attractiveness.

There are certain aspects throughout the themes that are recurrently mentioned. Therefore, these aspects will be explored and explained within each relevant context, with data extracts to support the various data codes and to highlight the nuances within each theme.

4.4.2.1 Exposure to photoshop in media

The first theme identified the average amount of exposure to media that the participants experience. Most participants have indicated that intentional exposure is not very regular, with 20% of the participants showing exposure to male-directed magazines once monthly, and 52% of participants indicating exposure once weekly. Nonetheless, the participants report that they are unintentionally exposed to media and photoshopping multiple times per day through billboards, social media networks, advertisements and so forth. Exposure in this study therefore included anything ranging from "constantly (being) bombarded by it" to "monthly". Furthermore, this exposure included both the intentional exposure to photoshopped women in male-directed magazines, as well as any exposure which occurred coincidentally via advertisements, social media and so on.

It should be noted that in some instances, where one word responses were given by the participants, the tables will only contain a response code as a representation of the data retrieved and not a supporting data extract, see Table 4.13 for an example.

Table 4.13: *The participants' exposure to photoshop in the media*

Theme	Sub-theme	Response codes	Data Extracts to illustrate relevant sub-theme
Exposure to photoshop	Intentional exposure	Daily	
		Weekly	
		Monthly	
		Other: Once every three months, six months or yearly	
	Coincidental exposure	Multiple times per day	"...uhm, constantly bombarded by it. Five to ten times per day" - Participant 4 "More than ten times daily. Ads on Facebook or social media do increase the exposure" - Participant 14
		Daily	"Daily via the internet - Social media" - Participant 15 "Every day. You can't get away from advertising since it's readily available in so many forms..." - Participant 16 "Driving to-and-fro my house and varsity, browsing in stores, browsing advertisements" - Participant 17 "...especially images seen on social networks" - Participant 23
		Every second day	"Possibly every day, but definitely a minimum of four times per week" - Participant 11
	Weekly		

4.4.2.2 *Understanding of the digital enhancement of images in the media*

This theme, 'Knowledge of photoshop', was elicited through one of the questions in the questionnaire, which enquired about whether the participants knew of the existence of

photoshop. The participants were also prompted for a description of what they thought photoshop entailed. As mentioned in 4.4.1, it was important to not limit the theme to the questions asked during the qualitative data collection process. Accordingly, the entire questionnaire of each participant was re-read in order to ensure that this theme would be comprehensively covered and would be an accurate reflection of all the data retrieved.

It was found that all 25 participants had heard about and understood photoshopping to varying degrees. While some participants only mentioned that it was the digital enhancement of an image, others could provide a more in depth view, including knowledge around what it was used for and why, for instance, "Skin is probably also changed to fit the magazine or advertisement needs". Those who portrayed a deeper understanding of photoshop mentioned not only the enhancement of certain positive characteristics of a face "...to make the person in the picture look better", but also the removal of certain unattractive characteristics "...to remove any blemishes or disliked facial features". Furthermore, some participants understood that photoshop is used to make an image, the models and the products themselves, look more appealing to the viewer specifically. All 25 participants identified that photoshopping is very frequently used in the media, indicating that either most or all images in the media are photoshopped. This theme, 'Knowledge of photoshop' therefore entails the knowledge of the existence of photoshop as a whole, how it is understood by the participants with regards to what it entails specifically, as well as how often it is employed in the media, see Table 4.14.

Table 4.14: *Knowledge and understanding of photoshop*

Theme	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Knowledge of photoshop	How is photoshop used	Enhancement of beauty	"...highlight or exaggerate certain features..." - Participant 8 "...to make the person in the picture look better" - Participant 15



			<p>"...enhancing people's faces in pictures for social media or magazines" - Participant 18</p> <p>"It enhances their attractiveness and sexuality" - Participant 19</p>
		Decrease in imperfections	<p>"...to remove any blemishes or disliked facial features" - Participant 6</p> <p>"Removal of unwanted blemishes or unsightly skin tones..." - Participant 7</p>
		Increased appeal of products and models	<p>"...editing an image to improve its visual attractiveness" - Participant 2</p> <p>"...editing of a photo to make the subject of the photo, or the photo itself, appear more appealing" - Participant 11</p> <p>"...seem more attractive to the target market" - Participant 12</p> <p>"...make it more appealing to the viewer..." - Participant 17</p> <p>"Skin is probably also changed to fit the magazine or advertisement needs" - Participant 24</p>
		Digital adjustments	<p>"Software program that allows you to change the background of a photo..." - Participant 1</p> <p>"The use of a cell phone application to edit photographs..." - Participant 6</p> <p>"Adding more richness to the colour" - Participant 25</p>
	Frequency of usage	All images	<p>"Every picture published in a magazine or social media is photoshopped" - Participant 8</p> <p>"If it is in a magazine, you can almost bet on it being photoshopped" - Participant 12</p> <p>"...almost any image of a celebrity or 'icon' that appears in the media has been edited...also in adverts" - Participant 16</p> <p>"...all static images..." - Participant 22</p>

		Most images	<p>"Photoshopping has become common practise in almost all media images" - Participant 10</p> <p>"...especially the front covers of magazines" - Participant 19</p> <p>"All the pictures containing models, less with pictures containing celebrities" - Participant 24</p> <p>"...(in) most magazines it is highly evident when looking at the pictures...some are more subtle but they still use it" - Participant 25</p> <p>"...especially in magazines that expose the body, or to draw attention to the face; skin, eyes, teeth" - Participant 17</p>
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4.4.2.3 Targeted use of photoshop on women in the media

This theme, 'Photoshop usage in media', builds on the previous theme identified in 4.4.2.2 which shows that most participants knew of the existence of photoshop, how it is generally used and how frequently it is employed in media images. More specifically, this theme covers the areas and characteristics that are targeted by photoshop in the media. This theme is intentionally kept as a separate entity, due to its importance in this particular study as well as its potential relationship with the eye tracking data and the identified features of attractiveness as discussed in 4.4.2.5.

The data codes are listed in order of the popularity of the responses made by the participants. As indicated in Table 4.15, most participants mentioned photoshopping of the skin and eyes; "...removes blemishes and wrinkles, any irregularity of the skin" and "...width of eyes, as well as size" respectively. Interestingly, the main focus in this theme was on changes made to facial features, while photoshopping of bodily features were only mentioned sporadically.

Table 4.15: *Targeted use of photoshop on women in the media*

Theme	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Photoshop usage in media	Targeted areas	Skin	"...removes blemishes and wrinkles, any irregularity of the skin" - Participant 2 "...zits, freckles and scars (are removed)" - Participant 4
		Eyes, including colour, size and brightness	"...width of eyes, as well as size" - Participants 8 "Pupils...and eyelashes" - Participant 19
		Weight	"Minimise...cellulite (and) fat roles" - Participant 19
		Size of body parts, including breasts, waistline, buttocks and neck	"...the waist and the buttocks..." - Participant 6 "...shoulder width and neck length" - Participant 8 "...breasts and buttocks regions are enhanced to portray a more desirable size" - Participant 10
		Facial structure and contours	"Bones, proportions and positions (are changed)" - Participant 4 "Shadows are used to enhance certain attractive facial features" - Participant 2 "The curves of the face (are changed)" - Participant 14
		Other, including teeth whitening, hair colour, lips, legs	"(Lips are given) a fuller look" - Participant 17

4.4.2.4 *Opinions about photoshop*

This theme covers the various opinions of photoshopping itself. The sub-themes 'Negative opinion' and 'Positive opinion' have been separated into Tables 4.16 and 4.17 respectively, for the convenience of the reader.

The 'Negative opinion' sub-theme covers a wide range of issues raised by the participants. These opinions include issues with photoshopping itself, which ranges from the false perceptions created, "...it creates false, and even ridiculous standards", to the impact on women and their self-image, "Make women live up to unreachable goals that effect their self-worth", to conflicting opinions where the participants provided two seemingly contradictory views "...it's unrealistic to appear like that all the time... Hating on photoshop is no excuse to let yourself go". Additionally, the participants point out that their concerns about photoshop are sometimes more subjectively experienced due to their own beauty preferences "...natural beauty is far more pleasant to look at" and other possible complications "...if they looked like the magazine advert I won't feel that I can relate to them".

Table 4.16: *Negative and conflicting opinions of photoshop in the media*

Theme	Sub-theme	Response code	Data extracts to illustrate relevant sub-theme
Opinion of photo-shop	Negative opinion	Beauty perceptions in media	"...it creates false, and even ridiculous standards by which people try and aspire to be like" - Participant 11 "It's deceiving to society since most people believe what they see on media sources and in this case people believe that beauty is what they see in media..." - Participant 21
		Impact on women	"...this provides young children, particularly girls, with a false image of what they should look like" - Participant 3 "Photoshopped images are deceiving and create much anxiety and depression among women as they create an image that women cannot live up to" - Participant 5 "...it seems that women become more insecure about their



		<p>facial features now that photoshop is available" - Participant 6</p> <p>"...make women live up to unreachable goals that effect their self-worth" - Participant 24</p>
Conflicting opinions		<p>"...first is an appreciation for the beauty intended. The second...is annoyance that the image is false..." - Participant 4</p> <p>"If photoshopping is used to do minor editing of bodily or facial features then I have no problem with its use. However, if used to...change the entire physical appearance... then I find it unethical and false marketing" - Participant 10</p> <p>"Photoshopping does increase attractiveness, but it tends to alter human's perception of beauty" - Participant 11</p> <p>"They do mislead you for sure. But I also think a woman has to be fairly attractive to appear in such advertising in any case. Photoshop just perks it up a little" - Participant 16</p> <p>"...it's unrealistic to appear like that all the time... Hating on photoshop is no excuse to let yourself go" - Participant 16</p>
Beauty preferences		<p>"It is completely unnecessary and bizarre. Natural beauty is far more pleasant to look at" - Participant 7</p> <p>"If all women were magazine models, some might think that it would be a perfect world, but I feel that it would be like eating one breakfast cereal for the rest of your life. It takes the spark out of your day" - Participant 12</p> <p>"...often, (it) is those flaws that make them beautiful and stand out, to me" - Participant 14</p> <p>"...beauty is a perception that is unique to each individual and should not be fiddled with" - Participant 17</p> <p>"...what is seen in magazines is NOT perfection" - Participant 17</p>
Other		<p>"If they looked like the magazine adverts I won't feel that I can relate to them and they would seem less approachable" - Participant 2</p> <p>"...I do believe that obesity should not be glorified as being overweight has multiple health risks, although every woman</p>

		<p>has her own beauty" - Participant 5</p> <p>"...women portrayed in media seem to have a fake and non-real appearance" - Participant 10</p> <p>"Photoshopping in manipulative..." - Participant 10</p>
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The sub-theme 'Positive opinion' entails attitudes towards photoshopping that range from an appreciation of the increased beauty of women "I do believe that it brings out more attention and sexuality in women", to the marketing value that it possesses "...from a business point of view...(it creates) a market for 'self-enhancers'...".

Table 4.17: *Positive opinions of photoshop in the media*

Theme	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Opinion of photoshop	Positive opinion	Increases beauty	<p>"...some images are photoshopped (and) it's hardly noticeable and makes the women look very nice" - Participant 8</p> <p>"I love females, especially physically...unless photoshop is obvious...I do believe that it brings out more attention and sexuality in women" - Participant 19</p> <p>"If women want to be more attractive to males, then they should look more like that" - Participant 22</p>
		Marketing value	<p>"If it helps promote a product better and it is not intentionally hurting someone then it is fine" - Participant 14</p> <p>"It is a good marketing strategy and from a business point of view...creating a market for 'self-enhancers'..." - Participant 20</p>

4.4.2.5 Facial and bodily features of attractiveness

The fifth theme identified what the participants deemed attractive in a woman. The focuses of the participants' responses were on both facial and bodily characteristics. These two features have been divided into Table 4.18 and 4.19 for the convenience of the reader. Interestingly, although most of the participants agreed on the appeal of certain features, both bodily and facially, they differed in the specific details for each feature. For instance, many

participants mentioned 'Teeth' but some liked crooked teeth while others preferred straight teeth. Similarly, many participants mentioned weight, but there were differences within this category with some participants preferring 'skinny' women while others prefer 'chubby' women and yet others preferred 'fit' women. This differentiation in preferences was true for almost every data code identified in phase two of the thematic analysis for this theme.

Facial features in this theme are identified as any features from the neck and up, which are isolated to the face itself. Of the facial characteristics mentioned, the most prominent features were the eyes, with 84% of the participants mentioning this characteristic as a favourite facial feature, "...women who have more bright eyes...tend to have a more welcoming face/attitude when meeting them". 'Eyes' were followed by the mouth, with 44% of the participants reporting its aesthetic appeal. These findings coincide with the social gaze patterns established in the data retrieved from the Eye-tracker as discussed in 4.3.1. See Table 4.18 for further descriptions of facial features identified by the participants, along with supporting data extracts.

Table 4.18: *Features of attractiveness as identified by the participants, with specific reference to facial features*

Themes	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Features of attractiveness	Facial features	Eyes, including eyebrows	"...vibrant eyes. Should also be big...prominent eyebrows" - Participant 2 "The shape of the eyes...but the colour is the most striking feature..." - Participant 4 "...who smiles with her eyes" - Participant 11 "Eyes...are the most sincere part of a person" - Participant 15 "...eyes that penetrate your soul" - Participant 18 "...women who have more bright eyes...tend to have a more welcoming face/attitude when



		meeting them" - Participant 25
	Mouth, including lips, dimples, smile, and teeth	"Small mouth/thin lips" - Participant 4 "Nice and smooth lips" - Participant 21 "Symmetrical smile with dimples" - Participant 2 "Smile showing teeth" - Participant 24 "White, straight teeth" - Participant 3 "Non-perfect teeth, a crooked smile adds character" - Participant 25
	Nose	"Not a big nose as it must complement the face..." Participant - 5 "A small sharp nose" - Participant 3 "Button nose" - Participant 7 "Softer looking nose" - Participant 17
	Hair preferences	"I'm also a sucker for blondes..." - Participant 4 "Long, dark hair..." - Participant 8
	Combination of features	"Very well proportioned face..." - Participant 5 "Small mouth, average nose and big eyes" - Participant 9 "Delicate nose and features" - Participant 18 "Probably her smile, although the sum of all her facial features is important" - Participant 22
	Skin, including freckles and colour	"Fair complexion. Not light, not dark" - Participant 1 "...even skin that highlight any unique beauty spots on the face" - Participants 2 "...slightly tanned complexion" - Participant 11 "Freckles, some, not a lot" - Participant 14
	Face shape preferences	"Angular face..." - Participant 4 "Prominent cheekbones..." - Participant 2 "Round-to-pointy jaw line...overall soft face, no pronounced cheekbones" - Participant 17
	Other, including	"I do not really pay that much attention to facial features...as long as the individual is not lazy..." -

		<p>personality, natural beauty and relativity of importance</p>	<p>Participant 6 "I prefer a woman that can portray beauty without excessive physical enhancements, such as make-up or clothes that expose certain body parts..." - Participant 10 "I am a guy, so yes, I look at breasts and bum...that being said, (the) face is the most important. A girl can be drop-dead gorgeous without c-cups and a fitness model butt" - Participant 16</p>
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Bodily features in this case not only involves features from the shoulders and down, such as breast size, waists, etcetera; but also characteristics that effect the entire person on a physical level, such as weight, height and race. It is important that this be specified as people do show, for instance race or weight, in their faces, the latter as demonstrated by the reference "...skeletal sucked in cheeks", however, it is not a feature specifically limited to the face and is therefore grouped under 'Bodily features'. The data codes in Table 4.19 are listed in order of the popularity of responses, with weight being specified 56% of the time and height being specified by 40% of participants. Interestingly, both height and race were often linked to the participant himself as verified by quotes such as "Just shorter than me" and "Same skin colour as mine", respectively.

Table 4.19: *Features of attractiveness as identified by the participants, with specific reference to bodily features*

Theme	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Features of attractiveness	Bodily features	Weight preferences	<p>"Slender figure, but not too thin" - Participant 3 "...not skeletal sucked in cheeks..." - Participant 2 "Must have curves and a little bit (of a) big bum but not too big that it looks like she's fat" - Participant</p>



			<p>9</p> <p>"Active body - not in the sense of muscled but more in the line of slender" - Participant 12</p> <p>"A little chubby" - Participant 15</p> <p>"Not skinny, but also not chubby, so a fit girl" - Participant 16</p> <p>"...not fat, but not too skinny either" - Participant 18</p> <p>"Slender...shaped waistline...toned back" - Participant 19</p>
		Height preferences	<p>"Average..." - Participant 1</p> <p>"Tall..." - Participant 4</p> <p>"1.55-1.60 m" - Participant 8</p> <p>"Very short but normal attractive shortness" - Participant 9</p> <p>"Average height to short-ish, for a woman" - Participant 11</p> <p>"Just" shorter than me..." - Participant 20</p> <p>"Not short, but not taller than me" - Participant 22</p>
		Chest size preferences	<p>"Larger breasts" - Participant 1</p> <p>"...relatively flat chested - B-cup or less" - Participant 4</p> <p>"Natural breasts, not too big or too small, no offense" - Participant 20</p> <p>"A woman with nice female characteristics such as nice breasts" - Participant 23</p>
		Racial preferences	<p>"Same skin colour as mine" - Participant 4</p> <p>"Caucasian" - Participant 14</p> <p>"Light brown skin" - Participant 8</p>
		Combination of features	<p>"...prefer women that have proportionately sized body parts, that complement their overall body size" - Participant 10</p> <p>"I look at breasts and bum. But not like Kim</p>

			Kardashian, (it) just needs to be in proportion with their body" - Participant 16
		Other, including hands, legs, hips, posture, tattoos, collarbones and feet	"Long, thin, graceful fingers" - Participant 4 "Not a fan of tattoos" - Participant 16 "...defined collarbone - bone protruding" - Participant 19

4.4.2.6 Impact of photoshop on males' perception of female attractiveness

The final theme investigates what impact photoshop might have on how men perceive women, as identified by the participants. This theme was sub-divided into participants who believed that photoshopping had a negative impact on their perceptions of women, and those participants who believed that photoshopping in the media had no impact on their perceptions. The first group consists of 80% of the participants - in other words, 20 of the 25 participants thought that the media created certain expectations that are unrealistic and unachievable. In this theme, 'Negative impact' includes everything from an acknowledgment that photoshop does have some sort of an impact on them, "We are conditioned to believe that all women should look perfect" to the stronger stance that women in the real world are actually plain and disappointing compared to photoshopped women "I am sometimes disappointed by how some women really look".

The second group of participants believed that photoshop had no impact on them and how they perceive female attractiveness. This group comprised of 4 of the 25 participants (the final participant misunderstood the question in the questionnaire and did not mention anything related to this theme in the other answers throughout the questionnaire). In this

study, 'No impact' included participants who believed that they could separate reality from the media, "I realise these images are photoshopped...(I) still see women in the real world and find them attractive, without comparing them to photoshopped images". Some of the other participants related that physical appearance should not be the main judgement of a woman's attractiveness in the media or in real life and therefore photoshop did not have an impact on them, "I value women for who they are and I don't think society's perspective on what beauty (is) should be relevant". As indicated in Table 4.20, the participants' answers in both sub-themes, varied in intensity and strength of feelings towards the use of photoshop in the media.

Table 4.20: *Impact of photoshopped women in the media on males' perception of attractiveness*

Theme	Sub-theme	Response codes	Data extracts to illustrate relevant sub-theme
Impact of photo-shopped women on men	Negative impact	Unrealistic expectations	<p>"It widens the gap between what I find sexually attractive and what I find visually attractive" - Participant 2</p> <p>"...(when) you actually see the original photo...you start to notice how "not beautiful" they are" - Participant 6</p> <p>"Unrealistic expectations are imprinted on me by magazines and social media" - Participant 7</p> <p>"I expect women to look as flawless and have perfect skin and facial features. I am sometimes disappointed be how some women really look" - Participant 8</p> <p>"When I see one (a photoshopped image) I tend to raise my hopes...but when I actually...see her in real life it becomes very difficult to stand such a person as (she) is no longer the one I got attracted to" - Participant 9</p> <p>"...when seeing people naturally I don't expect them to look so plain. It has also influenced my attraction to 'more beautiful women'" - Participant 11</p> <p>"...they look prettier but it is a false sense of attractedness, it</p>



			<p>is a shallow attraction and never progresses further" - Participant 15</p> <p>"...changes first impression(s) a lot" - Participant 16</p> <p>"It...creates a 'perfect' woman which every man would want, thus distracting us from the real ones right in front of us" - Participant 20</p> <p>"It allows...false realities to be created through modification..." - Participant 4</p>
		Conformity	<p>"(We are) moulded into believing that beauty has certain traits, that women need to adhere to, as men find these traits attractive" - Participant 5</p> <p>"...we expect to see girls as they look on T.V (and) billboards...and that's why sometimes they also feel it and put (on) tons of makeup, forgetting that natural beauty is also important" - Participant 18</p> <p>"By being constantly exposed to such images we are conditioned to believe that all women should look perfect and this may inhibit us from continuing our social encounters based purely on looks" - Participant 23</p>
	No impact	<p>Insight into deception</p> <p>"I realise these images are photoshopped...still see women in the real world and find them attractive, without comparing them to photoshopped images of women" - Participant 16</p> <p>Different priorities</p> <p>"I try not to look for perfection, but other properties including kindness, warmth etc. NOT a perfect face" - Participant 17</p> <p>"...I value women for who they are and I don't think society's perspective on what beauty (is) should be relevant. Human (to) human connection is more important than any factor beauty has to offer" - Participant 21</p>	

4.5 Results Related to the Subjective Reports Questionnaire

After completing the questionnaire, participants were asked to rate whether photoshopping had increased the attractiveness of the women used in the slideshow. Each participant was presented with the printed version of the images from the slideshow, with the before photoshop (image A) and after photoshop (image B) of each woman presented side by side (see Appendix 3). The participants were given two possible answers; yes and no. A 'no' indicating that in the participant's opinion, photoshop had not increased the attractiveness of the woman in question, and a 'yes' indicating an increase in subjectively experienced attractiveness.

Of the 25 participants, eight believed that all the women in the slideshow presentation showed an increase in attractiveness after photoshopping had been applied. Seven participants believed four of the five women had increased in attractiveness, and six participants reported that three of the five women were aesthetically enhanced. Of the remaining four participants, two indicated that only one set of images had been improved through photoshop, while the last two participants believed that two of the five sets of images had been improved aesthetically.

Interestingly, of the thirteen participants which indicated that three or four of the five image sets were improved, twelve selected the same image or woman as not having increased in attractiveness (namely image set 2 on the subjective report questionnaire see Appendix 3 and the corresponding image set one in the slideshow, see Appendix 5). This finding begs the question whether the woman in this image set was already experienced as attractive, therefore rendering the photoshopping mute, or whether the photoshopping was too extreme, leaving the woman to look too unnatural, or alternatively if the photoshopping was too subtle, which

made the image appear unchanged. Nonetheless, it is possible that these results might not be a reflection on photoshopping itself, but rather the specific image chosen by the researcher. Similarly, all 25 participants believed that the first image set presented (namely image set one on the subjective report questionnaire and the corresponding image set 5 in the slideshow, see Appendix 3 and 5 respectively) showed an increase in attractiveness, while 23 of the 25 participants reported an increased attractiveness for the fourth image set in the subjective report questionnaire (Image set 2 in the slideshow). It is therefore possible that the effectiveness of photoshop in increasing the attractiveness of women could be quite unpredictable. Nonetheless, the majority of participants did indicate a preference for most of the photoshopped women presented in the slideshow.

4.6 Conclusion

This chapter contains the results for the quantitative and qualitative data collected throughout this study. The statistical analysis showed that only five statistically significant changes in physiological responses to the images occurred. This chapter further indicated that the participants mostly focused on the eyes and mouth of the women in the images provided. This was true for most of the photoshopped and non-photoshopped images. Some participants however, showed an increase in attention to the eyes of the photoshopped images when compared to the non-photoshopped images of the same woman.

The qualitative results indicate that all the participants were regularly exposed to the media and knew about the use of photoshopping in media images. They could to some extent explain how photoshopping works, why it is employed in the media and which features are often changed and edited through photoshop. The results further illustrate what the participants find attractive in women, with focus on both facial and bodily features. The qualitative analysis additionally revealed that there are some mixed feelings regarding

photoshop with some participants having strong negative opinions about its use in media and others believing that photoshop is acceptable and sometimes necessary in the media. Finally, participants were asked to elaborate on how they themselves, and men in general, might have been impacted by exposure to women in the media, with mixed results emerging here as well. The majority of the participants believed that they are negatively affected by photoshop due to the creation of false expectations, while other participants believed that they are not affected as they could recognise the deception or choose to prioritise aspects other than beauty.

Despite the lack of extensive physiological results, this chapter indicates that the majority of the participants subjectively experienced the women in the slideshow as more attractive after they had undergone photoshopping.

The interpretation and integration of these results, in line with the aims and objectives of this research study, will follow in Chapter Five. This discussion will be succeeded by the strengths and limitations of this study, along with any future recommendations.

CHAPTER 5: DISCUSSION OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS FOR FUTURE RESEARCH AND CONCLUSIONS.

5.1 Introduction

Chapter Five will include the discussion and integration of the findings presented in Chapter Four. The quantitative and qualitative results will initially be discussed separately as they relate to the literature found. These two data sets will then be integrated with specific reference to the similarities and contradictions found. The results will then be discussed in relation to the research objectives and hypotheses as identified in Chapter One. Finally, the limitations and future recommendations of the study will be considered.

5.2 Exploration and Triangulation of the Results

The quantitative and qualitative results will first be investigated individually as they relate to the literature found on the relevant topics. Thereafter, in line with the triangulation design of a mixed-methods approach, they will be integrated, compared and contrasted.

5.2.1 Physiological responses to non-photoshopped and photoshopped images

An increase in attractiveness ratings has been linked to an increase in physiological arousal (Hughes et al., 2010; Kerber, 1981). Generally, a physiological response is identified when the Autonomic Nervous System, composed broadly of the Sympathetic and Parasympathetic Nervous System, is activated (Motofei & Rowland, 2005). In men, it is found that both these branches are activated during different phases of arousal (Motofei & Rowland, 2005; Rowland & Crawford, 2011). The Sympathetic Nervous System (SNS) is shown to be more dominant during the psychological experience of arousal (Motofei & Rowland, 2005). Heart rate variability is seen as a very sensitive and objective measure of the interaction between the Sympathetic and Parasympathetic Nervous Systems (Stanton, Lorenz,

Pulverman, & Meston, 2015; Lorenz, Harte, Hamilton, & Meston, 2012). When the SNS is activated, heart rate variability has been shown to decrease (Stanton et al., 2015).

During this study, three of the five significant differences in physiological responses to the images were found for heart rate variability. In all three cases, there was a significant decrease in heart rate variability from the non-photoshopped image (2A, 3A and 5A) to the photoshopped version of the same image (2B, 3B and 5B). As mentioned above, this decrease in heart rate variability indicates an increase in the activation of the SNS (Stanton et al., 2015), and thereby signifies the presence of psychological arousal (Motofei & Rowland, 2005). Similar to the findings in this study, research done by Stanton et al. (2015) also found that a decrease in heart rate variability was linked to an increase in arousal. Yet another study done on 52 participants, who were also presented with visually appealing stimuli, showed a decrease in heart rate variability as an indication of SNS activation and therefore physiological arousal (Lorenz et al., 2012). Lower heart rate variability is usually accompanied by an increase in heart rate and breathing rate (Stanton et al., 2015). In this study however, despite heart rate variability indicating a significant difference for the majority of the five image sets, there were no significant changes found in the breathing rate, and one significant decrease, instead of the expected increase, found in the heart rate measures for image set one. Rowland and Crawford (2011) found that heart rate, as a physiological construct, provided a variety of mixed results while viewing visually attractive stimuli. Some participants showed an initial decrease in heart rate, while others showed an initial increase in heart rate, and yet other participants showed a biphasic response, which refers to an initial deceleration followed by an increase in heart rate (Rowland & Crawford, 2011). The research done by Rowland and Crawford (2011) might explain why the heart rate in this study did not show much of a significant difference, as the mean ranks were analysed

and the idiosyncratic heart rates of each participant might therefore have cancelled each other out.

The researcher hypothesises that the portrait images in the slideshow did not activate the SNS enough to elicit significant differences in heart rate and breathing rate, but did activate the SNS enough that a sensitive measure, such as heart rate variability, could pick up any significant physiological changes. The limited physiological responses of the heart rate and breathing rate measurements could further be attributed to a variety of reasons. Firstly, the slideshow contained five sets of images, with each set containing an image of the same woman before and after photoshop. It is postulated that as models, these un-photoshopped women are already seen as attractive and might have elicited an attraction response already. It is possible that the ten second buffer screen did not allow the physiological constructs measured to decrease back to the baseline activity. In other words, the physiological response to image A might have still been present when the response for the next image, image B, was measured. Further research should be conducted on the length of the buffer used in between images for similar research designs.

As mentioned in 4.2, viewing time was also recorded and analysed for significant differences. This measurement was incorporated since, as discussed in section 2.2.1, an increased viewing time is found to correlate with increased attractiveness ratings (Geldart, 2010). Of the five image sets, one showed a significant difference - to be precise, there was a significant increase in the viewing time from image 5A to image 5B (see Table 4.8). This begs the question as to why this specific image set showed an increased viewing time, while the others did not. One possible explanation could be attributed to the fact that the woman in image set five had a few facial blemishes that were removed (see Appendix 3). According to research done by Haas et al. (2012) and Fink et al. (2006) blemishes are often removed through photoshop in the media, as a homogenous skin tone and texture is often related to an

increase in attractiveness, which would therefore increase viewing time (Geldart, 2010). It was assumed by the researcher that the viewing times for the other image sets might have been compromised by the repetition of images. In other words, despite the ten second buffer in between the non-photoshopped and photoshopped images, it is possible that the participants grew tired of viewing the same woman twice in a row. In contrast to this assumption, research shows that attractiveness is seen to increase due to repeated exposure of the same stimulus, also known as the 'mere exposure effect' (Rhodes, Halberstadt, Jeffery, & Palermo, 2005). According to a study done by Rhodes et al. (2005), the repetition of the images would have increased their attractiveness and consequently the viewing time (Geldart, 2010), but this was not the case in this particular study.

5.2.2 Eye-tracker

The data retrieved from the Eye-tracker showed that the majority of participants focused on the eyes and mouth of the women in the images. This is typically known as a 'social gaze' (Goman, 2008). As mentioned in 3.5.2, this gaze is often found when viewing a pleasant face and during flirtatious interactions (Goman, 2008). Interestingly, this 'social gaze' pattern was found for both the photoshopped and non-photoshopped images (see Appendix 8). One noticeable difference in the viewing pattern of some participants was an increase in time and attention spent on the eyes of the photoshopped women in the slideshow (see 4.3.1 and Appendix 9). Generally, larger eyes are linked to an increase in attractiveness ratings (Gonçalves et al., 2015). As highlighted by the images used in the slideshow, photoshopping is often used to increase the size, shape, colour and brightness of the eyes. Therefore, the fact that some participants focused more on the eyes in the photoshopped version of an image corresponds with the literature found on the importance of 'eyes' for attractiveness ratings (Baudouin & Tiberghien, 2004; Naini et al., 2006).

5.2.3 Subjective reports of increased attractiveness

The qualitative questionnaire was not linked to the specific images in the slideshow, but rather focused on the topic of attractiveness and photoshopping as a whole. Therefore, it was essential to put another measure in place that allowed for subjective reports from the participants on whether the women in the slideshow had increased in attractiveness after photoshopping had been applied. These subjective reports were important as research shows that attraction is often measured through self-reported perceptions of attractiveness and the subjective experience of attraction towards another (Clark & Fiske, 2014; Levy et al., 2008; Montoya & Horton, 2014). As mentioned in 4.5, the majority of the participants felt that most of the women in the slideshow improved in attractiveness levels after photoshopping had been employed. Due to a lack of one specific definition and description of what is seen as attractive, the 'truth-of-consensus' methodology is often used to determine attractiveness (Donovan et al., 1989). In other words, when enough people (the specific number is not specified) agree on the attractiveness ratings of an individual, the label of 'attractive' or 'unattractive' becomes generalisable (Donovan et al., 1989). Although a consensus in opinion between 25 participants will not allow for broader generalisation, it is still significant when, for instance, 100% of the participants in this study agreed that the photoshopped image of image set one in the subjective report measure (image set five in the slideshow) increased in attractiveness. Although the consensus between participants were not always 100%, there was nevertheless a general agreement between participants regarding who was, and who was not, made more attractive through the use of photoshop.

This self-report measure (see the images in Appendix 3 and the corresponding questions in Appendix 4), also allowed the researcher to compare and contrast the testimonies of attraction and attractiveness to the physiological responses mentioned above in 5.2.1, and the themes elicited through thematic analysis which are discussed next in 5.2.3.

5.2.4 Themes elicited during this study

In this section some themes will be discussed as the individual entities identified in 4.2.2, while other themes will be grouped together for the purpose of this discussion.

5.2.4.1 Exposure to photoshop

As mentioned in 4.4.2.1, intentional exposure to the media and photoshopped women through male-directed magazines occurred on a weekly basis for the majority of the participants. However, coincidental exposure was acknowledged to occur multiple times a day and through a variety of sources, as demonstrated by the following extracts; "via the internet - Social media"; "...Especially images seen on social networks"; and "Driving to-and-fro(m) my house and varsity, browsing in stores (and) browsing advertisements". These quotes not only illustrate the regularity with which the participants are exposed to photoshopped images in the media, but also show an awareness that photoshopping is employed in advertisements, social media, the internet and so forth. As mentioned in 2.4.1, up to 93% of young adults, in a similar age group to the participants in this study, are on the internet, with daily social media exposure increasing with up to 100% on a yearly basis through various mediums such as computers and cellular phones (Briones, 2015; Potter, 2014; Sampasa-Kanyinga & Lewis, 2015). Therefore, the reports from the participants regarding the frequency of exposure to photoshopped images coincide with the published statistics on individuals in the 18-29 age group.

5.2.4.2 Understanding and opinions of photoshop

This sub-section will combine two themes, namely 'Knowledge of photoshop' and 'Photoshop usage in media'. These themes have photoshop as a main focus, and can therefore be grouped together for the purpose of this discussion.

All the participants knew of the existence of photoshop and could provide some form of a definition. The majority of the participants indicated an understanding for the digital enhancements made to images in the media (Quigg & Want, 2011), which generally include retouching images to improve the aesthetic appeal of both models and products (Reaves et al., 2004), the removal of unwanted characteristics (Fink et al., 2006) and the value of photoshopped images as a marketing tool which entices, and often misleads, the viewer (Holmqvist & Frisen, 2012). Not only were the participants aware of what photoshop is, they could also identify that photoshop is used in most, if not all images in the media, "If it is in a magazine, you can almost bet on it being photoshopped".

The participants were also able to identify which features are usually photoshopped in media images, with the majority mentioning changes made to the skin "...zits, freckles and scars (are removed)", eyes "...width of eyes, as well as size" and weight "Minimise...cellulite (and) fat roles". Some participants could also recognise changes made to body parts and facial structures, as illustrated by the following extracts; "...shoulder width and neck length (is photoshopped)" and "Bones, proportions and positions (are changed)".

5.2.4.3 Opinions of photoshop

Participants were asked about their opinions of photoshop, with two opposing views found - those who feel that photoshopping has a variety of negative implications and those who understand and in some cases encourage the use of photoshopping. With regards to the first mentioned, the negative opinion of photoshop, a variety of concerns emerged (see Table 4.16). One such concern related to the false expectations created by photoshop, "It's deceiving to society since most people believe what they see on media". This opinion has been supported by researchers who show that photoshop and the images shown in the media can sometimes be misleading and may have a significant impact on the beauty ideals in society (Dawson-Andoh et al., 2011; Holmqvist & Frisen, 2012). The participants were also

apprehensive about the impact that photoshop might have on women: "Photoshopped images...create much anxiety and depression among women as they create an image that women cannot live up to". Literature shows that women are becoming increasingly aware of what men find attractive and the expectations created of the 'ideal woman' through images in the media (Bale & Archer, 2013; Bergstrom et al., 2004). Seeing as a very small proportion of women can achieve the beauty ideals promoted in media (Quigg & Want, 2011), women are increasingly vulnerable to low self-esteem (Bale & Archer, 2013; Lynch, 2011) and other serious mental health difficulties such as eating disorders, anxiety and depression (Bergstrom et al., 2004; Jordaan, 2009; Reaves et al., 2004; Watson et al., 2012).

Other issues, related to the negative opinions that some of the participants had about photoshopping, related to personal preferences. Some participants felt that photoshopping "...is completely unnecessary and bizarre", and that "Natural beauty is far more pleasant to look at", while others mentioned an appreciation for the facial flaws and imperfections that are removed through photoshopping. This statement strongly contradicts the belief that photoshopping women to be completely flawless in the media enhances their beauty for all viewers (Markey & Markey, 2012). Another participant mentioned that "...beauty is a perception that is unique to each individual and should not be fiddled with". This view coincides with the idea that beauty is subjectively and uniquely experienced (Baudouin & Tiberghien, 2004; Levy et al., 2008). Interestingly, one participant mentioned that "If they looked like the magazine adverts I won't feel that I can relate to them and they would seem less approachable". Research done by Montoya and Horton (2014) shows that people are more likely to choose romantic partners who are more or less equivalent to their own self-perceived attractiveness level, this phenomenon is known as the matching effect. Accordingly, even though people might be attracted to highly attractive individuals, they are unlikely to act on this attraction due to fear of rejection (Montoya & Horton, 2014). Finally,

yet another participant, argued that diversity in society is more attractive than everybody conforming to the same beauty ideals: "If all women were magazine models, some might think that it would be a perfect world, but I feel that it would be like eating one breakfast cereal for the rest of your life. It takes the spark out of your day". This once again confirms the idea that beauty is subjectively experienced and not easily definable (Amos & McCabe, 2015; Baudouin & Tiberghien, 2004).

This theme also elicited some contradictions, where a number of participants could understand the need for photoshop, but also enquired about overstepping boundaries and the possible consequences of using photoshop: "If photoshopping is used to do minor editing of bodily or facial features then I have no problem with its use. However, if used to...change the entire physical appearance... then I find it unethical and false marketing" and "Photoshopping does increase attractiveness, but it tends to alter human's perception of beauty". As discussed in 2.4.3, research done by Markey and Markey (2012), support the idea that the media creates certain expectations and might have an impact on what men and women find attractive. Furthermore, the media is notorious for setting trends and creating new stereotypes in society (Daniels & Wartena, 2011; Parikka, 2012; Quigg & Want, 2011),

The positive opinions surrounding photoshop usage in the media is much less complex, with two constructive aspects identified. The first being an appreciation for the increased attractiveness of women (Markey & Markey, 2012), "I love females, especially physically...unless Photoshop is obvious...I do believe that it brings out more attention and sexuality in women". The second positive aspect refers to the marketing value added through photoshop, "If it helps promote a product better and it is not intentionally hurting someone then it is fine". Reaves et al. (2004), suggests that photoshopping images in order to improve the aesthetics of both the model and the product, does in fact have a positive impact on marketing and selling products.

5.2.4.4 Features of attractiveness

In this theme, the participants did not provide vague descriptions of features, but instead reported a very detailed and specific indication of what they found attractive, ranging from the shape and placement of eyebrows, to the presence or absence of freckles, to prominent and non-prominent cheekbones, to jaw-line, weight, and height preferences and so forth, see Table 4.18 and 4.19.

As mentioned in 4.4.2.5, 'features of attractiveness' in this study, was divided into facial and bodily features. 'Facial features' will entail a more detailed discussion than the 'Bodily features', in line with the objectives and design of this study. With regards to facial features identified, the characteristics that were mentioned most often all fall within the social gaze. The vast majority of participants mentioned a woman's 'eyes' as pivotal to attractiveness, which coincides with the literature that highlights the importance of 'eyes' for facial aesthetics (Baudouin & Tiberghien, 2004; Little et al., 2006). Interestingly, some participants linked the 'eyes' not only to objective beauty, but also suggest that eyes are "... the most sincere part of a person" and that certain expectations, such as a better attitude and a more welcoming presence, are created by a woman's eyes. Similar to these findings and comments, Little et al. (2006) and Zeiger-Hill et al. (2015) suggest that neonatal features, such as large, wide eyes, are often linked to qualities such as sincerity, warmth and agreeableness.

The mouth and nose are other features that fall within the 'social gaze' and were regularly mentioned by the participants. With regards to the mouth, there were various preferences. While fuller lips are generally deemed in literature as more attractive and representative of sexual maturity (Baudouin & Tiberghien, 2004; Geldart, 2010; Naini et al., 2006), some participants actually preferred a "Small mouth/thin lips". Interestingly, when talking of the mouth, many participants mentioned a 'smiling' mouth, as well as specifications

about the smile itself, for instance a "Symmetrical smile with dimples" and "Smile showing teeth". O'Doherty et al. (2003) conducted a study to determine what impact images of attractive male and female faces, with different facial expressions, might have on brain activity as measured by an fMRI. This study was done on 25 participants, 13 of which were male. According to the findings of this study (O'Doherty et al., 2003), a smile, or a 'happy expression' directed at the perceiver, increases the activation of the reward centres of the brain which are generally activated when viewing an attractive face (Geldart, 2010; Xiuping & Meng, 2014). A smile can therefore be seen to increase the attractiveness of a face (O'Doherty et al, 2003). Consequently, the large amount of attention that participants in this study paid to 'smiles' as a feature of attractiveness appears to be in accordance with the study by O'Doherty et al. (2003). Another correlation can be found between the literature mentioned in 2.2 and participants' nose preferences. In other words, according to Baudouin and Tiberghien (2004) and Naini et al. (2006), a smaller nose is identified as a neonatal feature which is generally found attractive in a female face. The majority of participants also show preference for a "Small, sharp nose", see Table 4.18.

As discussed in 2.3.1 and 2.3.2, the proportions in which facial characteristics are presented, are imperative for attractiveness ratings. In other words, "... the sum of all her facial features is important" (Baudouin & Tiberghien, 2004; Naini et al., 2006). Various participants paid attention to the general proportions of the face, with the majority preferring "Petite facial features". These delicate facial features identified coincide with the neonatal features discussed in 2.3, such as large eyes and a small nose and chin. Some participants also mentioned the more sexually mature features such as high eyebrows and prominent cheekbones (Geldart, 2010). A study done by Baudouin and Tiberghien (2004), showed that participants generally preferred neonatal features in the middle of the face and sexually mature features on the peripheral sides of the face - in other words an attractive face often

comprises of big eyes, a small nose and chin, prominent cheekbones, full lips and high eyebrows. Although not all participants' descriptions of attractiveness stayed within these boundaries, most did.

Pertaining to the bodily features mentioned, weight and height were the most regularly identified. A review of literature regarding weight preferences, show that despite the importance placed on thinness in the media, men do not necessarily prefer women quite as thin as women tend to believe (Bergstrom et al., 2004; Sypeck et al., 2006). Similarly, in the sub-theme identified in 4.4.2.5, the participants specifically mention a dislike for a body type that is overly skinny, "Slender figure, but not too thin". However, according to Markey and Markey (2012), exposure to media did lead men, and women, to change their perceptions of beauty. This change in perception became increasingly similar to what was portrayed in the media (Markey & Markey, 2012). The researcher therefore assumes that the participants' ideas of "not too thin" might still be influenced by the media. In other words, the 'appropriate' level of thinness, as identified by the participants, might still be predisposed by exposure to the media, and might therefore still be thinner than what most women can achieve.

As mentioned in 2.4.3, media often portrays women as tall, thin, small-waisted and big breasted (Dawson-Andoh et al., 2011; Holmqvist & Frisen, 2012). Contradictorily, the majority of participants indicated a preference for "short-ish" women, who ranged from "bone protruding" to not "too skinny" and in some cases "a little chubby", with a variety of chest sizes ranging from "relatively flat chested" to "larger breasts". Therefore, personal preferences regarding female beauty are clearly uniquely experienced (Amos & McCabe, 2015; Baudouin & Tiberghien, 2004) and might not always coincide with what is portrayed in media images.

5.2.4.5 Impact of photoshopped women on men

Literature found on the topic of photoshopping and attractiveness ratings, indicated that men were still influenced by the beauty ideals portrayed in the media, despite awareness and critical views of photoshop (Holmqvist & Frisen, 2012; Markey & Markey, 2012; Reaves et al., 2004; Quigg & Want, 2011). The researcher therefore attempted to determine whether the same, or different, results would be found during this research study.

The thematic analysis revealed that the vast majority (80%) of the participants believed that they were still negatively impacted by photoshop, despite their critical opinions and apprehensions about the use of photoshop in media images. These participants focused mainly on the unrealistic expectations created by images in the media and the attempted conformity that follow these expectations. The participants identified that "unrealistic expectations are imprinted on me by magazines and social media" and that "I expect women to look as flawless and have perfect skin and facial features". In fact, some participants mention disappointment in how 'normal' women look, "...when seeing people naturally I don't expect them to look so plain" and further note that the women portrayed in magazines and in media images distract them from seeing the real women around them. Once again, these findings are supported by the literature that shows that the media does have an impact on what is seen as attractive, along with the creation of unrealistic beauty ideals (Markey & Markey, 2012; Quigg & Want, 2011). The participants also reported concerns about the fact that women might be sensitive to the changing expectations of beauty and might therefore be negatively impacted by these expectations (Bale & Archer, 2013; Bergstrom et al., 2004), "...we expect to see girls as they look on T.V, (and) billboards...and that's why sometimes they also feel it and put (on) tons of makeup...". One participant mentioned that exposure to photoshopped images of women might "inhibit us from continuing our social encounters based purely on looks". This last statement is supported by the findings from the Seidman

and Miller (2013) study. Similar to the importance of looks in interpersonal interactions as identified in this study, the research done by Seidman and Miller (2013) showed that people, both men and women, were more likely to spend time on getting to know someone on Facebook purely based on the attractiveness of their profile picture. The participants' views are further supported by research that shows how important physical attractiveness levels are in the initial phases of interpersonal connection, the pursuit of a relationship and consequential mate-selection and reproduction (Bale & Archer, 2013; Fisher et al., 2006).

As mentioned in 4.4.2.6, a limited number of participants claimed that photoshopping in the media had no impact on how they view women. These findings were either related to insight into the deception of photoshop, or to different preferences in choosing a romantic partner: "I try not to look for perfection, but other properties including kindness, warmth etcetera". This supports the "what is good, is beautiful" notion (Little et al., 2006) which argues that when a face seems to possess qualities that the perceiver is looking for in a partner, such as warmth, kindness, honesty and so forth, that face will automatically appear more attractive to the perceiver. In re-reading the questionnaire of the participant who, as demonstrated by the data extract above, mentioned a preference for kindness and warmth instead of attractiveness, it was found that a softer looking nose and an overall soft face, in the absence of pronounced cheekbones, was identified as his personal preferences in an attractive woman. This finding coincides with the discussion in section 2.3.3 regarding the attributes, such as warmth and sincerity, that are attributed to neonatal features, such as a small nose and softer face (Baudouin & Tiberghien, 2004; Little et al., 2006; Naini et al., 2006).

5.2.5 Integration of the findings

When looking at the entire data set, in other words the data collected throughout both the quantitative and qualitative sections, there are a variety of comparisons and contradictions

to be found. This section will therefore start with an exploration of the similarities and contradictions within the two data sets collected. Thereafter, other findings that emerged from the study will be explored. The final element of this section will comprise a discussion of the results, as they relate to the research objectives and the research hypotheses.

5.2.5.1 Similarities and contradictions

The findings from the subjective report questionnaire can be contrasted and compared as follows. As mentioned in 4.2.1, the activation of the SNS, as demonstrated by the decrease in heart rate variability, can be linked to the experience of psychological arousal. The presence of psychological attraction and arousal can explain why the majority of the participants indicated that the women in the slideshow had increased in attractiveness, even though the other physiological constructs did not show significant changes. As discussed in 5.2.1, an increase in attractiveness is often linked to an increase in viewing time. However, of the five image sets in the slideshow, there was only one significant increase in the viewing time - specifically for image set five. Possible reasons for this finding were discussed above in section 5.2.1. Interestingly, image set five in the slideshow (which corresponds with image set one on the subjective report questionnaire) was subjectively reported by all 25 participants as more attractive after photoshopping was applied. The researcher therefore hypothesises that the increase in reported attractiveness for image set five could be accountable for the significant increase in viewing time for this image set. The findings from both questionnaires, namely the subjective report questionnaire and the main questionnaire, coincide with literature which shows that photoshop is used to enhance the beauty of models and products (Reaves et al., 2004). More specifically, a golden thread throughout the majority of the themes created, point to the understanding that photoshop is used to enhance the beauty and aesthetic appeal of the women found in media images (See sub-themes 'How is photoshop used', 'Targeted areas', 'Negative opinion', 'Positive opinion' and 'Negative impact' along with

the corresponding Tables 4.14, 4.15, 4.16, 4.17 and 4.20). Therefore, it seems logical that the majority of participants reported that most of the women in the slideshow had increased in attractiveness when comparing the non-photoshopped image to the photoshopped image.

The eye tracking data retrieved from the Eye-tracker coincides with the identified features of attractiveness collated from the thematic analysis, with specific regards to the attention paid to the eyes, nose and mouth. In other words, these facial characteristics, the eyes, nose and mouth, were the most popular features identified by the participants as important for facial attractiveness ratings and also coincided significantly with the social gaze patterns with which the participants viewed most of the images in the slideshow. Furthermore, there was a noticeable similarity between the facial and bodily features identified by the participants as attractive, and the areas thought to be targeted by photoshop, for instance the eyes, mouth and lips, nose, skin complexion, teeth, weight, breast size and so forth. These similarities could testify to why photoshopping is usually so affective in increasing aesthetic appeal.

As pertaining to the contradictions found in this study, there seems to be differences within the qualitative and quantitative data sets as a whole. Firstly, as mentioned in 5.2.2.2, most of the participants indicated that the majority of the women in the slideshow had increased in attractiveness. Since higher attractiveness ratings are usually linked to stronger levels of arousal and a longer viewing time, the assumption would be that heart rate, breathing rate and viewing time would all show a significant increase from the non-photoshopped to the photoshopped image. However, no significant differences were found for breathing rate and the one significant difference found for heart rate was in the "wrong" direction, in other words, the participants showed a decrease in heart rate. Although viewing time for image set five had significantly increased, viewing time for the other four image sets did not. The researcher therefore hypothesises that the increase in attractiveness reported was

not significant enough to elicit strong changes in behaviour or physiological responses towards the images.

Another interesting contradiction relates to the themes identified during the thematic analysis and the subjective reports. More specifically, despite the majority of the participants having negative opinions towards photoshop, they still found the photoshopped women in the slideshow more attractive. Throughout the themes created, it was clear that the participants did not deny that photoshop increased the aesthetic appeal of the models and products, in fact, this increase in attractiveness was a foundation for many of the negative opinions regarding the use of photoshop in the media. Nonetheless, given the amount of reported apprehension for the long-term consequences of photoshopped images and a seemingly strong dislike for the false expectations created, one might have expected a different outcome in the subjective reports.

5.2.5.2 Other findings

One of the aims of this research study was to evaluate the effect that daily exposure to media and photoshop might have on how men have come to view women and how they experience attraction. Although this research was designed to investigate what impact, if any, photoshopping had on how images of women are perceived, the thematic analysis illustrated that according to the participants, the impact of photoshopping stretched far beyond the perception of attractiveness in mere images. In fact, the majority of participants reported that they have, to some extent, internalised the photoshopped women shown in the media, and now experience expectations of beauty standards that are rarely met. These results show that exposure to the media and photoshop has, for the bulk of the participants in this study, had an impact on how they view women in the real world. Furthermore, with regards to experienced attraction, it was revealed that some participants might be less inclined to engage in social interactions with some women, based purely on looks. This was either due to a false

representation, and consequential disappointment, of how a specific individual's looks changed from social media to real life, or as a result of the distraction experienced by the perfection portrayed in the media.

5.2.5.2 Findings as related the research objectives and hypotheses

As mentioned in 1.3.2, the objectives of this study were to determine how men view women in non-photoshopped images, how men view women in the photoshopped version of those images, and then to compare and contrast these findings. As explored and discussed in 4.3.1 and 5.2.2.1, the participants generally engaged in a social gaze for both the non-photoshopped and the photoshopped images. A larger awareness of the 'eyes' in the photoshopped images was the one visible difference in how some participants viewed the photographs. The subjective report questionnaire also allowed the participants to view the photoshopped and non-photoshopped images side by side, with the bulk of the participants showing a greater interest in the photoshopped images. This last mentioned finding indicates that there might actually be a difference in how men look at these images, since one image is subjectively experienced as more attractive than the other. Nonetheless, this particular study found a strong pattern of similarity between how photoshopped and non-photoshopped images of women were viewed throughout the Eye-tracker data retrieved.

As mentioned in 1.3.3, the research hypothesis enquires as to whether there is a significant difference in how men perceive the attractiveness of women in normal and photoshopped images. The null hypothesis therefore predicts that there would be no difference in how men perceive the attractiveness of women in normal and photoshopped images. Despite some of the mixed results mentioned above, there are four indications that a difference in perceived attractiveness is present. Firstly, although not present for all images, some participants did pay greater attention to the eyes of the photoshopped women. Secondly, the subjective reports of increased attractiveness lean strongly towards the

photoshopped women being more attractive than those same women before photoshopping was employed. Thirdly, despite the absence of a strong physiological response towards the photoshopped images as compared to the non-photoshopped images, there was a significant increase in the Sympathetic Nervous System activation for three of the five image sets when measuring heart rate variability. This change in heart rate variability implies that the participants were more psychologically aroused when viewing the photoshopped images. Finally, there was one significant increase in viewing time for an image set that was reported by all the participants as having improved in attractiveness. The researcher therefore partially accepts the research hypothesis which states that there is a significant difference in how men perceive the attractiveness of women in normal and photoshopped images.

5.3 Limitations of the Study and Recommendations for Future Research

Similar to most research designs, this study had a few limitations worth mentioning. First and foremost, the sample size and sampling techniques come with certain restrictions. Although purposive sampling is a commonly used technique in a mixed-method research design, the results retrieved from such a sample compromises the external validity and therefore should not be generalised (Collins et al., 2006; Gravetter & Forzano, 2012; Onwuegbuzi & Collins, 2007). Due to the specific nature of the participants sampled (see 3.4.2), the sample was not an accurate representation of the entire male population. The ability to generalise the findings were further limited by the sample size. An increased in the amount of participants used in future research would therefore be recommended in order to draw generalisable conclusions. Other possible recommendations for future research include broadening the sampling pool to include a wider variety of participants. Further studies could also be conducted with the gender roles reversed in order to ascertain if photoshop had a similar impact on how women have come to perceive men.

The equipment used for data collection during the study provided further limitations. The Eye-tracker calibration often took some time, which might have had an impact on the participants on various levels. Firstly, the researcher hypothesises that several failed attempts for the calibration test could increase anxiety levels of the participants, thereby having an impact on the physiological responses measured. Secondly, although the researcher ensured that the participants felt ready to continue with the study, their eyes might have been tired, which would have had an impact on the eye-tracker data. Additionally, the Eye-tracker calibration often de-centred during the slideshow. This was adjusted manually for each image, however it does compromise the accuracy of the data to a certain extent. The Eye-tracker also restricted the movement of the participants. In line with research done by Hughes et al. (2010), the researcher assumes that the participants would have leaned forward slightly for the images with increased attractiveness. This change in posture could have been measured by the BioHarness and would have provided important information with regards to a positive response indicating attraction.

The researcher has two recommendations of further physiological constructs to be included in future studies. Firstly, as mentioned in 4.3, the researcher was unable to measure pupil dilation as the participants viewed the images. Pupil dilation is typically seen as a very accurate measure of arousal as it is often instantaneous and involuntary (Partala & Surakka, 2003). Pupil dilation is therefore an important physiological construct to measure in future research conducted on this topic. Secondly, an fMRI analysis is another physiological measure that could be used during future research, as brain activation in certain regions are seen as an indication of attractiveness (Geldart, 2010; Xiuping & Meng, 2014). In this way, the researcher could determine whether there are any differences in activation of the reward centres in the brain, the nucleus accumbens, when viewing photoshopped and non-photoshopped images.

With regards to the images used during the study, there are two possible limitations. Firstly, as the images were obtained from the public domain, some of the participants might have already been exposed to the images. If so, this increased familiarity might have had an impact on how the participants viewed, and responded to these images (Rhodes et al., 2005). The images might furthermore contain different levels of photoshopping, with some images containing a more or less subtle use of editing. Furthermore, the time in between each image, the ten second blank screen, was chosen randomly, due to an apparent lack of research of this nature to guide the slideshow's design. The time in between images might therefore have been too short to allow for physiological changes to reach equilibrium, or too long, which could have caused the participants to become distracted.

Finally, the researcher would recommend that future research use an interview in order to gather the qualitative information. An interview would allow the researcher and the participants to explain questions and answers where there is any confusion. Follow-up questions could also provide more in depth information.

5.4 Conclusion

From the discussions presented in this chapter, it is apparent that media exposure does have an impact on what is deemed as attractive, with potentially negative consequences for interpersonal attraction and romantic partner selection. A social gaze was identified through the Eye-tracker, with corresponding results found from the thematic analysis, indicating that the eyes, nose and mouth are important features of attractiveness. This study further illustrates that despite limited physiological responses to the various images, there was still a difference in how men perceived normal and photoshopped images of women. The researcher has therefore partially accepted the research hypothesis. The limitations of this study, namely the sampling technique, sample size, equipment used and slideshow compilation, was

identified, along with future recommendations that could counteract these limitations as well as further research on this topic.

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APPENDICES

APPENDIX 1: BIOGRAPHICAL QUESTIONNAIRE

Age:.....

Home language:.....

Fluent in English:

Yes	No
-----	----

Current degree:.....

Level of academic year:.....

Contact nr:.....

I meet all the criteria for participation in this study, as advertised, i.e. undergraduate physiology student, male, heterosexual and proficient in English:

Yes	No
-----	----

APPENDIX 2: QUESTIONNAIRE

1. How often are you intentionally exposed to male directed magazines and/or media?

Daily	Weekly	Monthly	Other.....
-------	--------	---------	------------

2. What is your favourite facial feature of a woman?

.....

.....

.....

3. Do you know what photoshopping is? If yes, explain.

.....

.....

.....

4. Do you believe photoshopping is employed in media images? If so, how often?

.....

.....

.....

5. Per estimation, how frequently are you exposed to photoshopped female images (Including billboards, magazine stands, television and internet)?

.....

.....

.....

6. What is your opinion of photoshopped images of women?

.....

.....

.....

.....

7. Do you believe that women in the real world should look like they do in media – magazines, advertisements etc.? Explain.

.....

.....

.....

8. Do you believe that you are affected by the photoshopping of women? If so, in what way?

.....

.....

.....

.....

9. Which features do you think are enhanced through photoshopping, if any?

.....

.....

.....

.....

10. What is your ‘type’ of women? Pay specific attention to physical aspects and preferences.

.....

.....

.....

.....

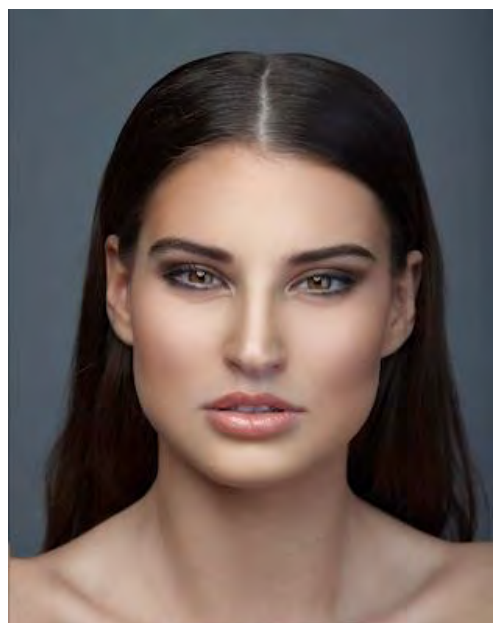
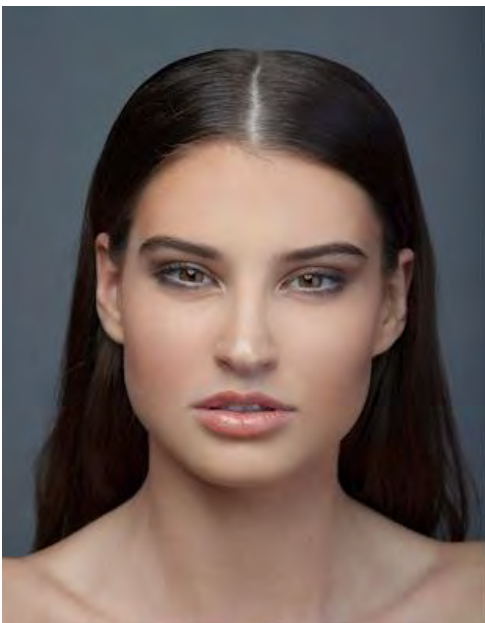
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**APPENDIX 3: IMAGES FOR THE SUBJECTIVE REPORT
QUESTIONNAIRE**

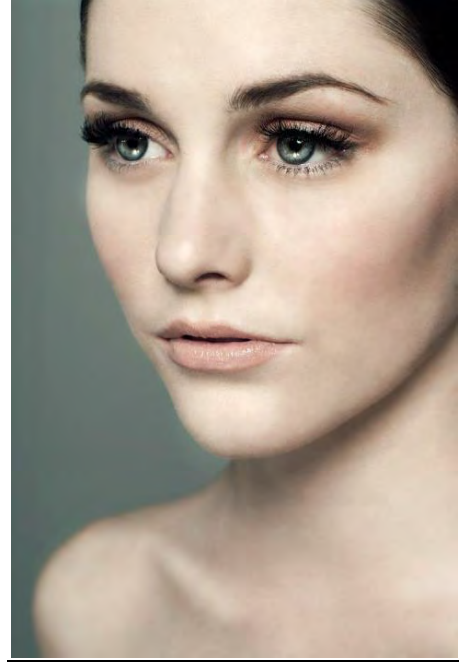
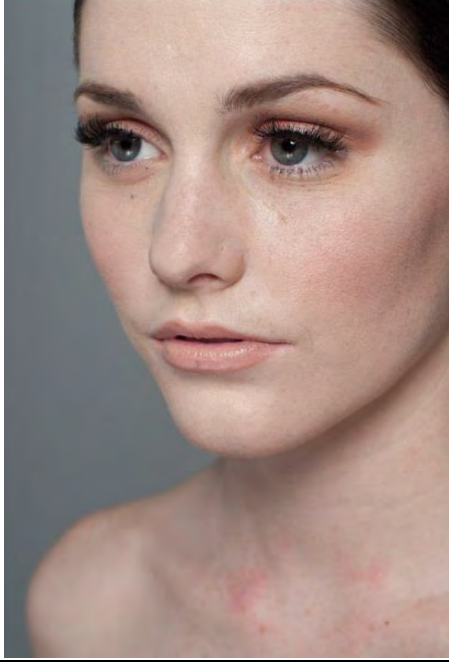
Subjective report questionnaire Image set 1



Subjective report questionnaire Image set 2



Subjective report questionnaire Image set 3



Subjective report questionnaire Image set 4



Subjective report questionnaire Image set 5



APPENDIX 4: SUBJECTIVE REPORT QUESTIONNAIRE

Does photoshopping enhance the attractiveness of these women's profiles?

1.

Yes	No
-----	----

2.

Yes	No
-----	----

3.

Yes	No
-----	----

4.

Yes	No
-----	----

5.

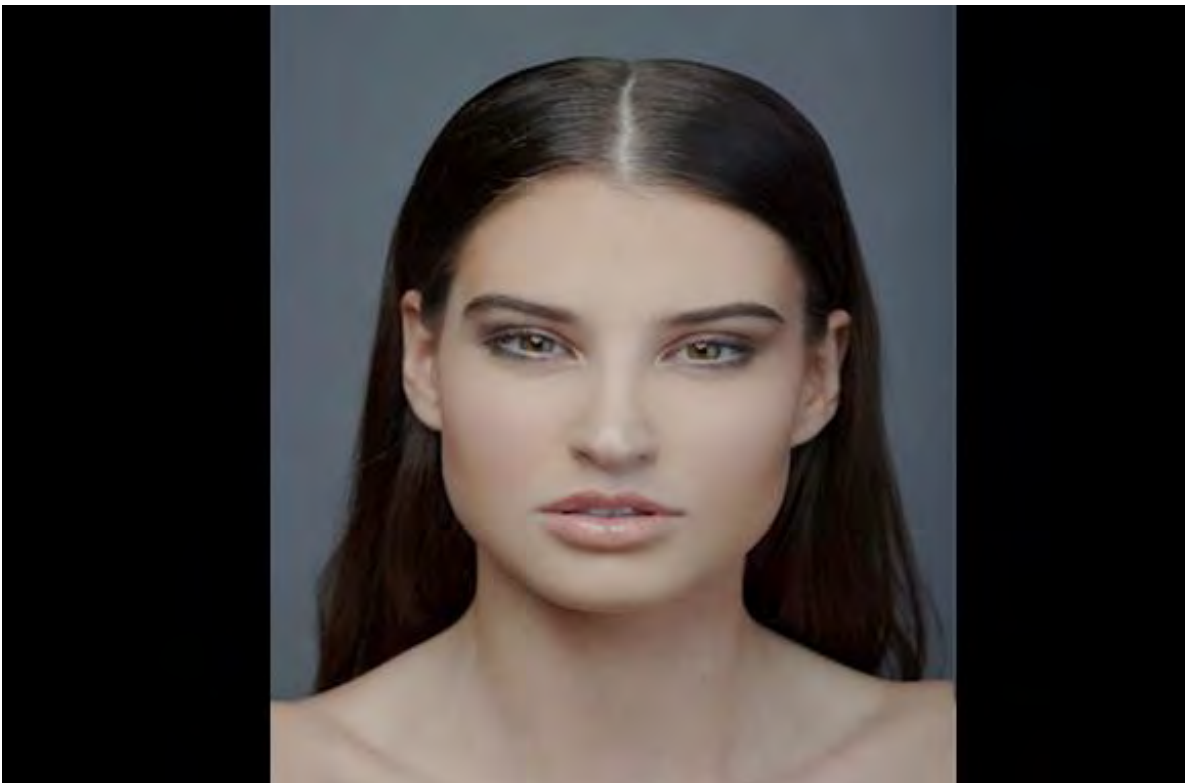
Yes	No
-----	----

APPENDIX 5: SLIDESHOW

Note the slideshow's progression, with the screenshots taken in the correct chronological order as viewed by the participants. The black screen with the two blue diagonal lines show the buffer screen in between each image - this screen was set to change automatically after ten seconds. Throughout the research report, images were either identified by their individual order (namely 1A, 1B, 2A, 2B and so forth) or as an image set ranging from 1-5.

Slideshow Image set 1

Image 1A



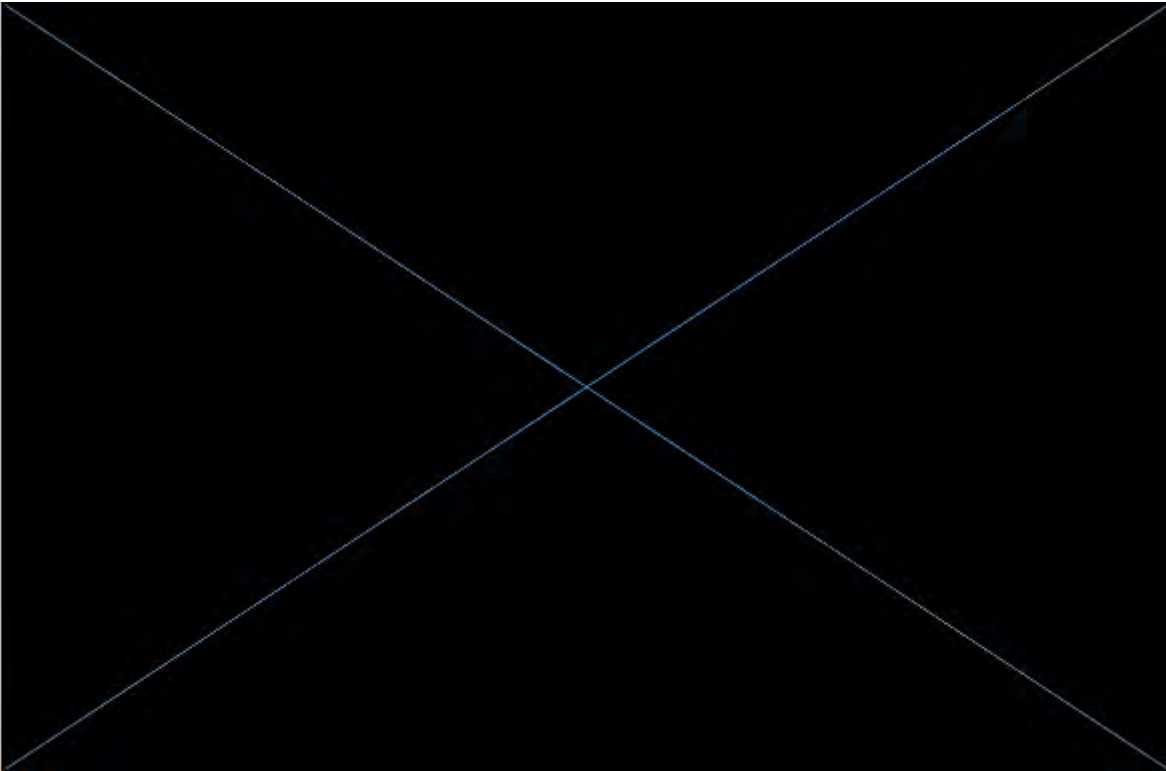
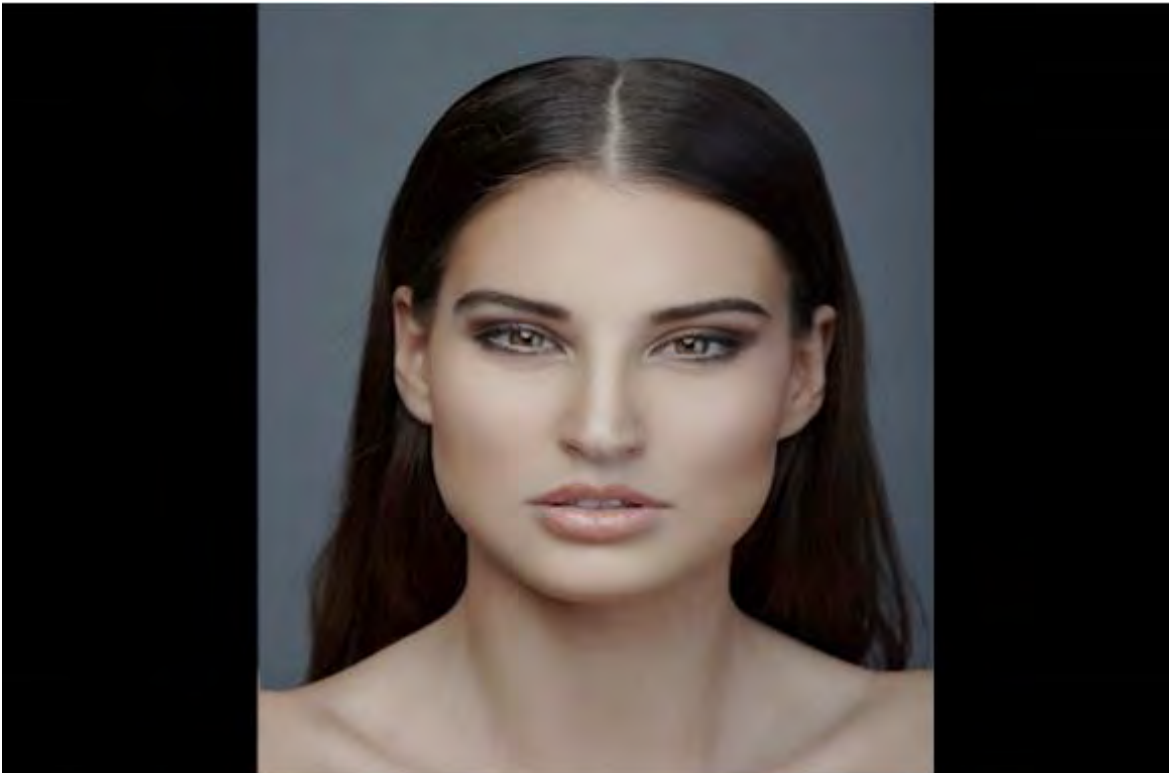
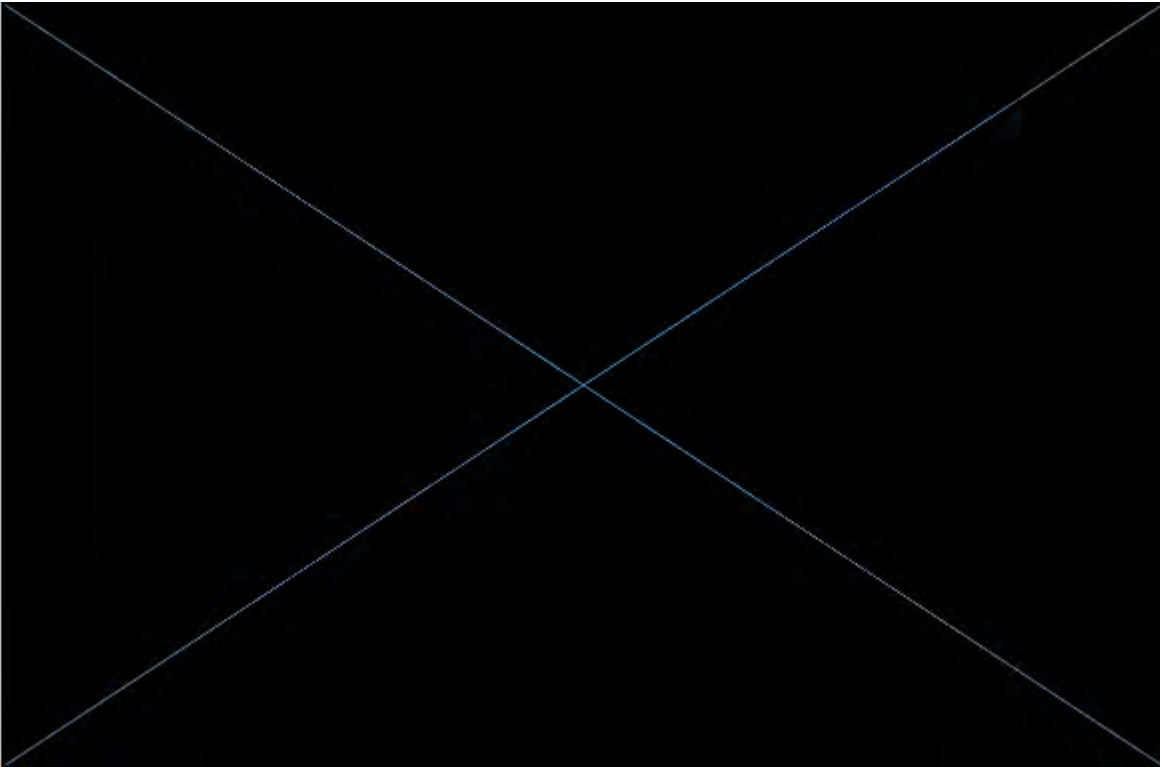


Image 1B





Slideshow Image set 2

Image 2A



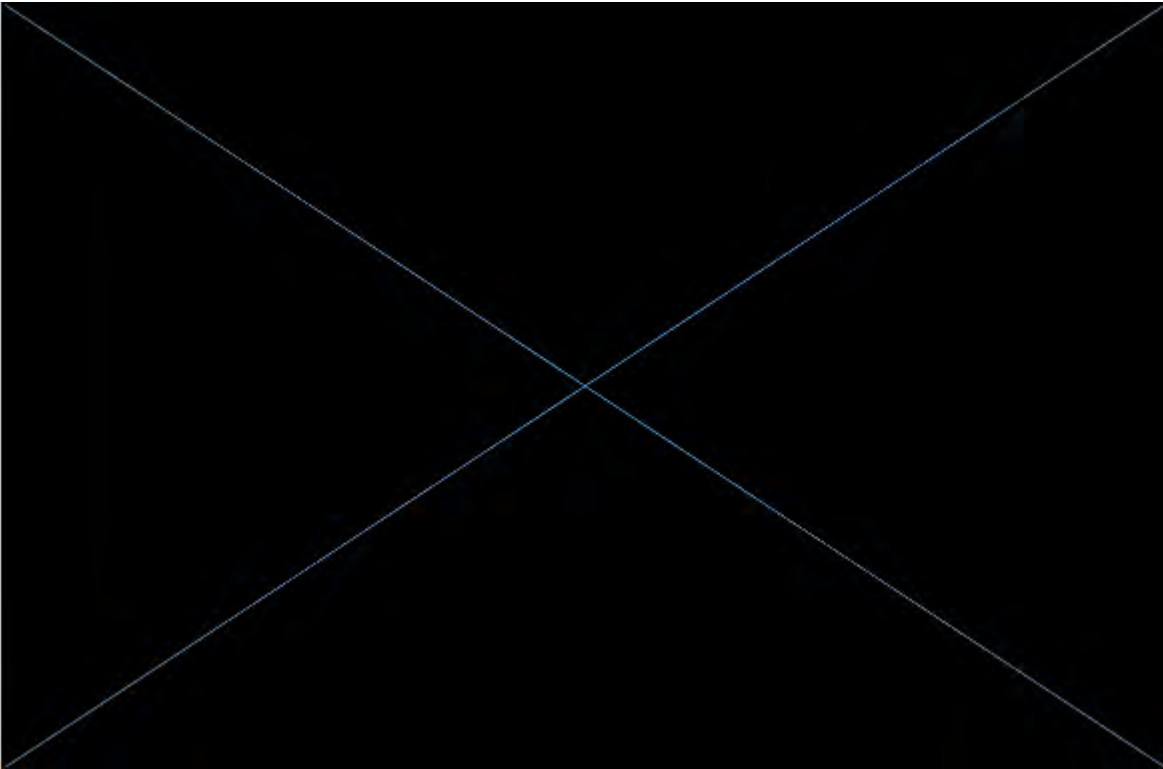
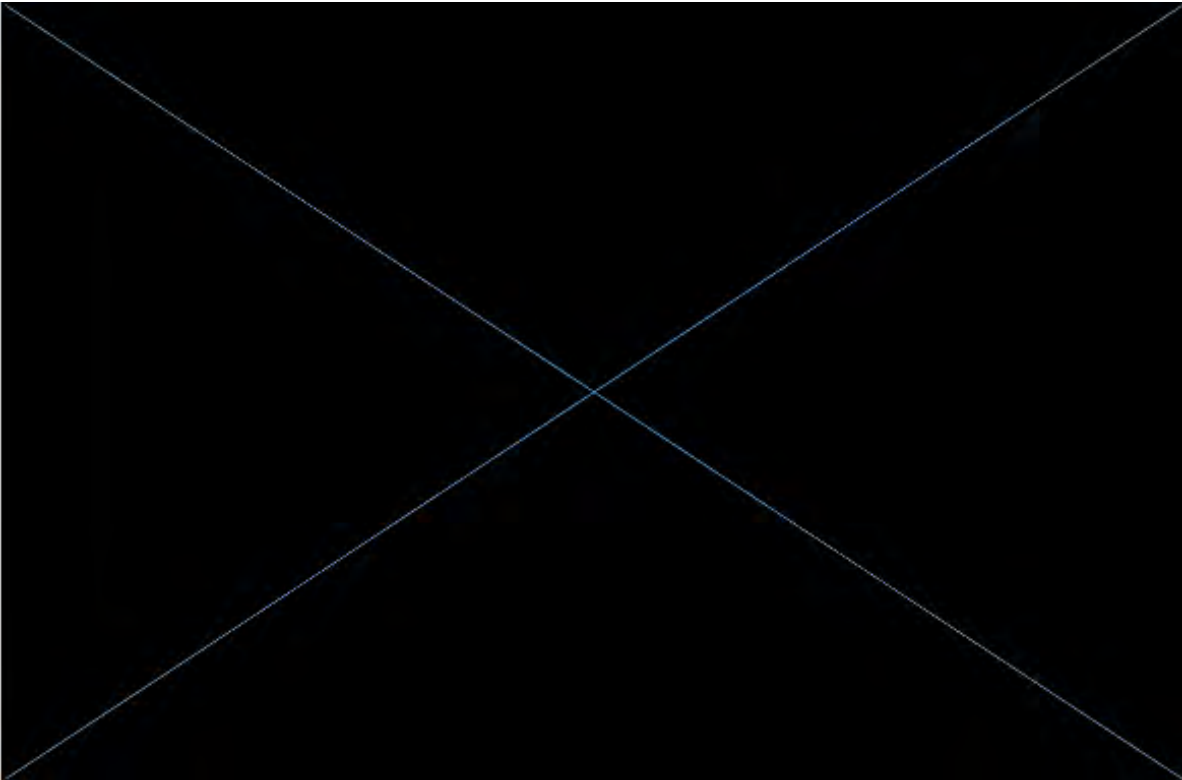


Image 2B





Slideshow Image set 3

Image 3A



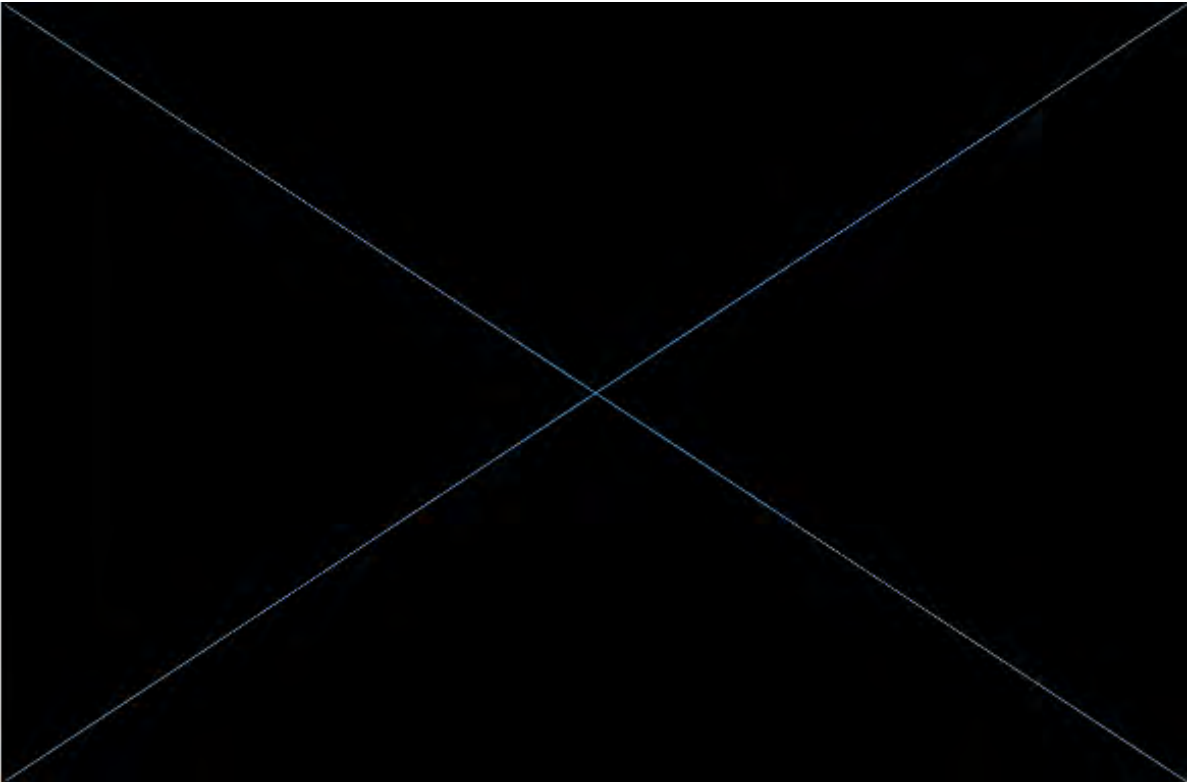
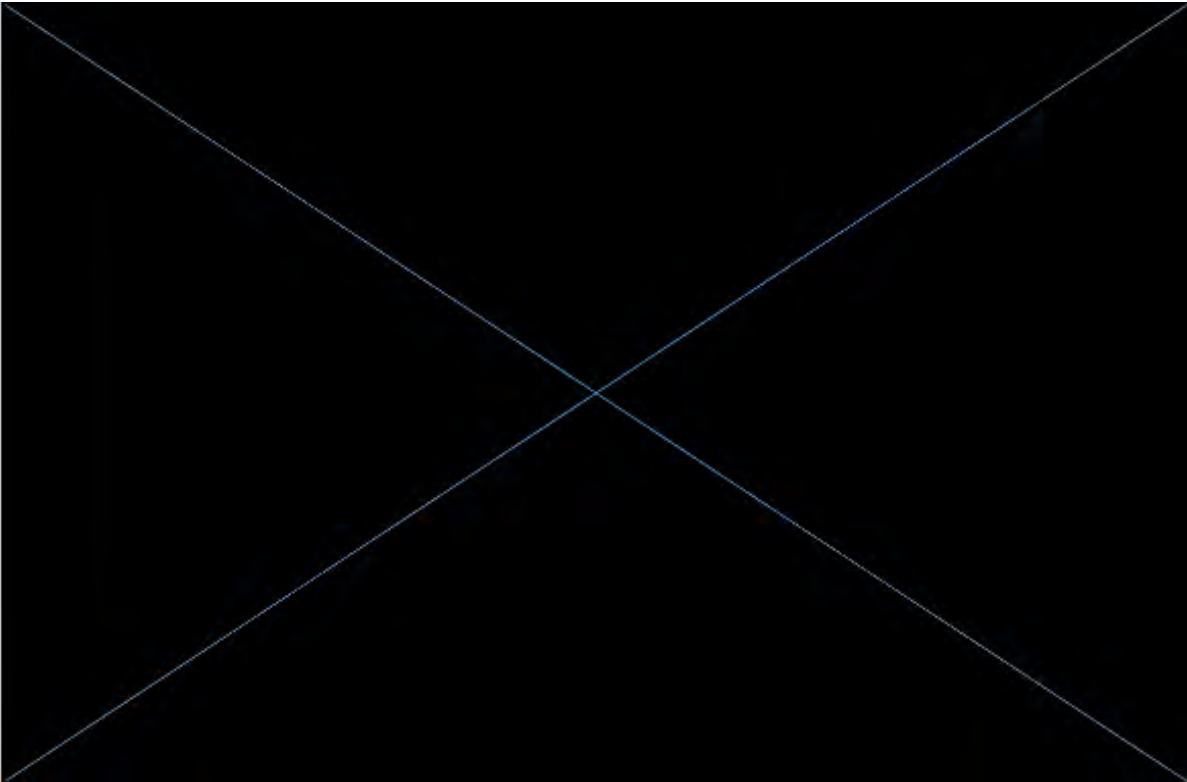


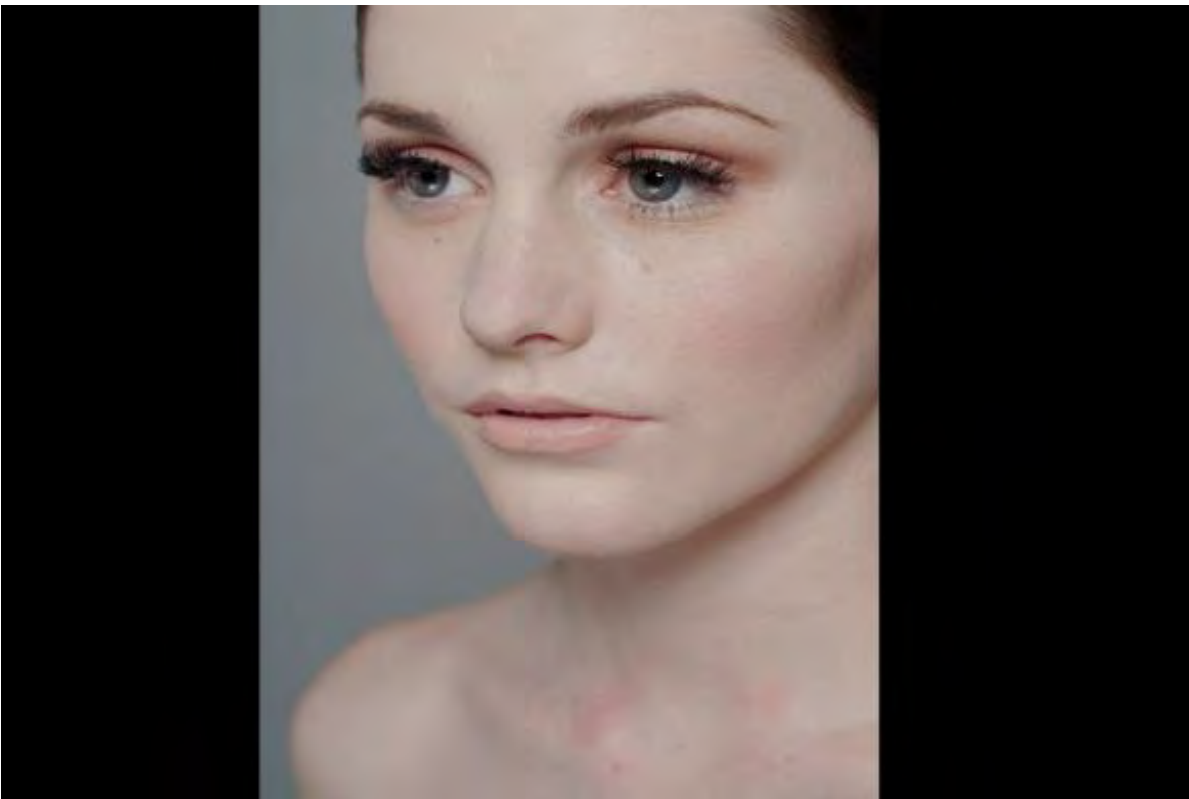
Image 3B





Slideshow Image set 4

Image 4A



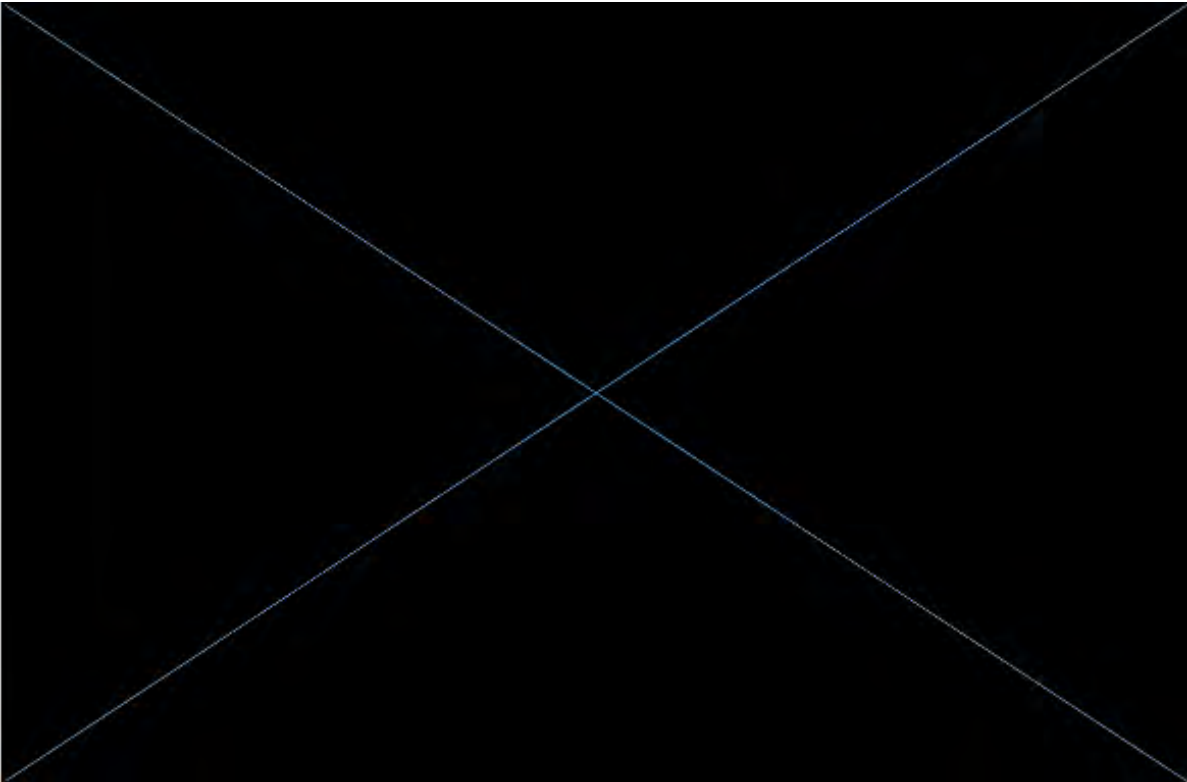
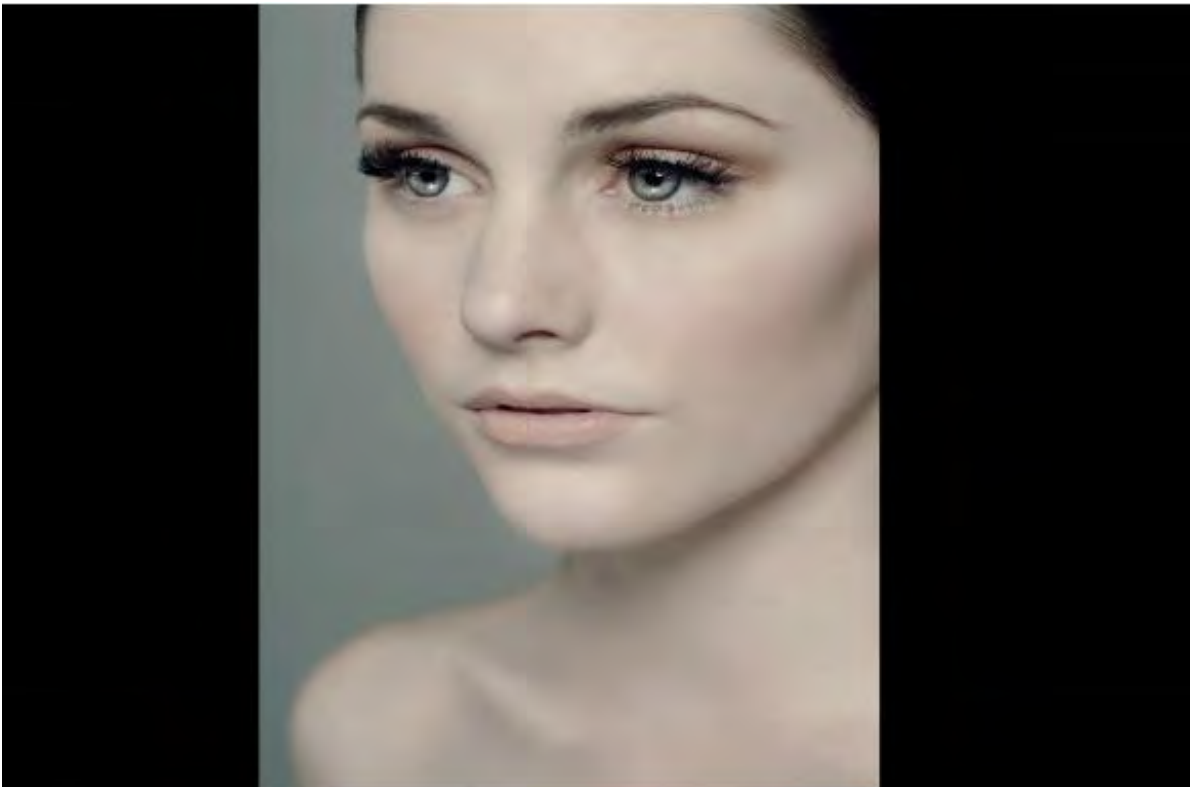
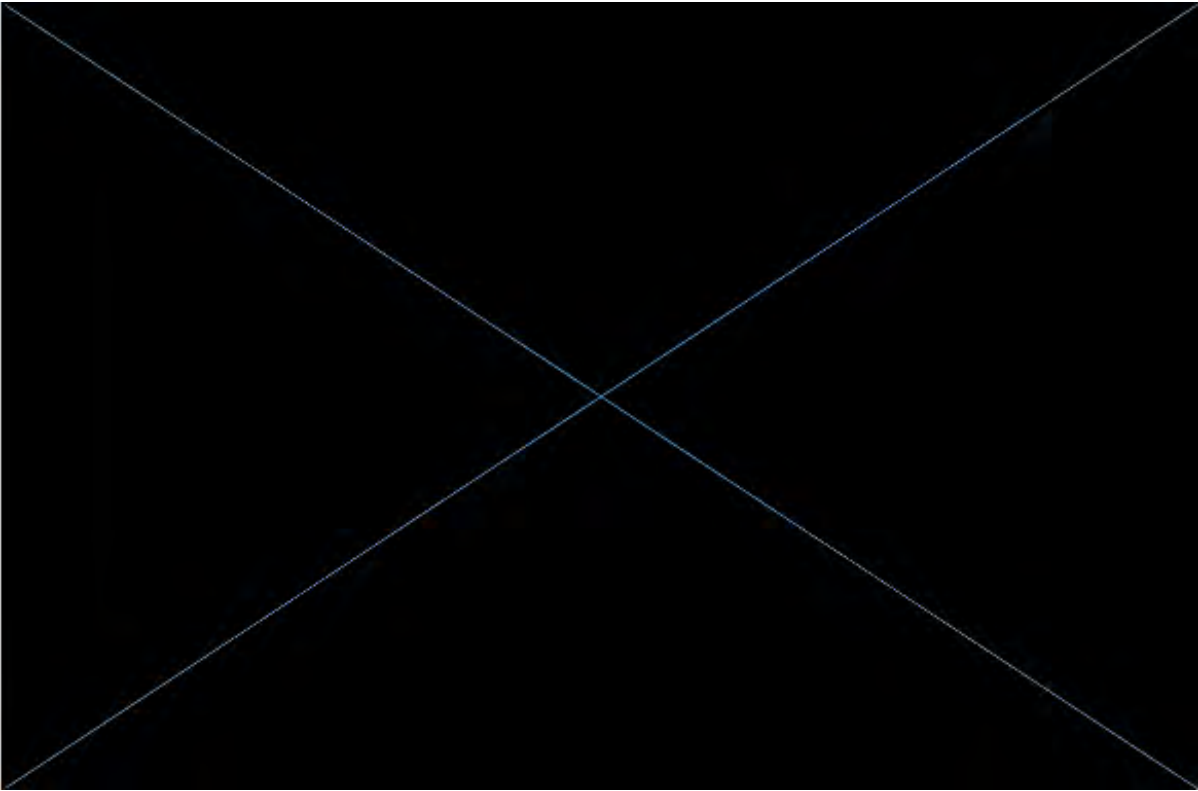


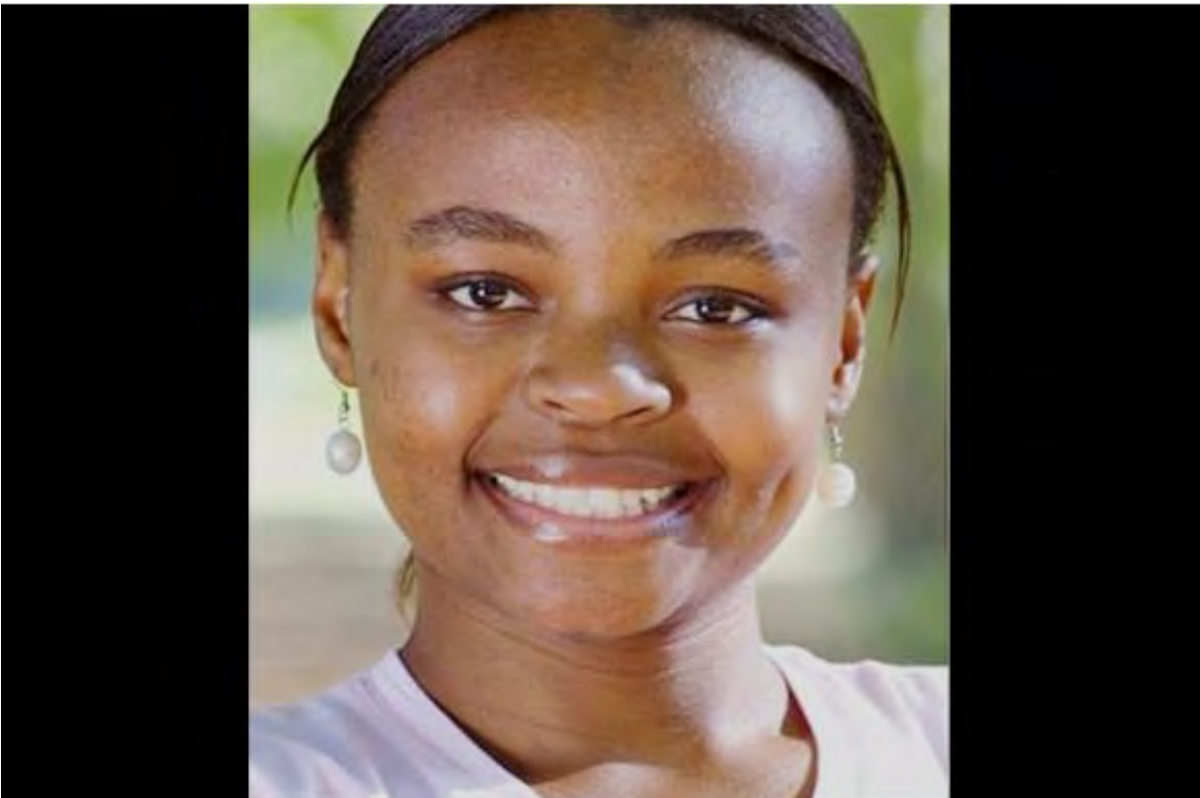
Image 4B





Slideshow Image set 5

Image 5A



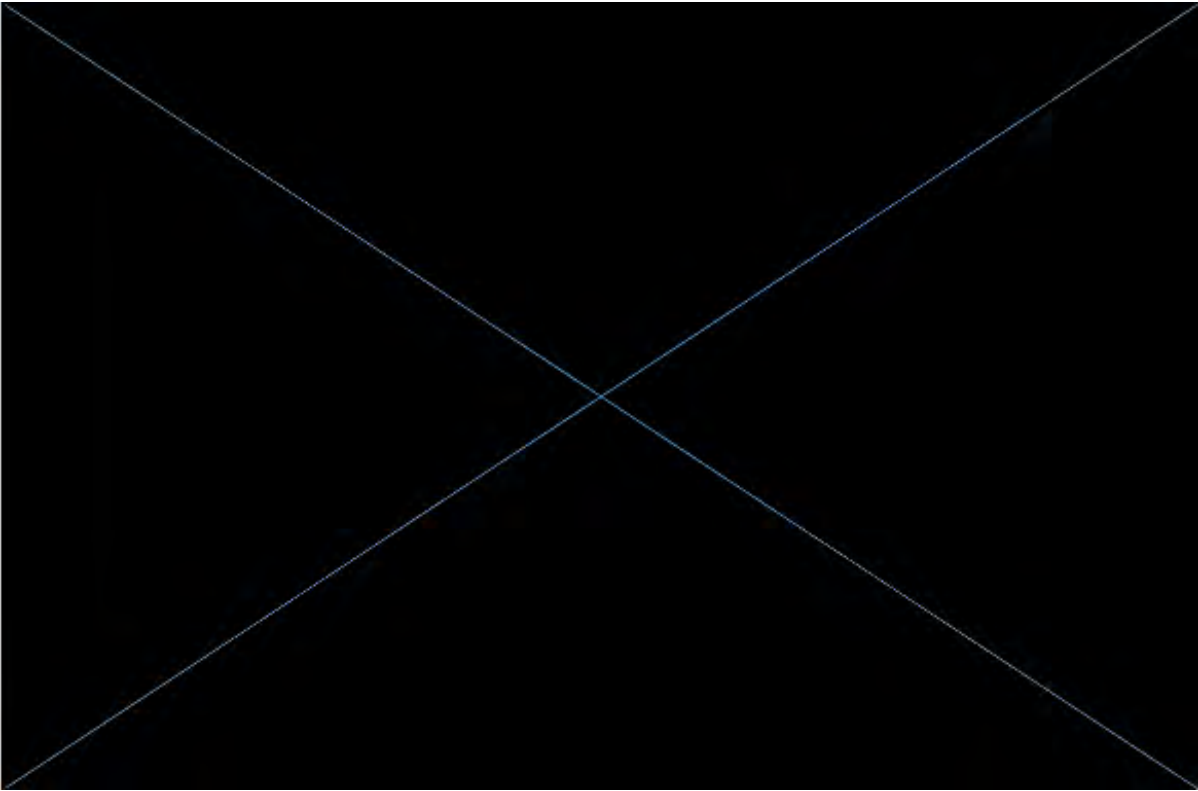
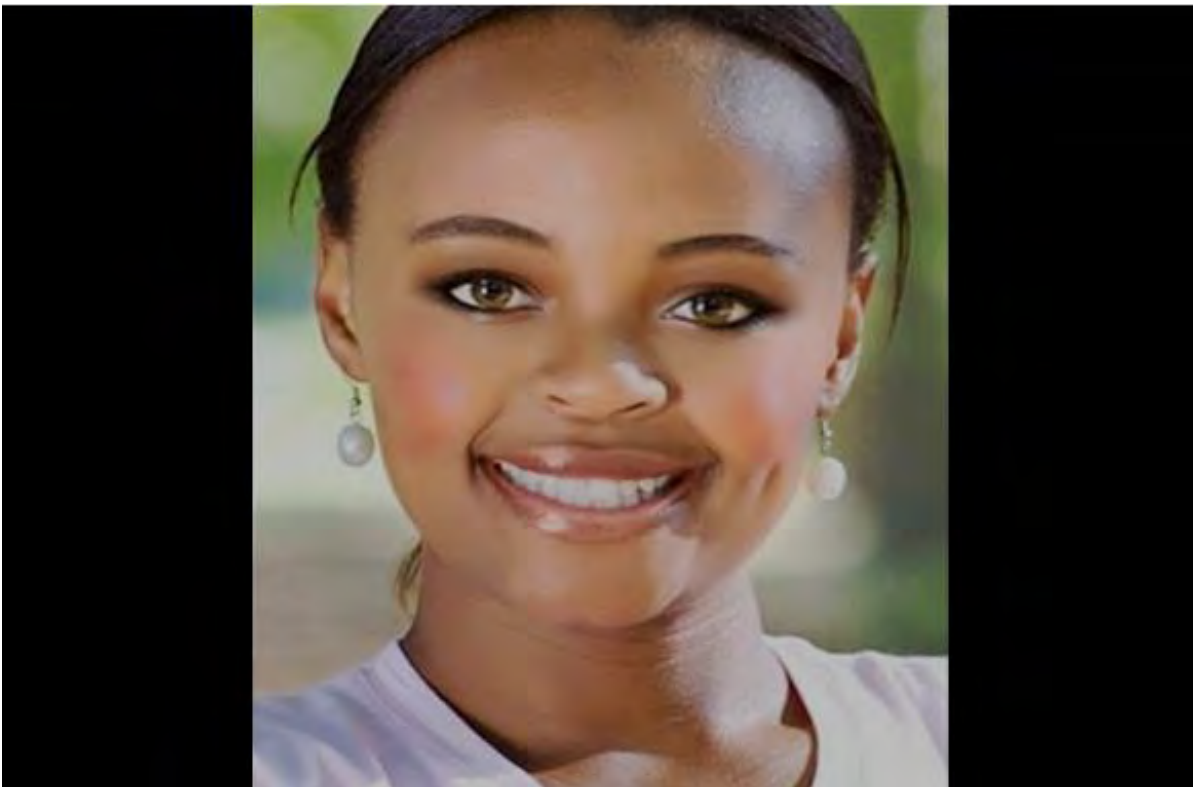


Image 5B



APPENDIX 6: CONSENT FORM



Faculty of Humanities
Department of Psychology

20 February 2015

Dear Participant

I am currently doing my masters in counselling psychology and am planning to do my masters research mini-dissertation.

Participation in the study is voluntary. You can decide if you would like to participate or not. You will not be penalised in any way, if you decide not to participate. Any information gathered in the research is private and confidential, and your name will not be used or disclosed to anyone. If you feel uncomfortable or experience any difficulty during the experience, you may stop and withdraw at any stage.

If you decide to participate in the research, you will be required to fill out a biographical questionnaire. We will then ask you to look at 10 static images of a woman's profile. While looking at these images you will be attached to two different instruments namely the Zephyr BioHarness (which will measure inter alia your heart rate, body temperature and respiration rate) and the Grinbath EyeGuide Tracker (which will track your eye movement and pupil dilation). These instruments should not cause any discomfort and will not cause any harm. Thereafter, you will receive a questionnaire with a limited number of questions. The researcher will be available for any questions.

The research results will be shared with the scientific public but your name will not be attached to the results. In signing this consent form, you also give permission that the data collected and results of this study may be used and published again in a confidential way without revealing your identity. The data will be stored for 15 years at the University of Pretoria for research purposes.

If you have any questions or need more information about the research, you can contact Bendoline Holtzhausen (0734438569).

Hereby I acknowledge that I have read and understood the above and I agree to participate in this research.

Signature:

Date:

APPENDIX 7: OUTLIER BOXPLOTS

Summary of outliers found			
	Asterisk	Circle	Circle
2A HR	3	5	
2B HR	3	5	
4A HR	3	5	
4B HR	3	5	
1A BR	5	23	
1B BR	5		
5A BR		5	23
5B BR		5	23
2A HRV			
2B HRV			3

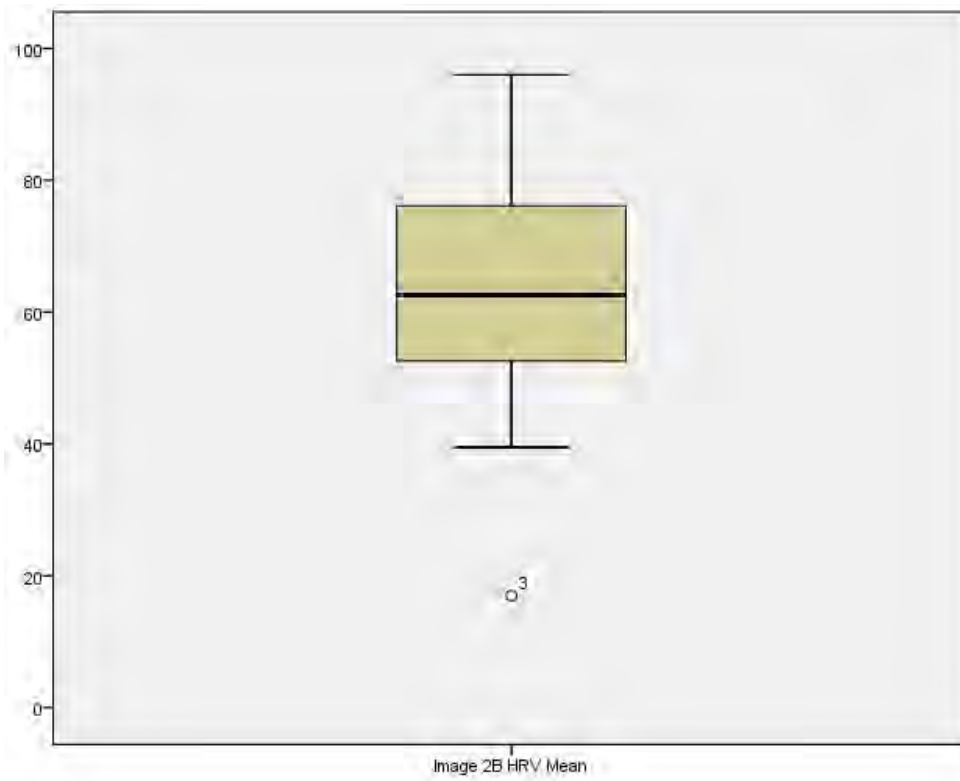
Abbreviations used in the Boxplots:

HRV = Hear rate variability

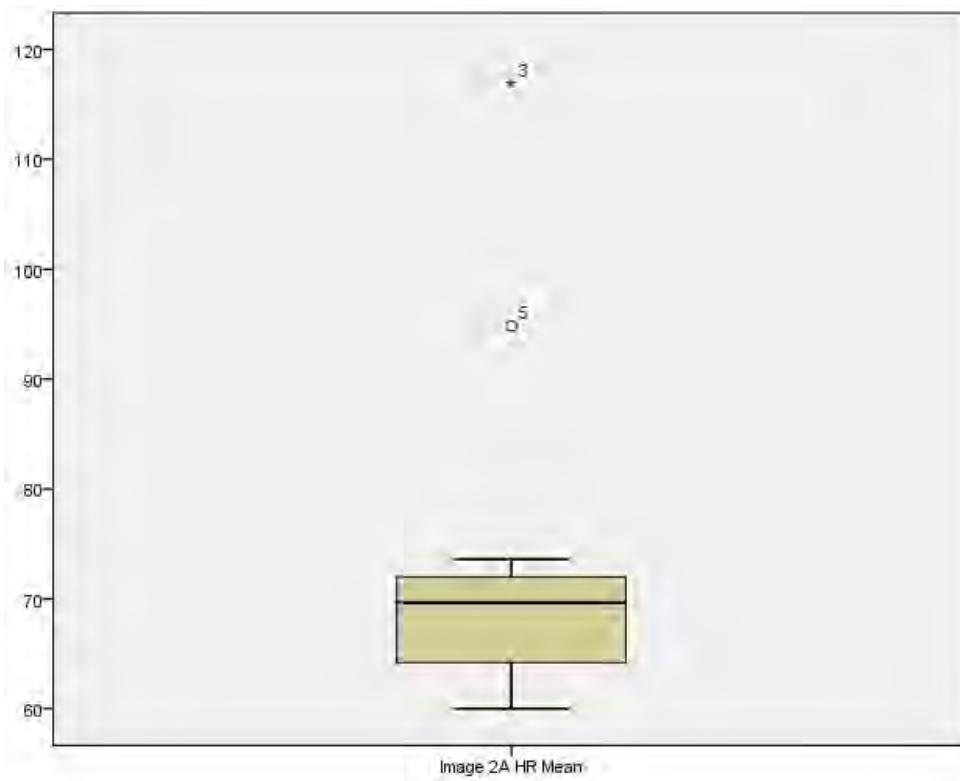
HR = Heart rate

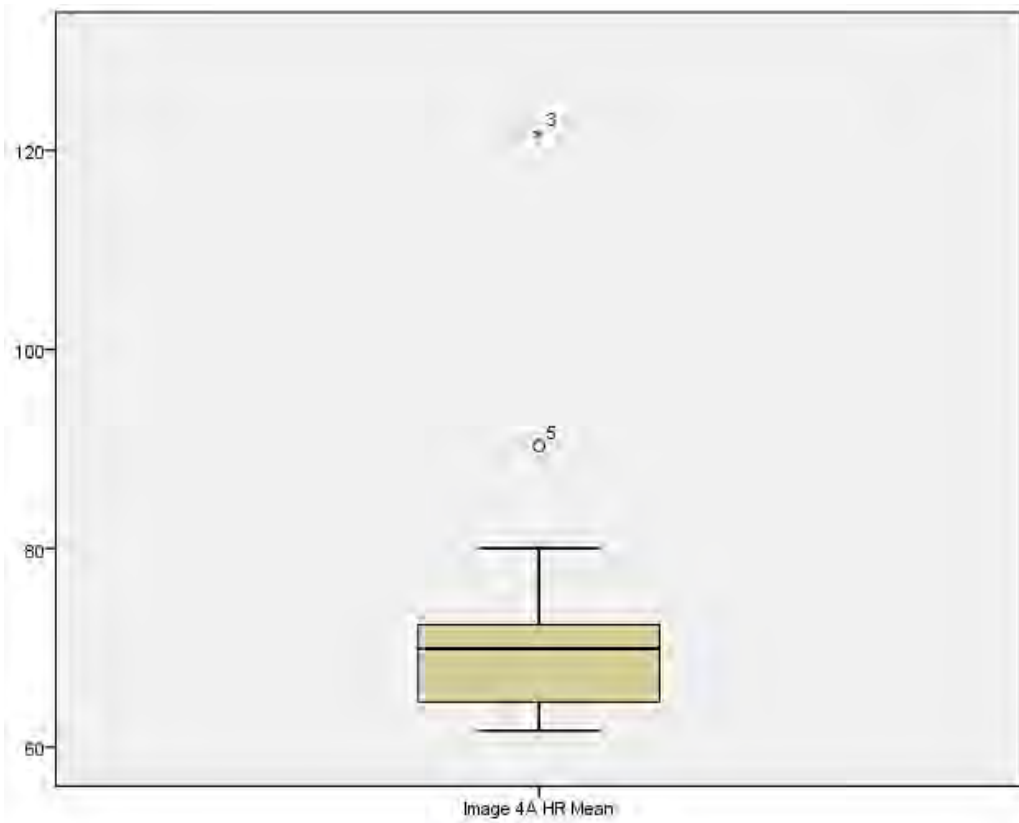
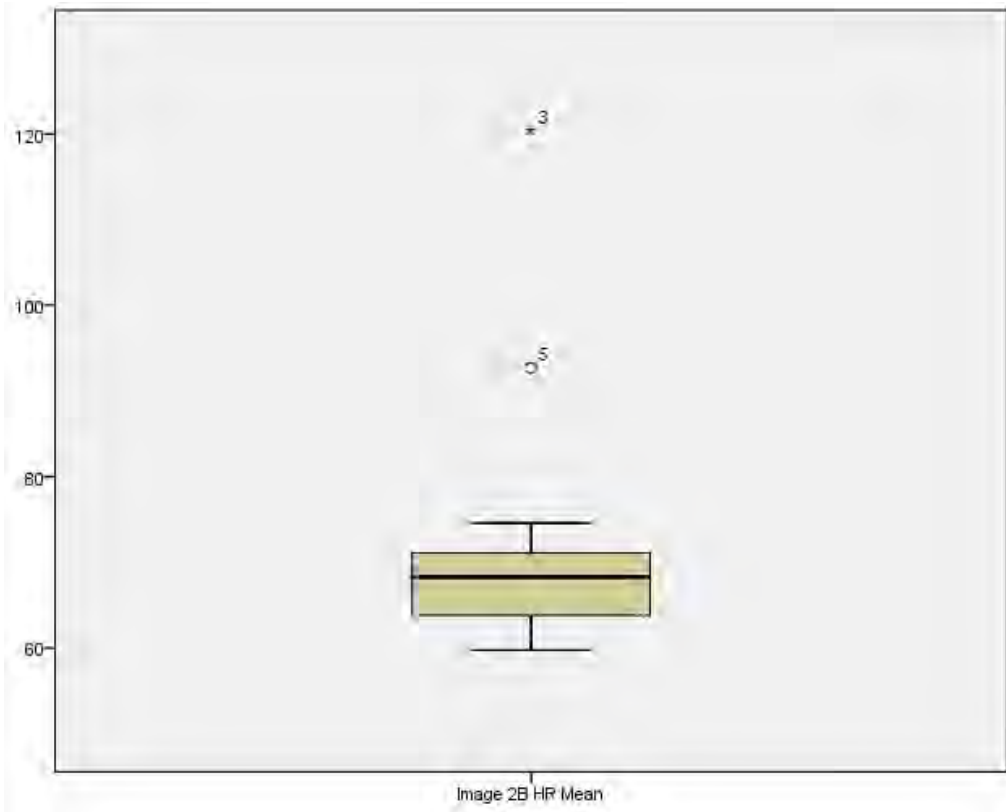
BR = Breathing rate

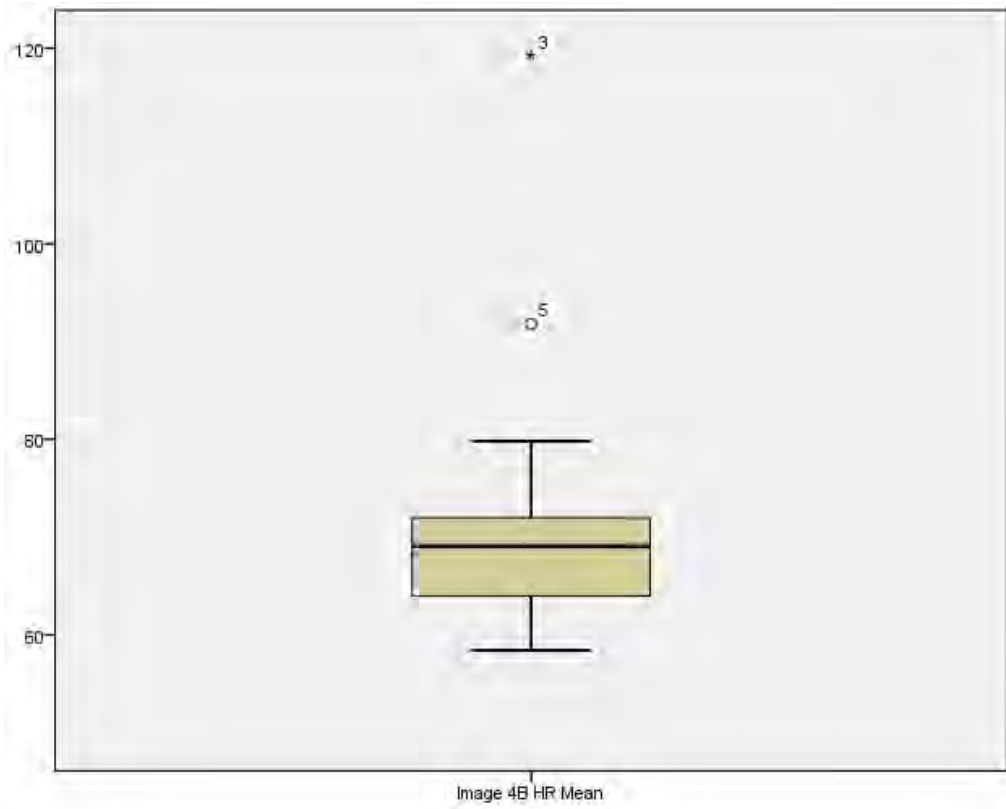
Heart Rate Variability Outliers



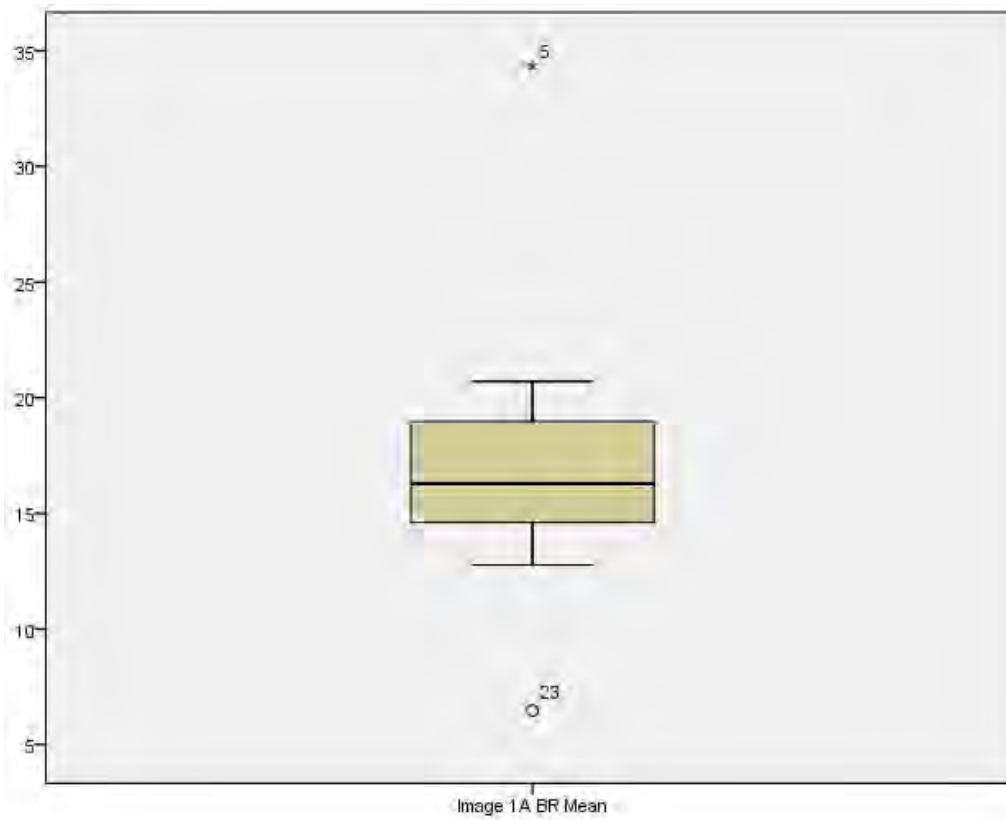
Heart Rate Outliers

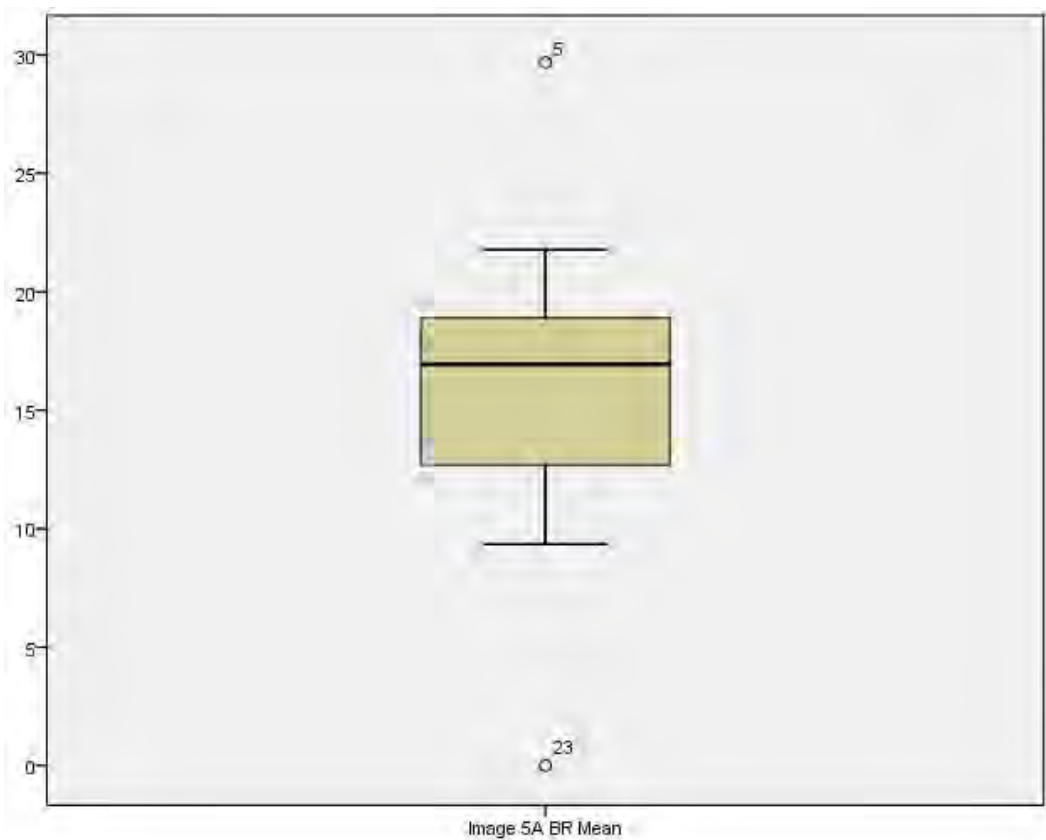
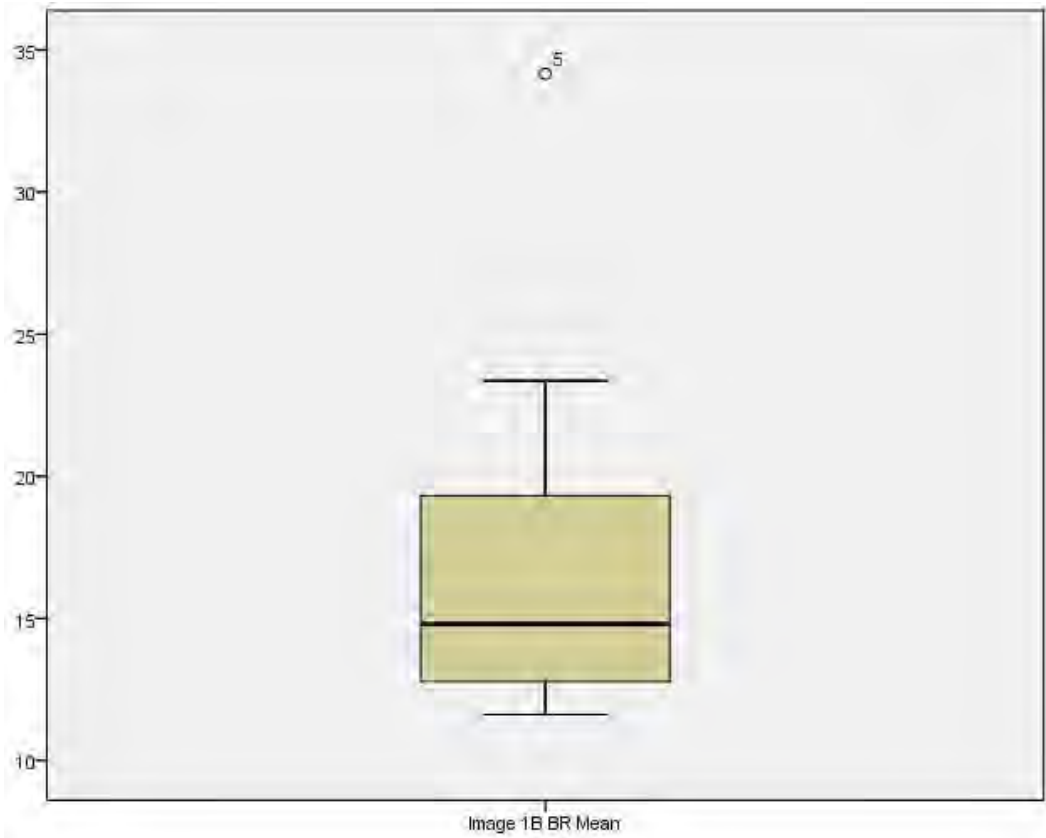


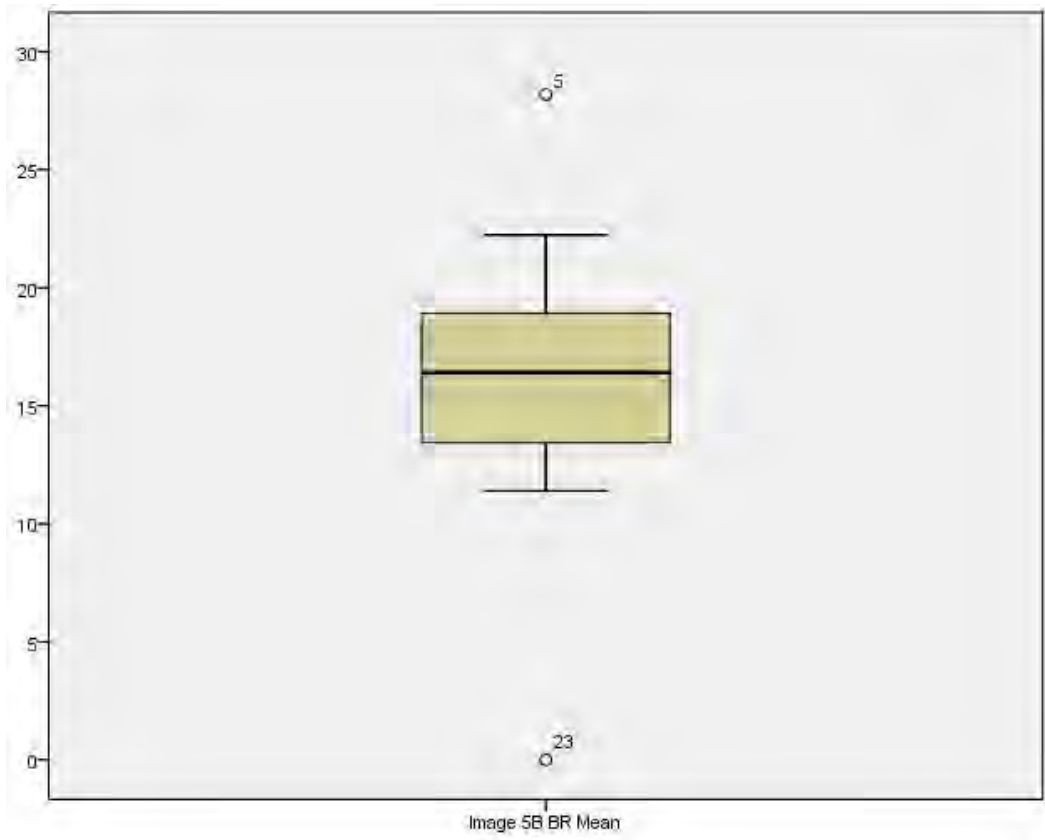




Breathing Rate Outliers

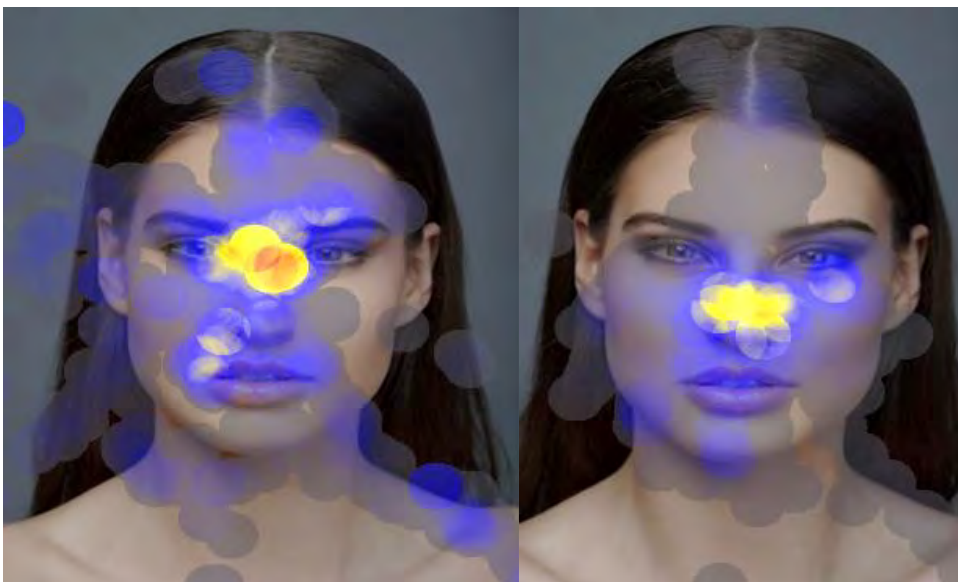






APPENDIX 8: SOCIAL GAZE PATTERNS

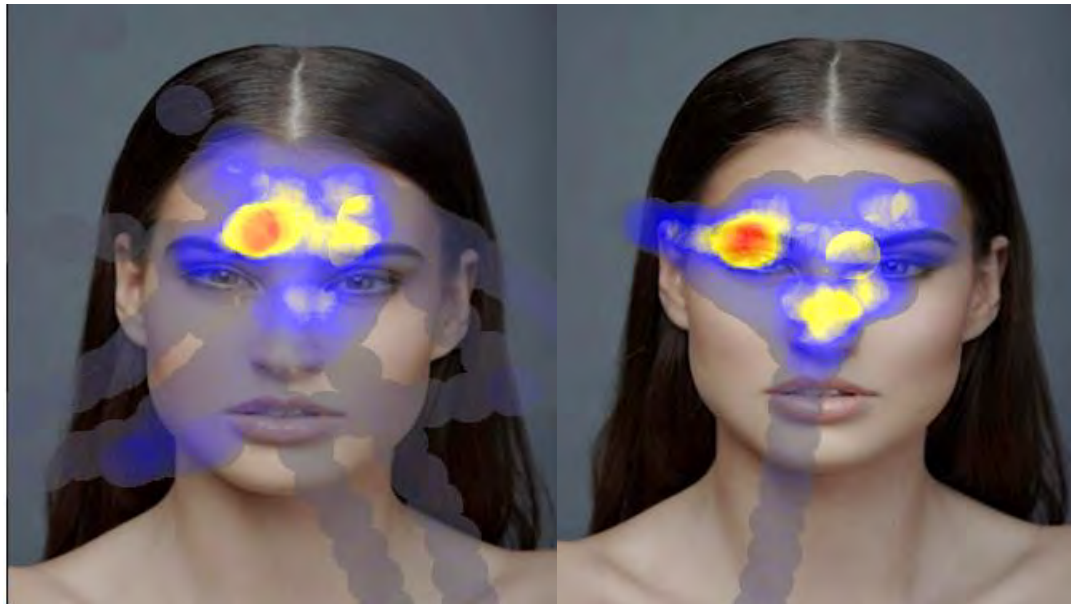
Herewith a selection of images from a variety of participants (in no particular order) that illustrate the 'social gaze'. Each image set reflects an individual participant's 'social gaze' for the non-photoshopped and photoshopped images.

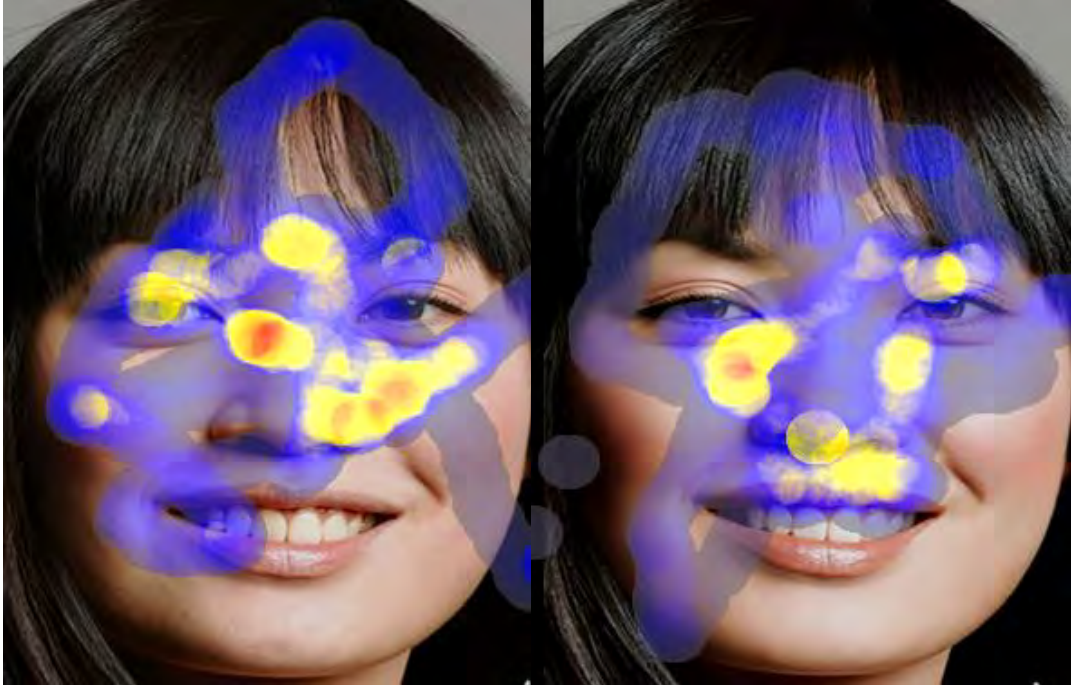












APPENDIX 9: INCREASED ATTENTION TO EYES

Herewith a selection of images from a variety of participants (in no particular order) that illustrate the increased attention to the eyes from the non-photoshopped image to the photoshopped image. Each image set reflects an individual participant's viewing patterns.

