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Beauty as a Confounding Variable: Refining Measure of Viewing Time

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ABSTRACT

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Current research on viewing time measures of sexual attraction fail to explore potential confounding variables of viewing time. One viewing time measure, the LOOK, has been shown to be reliable over time and generally correlated with self-reported sexual orientation but has been unable to differentiate between a non-offending group and an offending group of individuals. This study utilizes the LOOK to examine the relationship between viewing time and a potential confounding variable of viewing time, beauty, using two constructs of beauty (facial beauty and full-body beauty). Facial beauty scores were created by measuring the degree of adherence to four universal standards of beauty shown to correlate with subjective estimates of attractiveness (Schmid, Marx, & Samal, 2006). Given the subjective nature of beauty when viewing the whole body, participants of the study rated the beauty of each LOOK image in its entirety. No significant correlation was found between facial beauty scores and beauty ratings, suggesting these are unrelated constructs. Significant correlations were found between facial beauty scores and male viewing time, and between male beauty ratings and male viewing time. These correlations suggest that further research exploring the extent to which estimates of beauty confound measures of viewing time may increase their discriminative ability and could aid in the development of a norm-referenced procedures for screening and diagnosis.

Keywords: sexual interest, viewing time, The LOOK, beauty standards, facial beauty

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DESCRIPTION OF DISSERTATION STRUCTURE

This dissertation is written in a hybrid format that combines current peer-reviewed journal publication format with traditional dissertation format. The initial sections of this document, which are numerated using Roman numerals, are required for submission to the university. The main portion of the document, numerated by Arabic numerals, follows organization and style required for most peer-reviewed psychology journals. Appendix A includes an extended literature review, which contains detailed descriptions of available measures of viewing time of sexual interest and components of beauty. Appendix B contains the methods section submitted at the prospectus. Appendix C includes the consent form used with research subjects. Appendix D contains the Demographics and Sexual Interest Questionnaire.

Background

A three-stage sequential model of the process of sexual arousal by Singer (1984) can be used to conceptualize human sexual response. The first stage, aesthetic response, involves noticing and having an emotional reaction to an attractive face or figure; attention toward the attractive object increases. The second stage, approach response, involves bodily movements toward the object and desire to achieve physical contact. The third stage, genital response, includes numerous automatic-somatic components and is accompanied by genital tumescence (Singer, 1984). The first and third stages of human sexual response are the foundation for currently available instruments to evaluate sexual deviance. These instruments can be separated into two groups: those that measure sexual interest by looking for differences in an individual's attention to various categories of stimuli, and those that measure sexual arousal through genital tumescence.

Individuals who have sexually offended have a higher recidivism rate if they experience sexual arousal that is inappropriate or deviant (e.g., arousal to children, animals, exposing oneself, and/or use of violence or force; Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005; Wilson & Minor, 2016). Deviant sexual preference is a direct precursor to deviant sexual behavior; the sexual preference hypothesis states that deviant sexual interest is formed through concurrent experience of deviant stimuli and sexually aroused physiological state (Lalumière & Quinsey, 1994; Marshall & Fernandez, 2003; McGuire, Carlisle, & Young, 1965). Therefore, it is imperative for those conducting psychosexual evaluations or assessing risk to know the client's sexual preferences and interests. However, it is frequently difficult to determine if clients are being truthful during these evaluations given the potential outcomes of honesty, such as being labeled as having deviant sexuality or being a risk to others. Assessment of individuals

accused and/or convicted of deviant sexual behavior can be evaluated either through physiological measures of sexual arousal or non-physiological measures of sexual interest.

Physiological measures of sexual arousal, such as penile and vaginal plethysmography, assess genital tumescence while stimuli are presented via video, pictures, audio, or written text. Plethysmography is invasive and requires both significant training and specialized, costly equipment to administer. While penile plethysmography use is widespread, there have only been a few comprehensive studies that critically evaluate the method (e.g., circumference or volumetric) and the sensitivity, specificity, and standardization of administration and stimuli presented (Marshall & Fernandez, 2003; Wilson & Minor, 2016). Research findings have raised doubts about the validity and reliability of penile plethysmography, placing its clinical utility in question (Kalmus & Beech, 2005; Marshall & Fernandez, 2003).

Non-physiological methods of discriminating sexual interest can be divided into two main categories: self-reported and attentional. Self-report measures include clinical interviews, which Craissati (1999) considers central to the assessment of sex offenders, and standardized measures such as card sorts, inventories, and questionnaires. Standardized card sorts are highly susceptible to denial or faking and have a poor discriminative effect between admitting child-sex offenders and non-offenders (Haywood & Grossman, 1994; Hunter, Becker, & Kaplan, 1995). Standardized inventories and questionnaires may be composed of various scales, which may differentiate known offenders from non-offenders but cannot differentiate types of sexual offenders; these are also vulnerable to denial and faking, and clinical interpretation is reliant upon normative data (Gudjonsson & Sigurdsson, 2000; Marshall & Fernandez, 2003; Nichols & Molinder, 1984).

Viewing time measures of sexual interest purport that individuals will look longer at images they perceive as sexually attractive compared with neutral or unattractive images (Marshall & Fernandez, 2003; Rosenzweig, 1942). According to Singer (1984), during the aesthetic response stage of sexual arousal, attractive objects receive more attention from the attracted individual. This attention involves efforts to keep the object in view through eye movements or head turning (Singer, 1984). Viewing time measures involve participants viewing images of males and females of various ages and rating the attractiveness of the image on a Likert scale. Participants are able to advance to the next image either by pressing a key or entering their self-reported sexual interest rating; this allows for viewing time to be measured from the presentation of the image until the participant advances to the next image.

Viewing time as a general construct of measuring sexual interest within the sex offender population has been shown by the research to be useful, yet of lesser discriminative power when compared to physiological measures of sexual arousal (e.g., penile plethysmography) (Wilson & Minor, 2016). This inferior discriminative power could be due to confounding variables of viewing time, and little research has explored this possibility. Current research has found that when individuals are presented with stimuli perceived as beautiful, they will also look longer at these stimuli (Kranz & Ishai, 2006; Levy et al., 2008. As viewing time has been found to correlate both with sexual attraction and beauty, a better understanding of the relationship between these variables is needed. Through this understanding, it will be possible to determine if further research is necessary to improve the accuracy and discriminative power of viewing time measures of sexual interest.

Beauty has been grouped throughout the literature into two categories: facial beauty and beauty of an individual based on their entire person, which will be referred to as full-body beauty

henceforth. Both constructs of beauty have been researched to explore gender, societal, cultural, and ethnic factors, which contribute to an individual's ideal of beauty, in hopes of identifying universal standards of beauty.

Facial beauty has been found to be generally agreed upon by raters cross culturally, regardless of rater gender, and can be accurately and quickly appraised (Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Langlois, Kalakanis, Rubenstein, Larson, Hallam, & Smoot, 2000; Olson & Marshuetz, 2005; Schmid, Marx, & Samal, 2006). Symmetry, averageness, facial expression, and compliance with neoclassic canons have been shown to significantly impact the ratings of facial beauty of both men and women. (Langlois et al., 2000; Reber, Schwarz, & Winkielman, 2004 Rhodes et al., 2002 Schmid et al., 2006).

Full-body beauty ideals for both men and women vary across culture, time, ethnicity, and race, making it unrealistic to use a universal standard to measure this construct of beauty. In females, the waist-to-hip ratio and weight have been found to impact full-body beauty, yet these studies primarily focus on adult female beauty as assessed by adult males (Evans & McConnell, 2003; Freedman, Carter, Sbrocco, & Gray, 2007; Sugiyama, 2004). Little research has been done to explain what contributes to male beauty. While current research reports factors for mate selection (e.g., financial status) are important when females are rating male beauty, males are typically rated as less beautiful by men and women (Zaidel, Aarde, & Baig, 2005).

Viewing Time Measures of Sexual Interest

Viewing time measures of sexual interest have gained popularity within the past two decades as research and development on these measures continues to grow. These measures assess how long an individual views non-pornographic images of males or females of various

ages in order to determine which age and gender category of images the individual views longest (Wilson & Miner, 2016).

Currently, there are three viewing time measures of sexual interest that have been researched: the LOOK, the Affinity 2.5, and the Abel Assessment for Sexual Interest-3 (AASI-3). All three are commercially available (Abel Screening, Inc., 2016; Baird, 2015; Hansen, 2011; Wilson & Miner, 2016), The Affinity 2.5 and the AASI-3 are computer-based assessments. The LOOK utilizes an iPad mini for administration. All three are ipsative assessments that have participants view non-pornographic images and rate their sexual attraction to each image. Viewing time is measured in microseconds according to the time from when the image appears on the screen to when the participant advances to the next image. The participant must enter a rating of the current image before proceeding to the next image. While these measures include self-reported sexual interest, included in the participant profile, the focus of these assessments is viewing time. The resulting profile includes the participants' self-reported ratings of the images and viewing time of the images, grouped by gender and age. The Affinity 2.5 and the LOOK report raw data of viewing time in the participant profiles, allowing for independent research of these measures; the Abel catalogue of assessments including the Abel Assessment for Sexual Interest-3 only provides a profile based on viewing time and their proprietary algorithm thus inhibiting independent research.

The Affinity 2.5. The Affinity 2.5 begins by asking participants to rank, from most sexually attractive to most sexually unattractive, a series of eight line drawings representing males and females of various ages. After completing the ranking, the participant views 80 color images of fully clothed males and females across various ages and developmental stages from

small child to adult. The participant uses a sliding 15-point scale to rate the sexual attractiveness of each image. Viewing time is measured during this task (Hansen, 2011).

Data from the Affinity 2.5 is reported as both raw data and mean ranks. Each of the 80 images is assigned a rank according to the viewing time. The ranks are then averaged within gender and age categories to produce a score for each category. These results are ipsative; however, since raw data is also available, independent research on the data is possible. While data from the Affinity 2.5 and its predecessor the Affinity 2.0 have been used to create reference group patterns, the reference group scoring will not be incorporated into the next version of the Affinity which is still in development (Baird, 2015; Hansen, 2011).

The Affinity is a much newer measure than the Abel Assessment for Sexual Interest (AASI), and subsequently there is less empirical validation (Wilson & Miner, 2016). Similar to the AASI, most of the research around the Affinity 2.5 has been conducted by the creators of the Pacific Psychological Behavioural Assessment, who are responsible for the marketing and commercial development of the Affinity (Wilson & Miner, 2016). Empirical support for the Affinity is incongruent as some studies indicate the initial attraction ratings are better discriminators than the viewing time measure. Results from the Affinity compared to results from penile plethysmography show significant but modest associations, which is similar to early studies of the AASI (Mackaronis, Byrne, & Strassberg, 2014; Mokros et al., 2010; Wilson & Miner, 2016; Worling, 2006).

It is important to consider the development of the Affinity as it may provide context for the results of this study. Initially the Affinity was developed for individuals who both had committed sexual offenses and had cognitive and developmental delays (Glasgow, 2009; Glasgow, Osborne, & Croxen, 2003; Wilson & Miner, 2016). The viewing time component of

the Affinity was designed to check the validity of self-reported ratings, and only over time has it been developed into a measure of sexual interest which could explain why the initial line drawing ratings have better discriminating ability than the viewing time measure (Glasgow, 2009; Glasgow et al., 2003; Wilson & Miner, 2016).

Abel Assessment for Sexual Interest. The Abel Assessment for Sexual Interest-3 has been described as a 15-measure suite of tests including Visual Reaction Time™ (VRT), which is described as "Objective Measurements of Sexual Interest in Children" (Abel Screening, Inc., 2016; Wilson & Miner, 2016). Unlike the Affinity 2.5, the Abel Assessment for Sexual Interest-3 (ASSI-3) creates an ipsative profile requiring all 16 measures to be administered; the VRT measure cannot be used as a stand-alone measure. According to Gray, Abel, Jordan, Garby, Weigel, and Harlow (2015), the VRT profile is derived from a "specific scoring algorithm and its unique set of images" (p. 174). However, the procedure by which these 16 measures are combined to create participant profiles and the specific algorithm used to calculate VRT is proprietary and has yet to be disclosed by the creators of the ASSI-3 (Gray et al., 2015).

The VRT is the second test administered in the AASI-3, following the AASI Sex-Specific Questionnaire. The AASI Sex-Specific Questionnaire begins with questions for the referring therapist about the reason for evaluation and background information related to the participant's sexual behaviors. The therapist questions are answered prior to the participant entering the testing room. Following the therapist questions, the participant completes the AASI Sex-Specific Questionnaire on the computer. During the AASI-3 administration, the computer is locked and requires a password to exit the program. After administrators are sure participants understand how to use the computer, they leave the room and are readily available should any

questions arise. The AASI Sex-Specific Questionnaire is not timed and may be suspended at any time and resumed at a later time or date if needed.

The VRT includes a practice session of 15 images followed by four cycles of 80 images divided into two sets. In the first set, the participant imagines being sexual with the model in each image; in the second set each image appears again and the participant rates them on a seven-point Likert scale from highly sexually disgusting to highly sexually arousing. The VRT begins with 15 practice images shown in two sets like the scored assessment and are used to ensure the participant understands the directions and is varying their ratings of the images. The administrator is in the room during the practice session and provides feedback as needed. Once the administrator believes the participant is able to follow the VRT instructions correctly, and the administrator sets up the VRT assessment and leaves the room.

The profiles from the AASI-3 include self-report and objective measures and include a bar graph of VRT results. These results are presented in a bar graph with a sexual interest bar for each age, gender, and race category. The results of VRT are reported as z-scores to allow comparison of interest across categories; mean self-reported arousal is also included for each category. Results are separated by race, then divided by gender, and then split into the following categories by age: adult, 14-17, 6-13, and 5 or less. Evaluators are highly cautioned that viewing time of males of females in the 17-17 category are considered normal and do not indicate deviant sexual interest.

Numerous studies by individuals involved with the AASI and collaborators with Dr. Abel have indicated that different versions of the AASI are significantly associated with penile plethysmography. Such findings report the AASI can correctly classify sexual offenders with respect to age and gender of their victims, and it can distinguish between individuals who have

been apprehended for sexual offending behaviors and non-offenders (Abel, 1995; Abel et al., 2004; Abel, Huffman, Warberg, & Holland, 1998; Abel, Jordan, Hand, Holland, & Phipps, 2001; Abel, Lawry, Karlstrom, Osborn, & Gillespie, 1994; Abel & Wiegel, 2009).

While there is evidence that VRT—or the results provided by Abel Screening, Inc., that are, at least in part, derived from VRT—is a valid measure of sexual interest and can adequately differentiate between groups of sexual offenders, major concerns remain about VRT and the inability to replicate authors' findings given the lack of transparency regarding the AASI proprietary algorithm to create participant profiles, which involves more than viewing time of sexual interest alone (Wilson & Miner, 2016). Few studies have been published in peer-reviewed journals conducted by investigators independent of the AASI developers. The AASI has a standardized administration procedure, but there have been concerns about trimming data, including removing outliers and potentially compromising raw data (Letourneau, 2002; Smith & Fischer, 1999).

Currently, only one study (Letourneau, 2002) has had access to raw data and data computed by Abel Screening, Inc. Using a sample of 57 volunteers from military prison, the researchers found untrimmed measures were significantly associated with penile plethysmograph in three female categories whereas trimmed measures were associated with two of the three categories, those depicting female and male children (Letourneau, 2002; Wilson & Miner, 2016). Another study (Gray & Plaud, 2005) published in a peer-reviewed journal by authors unaffiliated with the AASI development used reports from Abel Screening, Inc., with 39 participants who met diagnostic criteria for pedophilia and found the VRT had a higher correct classification rate than penile plethysmograph for classifying participant's sexual interest as indicated by their Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) diagnosis (Gray & Plaud,

2005). Out of the viewing times measures, the AASI has the least independent research and information available because the data is proprietary (Sachsenmaier & Gress, 2009).

The LOOK. The LOOK was developed after the Affinity and Abel Assessment for Sexual Interest; as such, it builds upon previous research of viewing time measures of sexual interest. It has undergone multiple studies to assess validity, reliability, temporal stability, and falsification. The LOOK is administered on an iPad mini, which allows the participant to utilize touchscreen technology, resulting in an intuitive and speedier administration. Participants are first asked to provide basic demographic information as well as self-report their sexual preference according to the Kinsey Scale: 0 – Exclusively heterosexual with no homosexual interest, 1 – Predominantly heterosexual, only incidentally homosexual interest, 2 – Predominantly heterosexual, but more than incidentally homosexual interest, 3 – Predominantly homosexual, but more than incidentally heterosexual interest, 4 – Predominantly homosexual, only incidentally heterosexual interest, 5 – Predominantly homosexual, only incidentally heterosexual interest, 6 – Exclusively homosexual interest (Kinsey, Pomeroy, & Martin, 2003).

The LOOK requires participants to view 154 images of fully clothed models (14 of which are practice images and are not included in the sexual interest profile). The images are divided into 14 categories of images based on age and gender, allowing for more specific sexual interest profiles. Participants rate the images according to how sexually attracted they are to the image on a +3 to -3 Likert scale, and the participants' viewing time for each image is recorded.

Once the image appears on the screen, participants must locate and touch a black dot randomly placed in one of the four corners of the image before they are able to rate each image. This dot location component ensures participant attention to each image for a more accurate measure of viewing time. Viewing time is measured from the time the image is presented to the

time the participant presses the dot (dot time), then from the time the dot is pressed until the participant rates the image (rate time); dot and rate times are combined to create total viewing time for an image. Temporal stability of the LOOK was researched and found that total viewing time has been shown to be stable over time for 98% of males and 100% of females in the study, meaning their viewing time created stable profiles from T1 (time one) to T2 (time two; Baird, 2015).

Research has shown that viewing time by category for exclusively heterosexual males is longest for the reported sexual attraction categories "adult females" and "juvenile females." Of the exclusively heterosexual women sampled, average viewing time did not follow sexual attraction patterns, and adult males and juvenile males had the same total viewing time as mature adult females, adult females, and juvenile females (Baird, 2015).

Attempts to falsify the LOOK were studied by asking participants to respond as quickly as possible both with and without regard to the images and asking participants to respond as the opposite gender with and without providing information on previously established viewing time patterns (Veas, 2015). The study found that individuals were able to falsify the LOOK by responding as the opposite gender regardless of information on established viewing time patterns provided, but rapid responding was unable to result in falsification (Veas, 2015). To date, research has been unable to identify a constant multiplier allowing for the LOOK to positively screen individuals with deviant sexual interest without over identifying the norm-referenced profile (Cox, 2015).

These three measures—the Affinity, AASI, and the LOOK—record viewing time and self-report as a way to assess sexual attraction more comprehensively. Viewing time alone has not been shown to differentiate non-offending groups from sexually deviant groups, and current

research suggests looking at other predictor variables to clarify differentiation between the two groups (Mokros et al., 2010).

Beauty

People look longer at both images and people they are sexually interested in and that they consider beautiful (Crosby, 2008; Harmon, 2006; Rosenzweig, 1942; Schmid et al., 2006). Efforts have been made to identify universal standards of beauty for males and females that supersede culture, ethnicity, race, and societal norms. When beauty is separated into facial beauty and full-body beauty, some overarching and universal standards can be discussed. To ensure a holistic understanding of beauty, both beauty of the individual as a whole and facial beauty will be explored in this study.

Full-body beauty. Full-body beauty can vary greatly from culture to culture, within ethnic and racial groups, and across time. Some research has taken an evolutionary approach to understanding beauty by proposing that mate selection weighs heavily on an individual's appraisal of beauty. These studies state that males look for women who appear fertile and sexually mature based on looking young and their waist-to-hip ratio, whereas females look for males who appear financially successful (Buss & Angleitner, 1989; Cunningham et al., 1995; Sugiyama, 2004.

Standards of beauty differ for men and women, and these standards also differ across cultures, racial and ethnic groups, and even time. Regarding ideals of female beauty, researchers have looked at weight and waist-to-hip ratio because such characteristics have been suggested to be a good predictor of fertility in women and overall health (Grammer, Fink, Juette, Ronzal, & Thornhill, 2002). Literature suggests that breast size may also play a role in the perception of female beauty by males (Hess, Seltzer, & Shlien, 1965; Grammer et al., 2002). Research has

claimed that waist-to-hip ratio is the single measure consistently linked across studies of female bodily attractiveness, including males across multiple cultures (Grammer et al., 2002; Singh, 1993; Singh, 1995), yet other studies have shown this preference is not culturally universal (Douglas & Shepard, 1998).

Recently, studies have looked at weight scaled for height or body mass index (BMI) to explain differences in perception of female beauty across ethnic groups and suggest ethnic groups have a preferred BMI, but this may differ between groups and environments (Grammer et al., 2002; Tovee, Brown, & Jacobs, 2001). Different preferences have been found to be based on the ethnicity of the viewer, though both African-American males and Caucasian males prefer similar body weights, regardless of the female's ethnicity (Cunningham et al., 1995; Freedman et al., 2007; Singh, 1994).

Male beauty is considerably less researched, yet research indicates that shoulder width, waist circumference, fat distribution, muscular build, and overall fatness are correlated with a woman's perception of a man's attractiveness (Grammer et al., 2002; Horvath, 1979; Horvath, 1981; Salusso-Deonier, Markee, & Pedersen, 1991). Currently, no universal standards of male or female full-body beauty have been found, and often full-body beauty is determined by participant ratings of such beauty, typically using a Likert scale.

Facial beauty. Facial beauty has been shown to have minimal variance across culture, ethnicity, race, and gender, with one study demonstrating that a machine's prediction of facial beauty significantly correlated with average human ratings of facial beauty (Eisenthal, Drod, & Ruppin, 2006; Rhodes et al., 2001; Zaidel et al., 2005). Cross-cultural agreement on standards of beauty for male and female faces is based on symmetry, averageness, and adherence to geometric conditions (i.e., the golden ratio) and neoclassical canons (Cruz & Mullet, 2014;

Edler, Wertheim, Greenhill, & Jaisinghani, 2011; Gill, 2017; Johnston, 2006; Vegter & Hage, 2000; Zaidel & Cohen, 2005). Studies looking at averageness often combine several images of faces to create an "averaged face" and suggest that extremes are less beautiful than averaged faces, yet while faces that are averaged are rated as attractive, attractive faces, overall, are often not average (Chen, Xu, & Zhang, 2014). Other studies report that smooth skin and the appearance of youth are also cross-cultural standards of beauty (Cruz, 2013; Jefferson, 2004). Research on facial beauty either uses existing photographs or images and looks at variables that can be measured on these faces, or they alter existing facial images in order to study specific aspects of beauty (e.g., averageness or symmetry).

Symmetry. Humans have often equated symmetry to quality and have been shown to prefer symmetrical patterns over asymmetrical ones; the more symmetrical the pattern, the better (Enquist & Arak, 1994). One study found the same parts of the brain lit up during an fMRI when participants rated shapes as symmetric or not and then as beautiful or not (Jacobsen, Schubotz, Höfel, & Cramon, 2006). When looking at facial symmetry, people prefer faces with more symmetry but tend not to prefer complete symmetry, although that could be due to the fact that the completely symmetrical faces used in studies were altered by computer programs (Mealey, Bridgstock, & Townsend, 1999; Perrett et al., 1999; Thornhill & Gangestad, 1999). Symmetry was measured on faces that were unmanipulated by computer programming to increase averageness of the faces, and these studies found that symmetry was positively correlated with participant ratings of beauty (Penton-Voak, 2011; Perrett et al., 1999). Two studies correlated symmetry with datasets with hundreds of facial images that had participant ratings of beauty and found symmetry slightly increased the R^2 statistics, but the effect was weak (Chen & Zhang, 2010; Schmid et al., 2006). Symmetry is also considered to be an indicator of

overall health, good genetics, and long-term mental performance (Lie, Simmons, & Rhodes, 2010; Ewing, Rhodes, & Pellicano, 2010; Cruz, 2013). Regardless of whether people are looking at objects, art, or people, they are drawn to symmetry as opposed to asymmetry and will look longer at things that are more symmetrical.

Neoclassical canons. Scholars and artists of the Renaissance determined rules defining the ideal relationship between different areas on the head and face based on classical Greek canons. Artist-anatomists used the canons in medicine and art from the seventeenth to the nineteenth centuries (Farkas, Hreczko, Kolar, & Munro, 1985). These canons compare carious facial structural features (e.g., nose, mouth, eyes) and purport specific relationships between these features increase one's facial beauty. Of these canons which have been correlated with participant ratings of beauty, six canons are measurable from frontal view images; these are described below in Table 1 (Farkas et al., 1985; Schmid et al., 2006). Canon six was used to create the beauty scores in this study and is bolded in Table 1 below.

Table 1

Description of Neoclassical Canons

Formula No.	Description	
2	Forehead height	= Nose length = Lower face height
4	Nose length	= Ear length
5	Interocular distance	= Nose width
6	Interocular distance	= Right or left eye fissure width
7	Mouth width	= 1.5 x Nose width
8	Face width	= 4 x Nose width

Note. Taken from Schmid et al., 2006.

A study conducted to explore the relationship of these six calculations of neoclassical canons and participants' facial beauty ratings found that of the canons listed above, 2, 4, 6, and 8 correlated with significant decreases in the facial beauty ratings by participants; as the proportions of the face deviated from the proportion defined by the canons, so did facial beauty ratings decrease (Schmid et al., 2006). Canon 7 showed no significance and canon 5 showed

attractiveness scores increased when the proportions increased in women (females with smaller noses and/or a larger distance between their eyes) and decreased in males when the proportions increased (Schmid et al., 2006). When these canons were included in a multiple regression to determine which canons are predictive of participant ratings of facial beauty canon six was found to be predictive across all image and rater gender combinations (Schmid et al., 2006).

Golden ratio. The golden ratio has been included in the discussion of facial beauty since the time of the ancient Greeks and continues to be studied in the literature especially in exploration of universal beauty standards (Gunes, & Piccardi, 2006; Pallett, Link, & Lee, 2010). Also known at the divine proportion, Phi (Φ)= 1.618 is said to be the most desirable proportion for facial features and body proportions (Awad & Hassaballah, 2016). This ratio is calculated by measuring two distances on the face and comparing that ratio to 1.618 (a:b = 1.618); the closer the ratio of two distances is to 1.618, the more beautiful the face is (Prokopakis, Vlastos, Picavet, Nolst Trenite, Thomas, Cingi, & Hellings, 2013). Plastic surgeons use the golden ratio to create proportions with various facial landmarks in both reparative and cosmetic work (e.g., mouth width : the distance between the inner corners of the eyes = 1.618; Vegter & Hage, 2000).

While some say the golden ratio can be used as a universal standard for beauty, others report little correlation between the golden ratio and beauty scores given by human raters (Bottino, Di Torino, Laurentini, 2010; Laurentini & Bottino, 2014). One study created the Phi mask, developed from several golden ratios to measure various parts of the face, but when compared to a computer-averaged face the Phi mask did not fit well indicating that averageness and the golden ratio hypothesis of beauty are not compatible (Chen, et al., 2014; Marquardt, 2002).

A multiple regression was run to see which canons were found to be predictive of participant ratings of facial beauty and the ratios predictive of beauty are: the ratio of ear length to nose width, the ratio of mouth width to interocular distance, the ratio of lip to chin distance to eye fissure width, the ratio of- lip to chin distance to nose width, the ratio of length of face to width of face, and ratio seventeen- mouth width to nose width (Schmid et al., 2006). Of these ratios only two were found to be predictive of participant ratings of facial beauty across all gender combinations of image and rater: the ratio of mouth width to interocular distance and the ratio of lip to chin distance to nose width (Schmid et al., 2006).

Schmid et al. (2006) built a computational model of facial beauty using symmetry, neoclassical canons, and golden ratios. They ran multiple stepwise regressions, and a subset of predictions emerged and they found the facial measurements shown to be most attractive to participant raters across all gender combinations which were used to create objective facial beauty scores in this study (Schmid et al., 2006). The measurements which will be calculated on all images of the LOOK are: the symmetry of the upper points of the lip to the middle of the face; the interocular distance compared to the width of the left and right eye; the ratio of mouth width to interocular distance to 1.618; the ratio of the top of the lip to chin distance to nose width to 1.618.

Statement of Problem

Presently, viewing time measures of sexual interest are the second most popular assessment used in psychosexual evaluations behind penile plethysmography, which is widely considered invasive and often cost and/or training prohibitive. While measures of viewing time provide valuable information, they are less useful in predicting recidivism because sexual arousal, not sexual interest, is a predictor of reoffending.

Current measures of viewing time for sexual interest that are also commercially available—the Affinity and the AASI—require additional measures or components, in addition to viewing time, to produce participant profiles, yet they are generally considered reliable and valid. While the AASI-3 may create the most complete participant profiles, it uses a proprietary algorithm that restricts research by individuals unaffiliated with the AASI from accessing and using raw data, making independent research on this measure difficult. Both the Affinity 2.5 and AASI-3 are limited to providing profiles scored on an intra-individual basis and have inferior discriminating ability when compared to penile plethysmography. The LOOK creates a sexual interest profile from viewing time alone and has been shown to be reliable over time. This measure continues to undergo research to understand and improve its discriminating ability, and a norm-referenced screening or diagnostic procedure has not yet been established. The lack of a norm-referenced procedure limits its use to intra-individual scoring, rendering it unable to be used as a screening tool for deviant sexual interest.

Though these measures use viewing time to gauge sexual interest, numerous studies have shown that longer viewing time may also result when viewing something or someone the observer finds beautiful. Therefore, while sexual interest accounts for varying lengths of viewing time within these measures, it is possible that beauty may also account for a portion of viewing time. Understanding beauty's effect on viewing times may lead to future studies that can aim to enhance the discriminating ability of the LOOK and increase the overall accuracy of this measure and may lead to establishing a normative group.

The LOOK produces a profile where viewing time results are compared against the viewing time results of other gender and age categories, so the profile is ipsative. Current analyses have been unable to differentiate between offending and non-offending groups, so the

LOOK cannot currently be used as a screening tool. There is no research exploring the relationship between beauty and viewing time measures of sexual interest, yet beauty is most likely a confounding variable given the relationship between beauty and viewing time. Measuring and accounting for beauty when analyzing viewing time may enable discrimination between offending and non-offending groups.

Statement of Purpose

The objective of this research is to determine whether viewing time is related to beauty. Beauty can be separated into facial beauty and full-body beauty, so both constructs of beauty are investigated. If viewing time is related to beauty, then beauty values may be used as a covariate to enhance estimates of sexual attraction based on viewing time. Such a finding would warrant further studies of beauty and viewing time.

Research Questions

The current study estimates (1) the relationship between male and female subjective beauty ratings (2) the relationship between objective facial beauty scores and subjective full-body beauty ratings, (3) the relationship between subjective beauty ratings and viewing time and the impact of participant gender on this relationship, and (4) the relationship between objective beauty scores and viewing time and the impact participants' gender has on this relationship.

Method

Participants

The participants for this study included 37 females and 32 males enrolled as undergraduate students at Brigham Young University. They were recruited from undergraduate psychology courses and were awarded extra credit for their involvement in the study. Participants who self-identified as anything other than exclusively heterosexual were excluded

from the study as the following data was compared with data from a previous study with exclusively heterosexual college-aged participants. Consequently, 31 females and 25 males reported their sexual interest as exclusively heterosexual and were used in the study.

Procedures

Beauty ratings. Participants were first asked to complete a demographic and sexual interest questionnaire in order to ensure data was only included from participants who identified as exclusively heterosexual. Sexual preference was assessed using the Kinsey Scale, a seven-point scale on which participants self-rate sexual preference from 0, exclusively heterosexual with no homosexual interest, to 6, exclusively homosexual interest (Kinsey, Pomeroy, & Martin, 2003). All participants completed the study regardless of their Kinsey Scale score.

Participants were then instructed to view all 140 images of fully clothed people from the LOOK included in participant profiles of sexual interest and rate them on a seven-point Likert scale according to how beautiful they believed the model in the image to be. The images from the LOOK include full-body images of males and females of different ethnic and racial backgrounds and different ages, including infants and the elderly. The images were presented in randomized order. These participant ratings were used to create a mean *beauty rating* for each image. Each image received an averaged beauty rating by male participants (male beauty rating), and averaged beauty rating by female participants (female beauty rating) and a beauty rating averaged across male and female participant ratings (total beauty rating).

Beauty scores. *Beauty scores* were calculated for each image of the LOOK based on four objective facial calculations found to be predictive of participant ratings of beauty. Each image was enlarged to clearly identify facial landmarks used to calculate each measurement. Facial landmarks are taken from the Schmid et al. study (2006) and are described in Table 4 and shown

on a face in Figure 1. *Beauty scores* are comprised of the four facial calculations found to be most attractive across all rater and image gender combinations.

Data. Beauty ratings and beauty scores were correlated with previously collected data to examine the relationship between viewing time, beauty scores, and beauty ratings. This existing data from Baird (2015) was collected to measure the temporal stability of the LOOK, so participants were administered the LOOK twice; only the first administration will be used in the data analysis of this study. Included in the Baird analysis (2015) was data from 56 males, ages 18 to 30, and 75 females, ages 18 to 30. Elaborated demographics are found in Table 2.

Table 2

Achieved Data Participant Demographics

	Males (n = 56)		Females (n = 75)	
	Number	Percentage	Number	Percentage
Ethnicity				
Caucasian	48	86	61	82.4
Hispanic	4	7	1	1.4
Asian	3	5.5	5	7
Mixed Race	1	1.5	6	7.4
Year in school				
Freshman	15	26.5	36	49
Sophomore	18	32	15	20
Junior	10	18	12	16
Senior	13	23.5	11	15
Marital Status				
Single	39	69.5	69	93
Married	16	29	5	7
Divorced	1	1.5	-	-

Note: Data from Baird 2015 study.

Measures

The LOOK. The LOOK was developed as a measure to assess sexual attraction based on viewing time. Participants view images of fully clothed people from 14 different categories. These images are uniformly presented with the same background in each image, which includes darkened corners and edges of the image to draw viewer attention to the individual in the image.

These images depict the whole body of an individual and both their body and face are clearly visible in each image. The categories are elderly female (ELF), elderly male (ELM), mature adult female (MAF), mature adult male (MAM), adult female (ADF), adult male (ADM), juvenile female (JUF), juvenile male (JUM), pre-juvenile female (PJF), pre-juvenile male (PJM), small child female (SCF), small child male (SCM), infant female (INF), and infant male (INM) (Baird, 2015). Within each category there are 11 images. One image from each category is used at the beginning of the assessment in order to orient participants to the measure, and data is not collected for those 14 images.

Of these 154 images in the LOOK, the practice images were not included in the study as they are not included in participant viewing time profiles. The remaining 140 images were printed out on 8.5" x 11" paper with a seven-point Likert scale for rating beauty below. First participants filled out a basic demographics and sexual interest questionnaire shown in Appendix D and then moved on to rating the images of the LOOK for beauty. Participants were told to rate the images based on how beautiful they found the subject in each image.

For this study, the Likert scale below the images was altered to eliminate negative numbers and asked participants to rate the beauty of the model in the image as opposed to their sexual attraction to the model in the image. The Likert scale began with 1 – not at all beautiful and ended with 7 – extremely beautiful; negative numbers were not used out of concern participants would be reluctant to negatively rate beauty. These subjective beauty ratings were averaged to create beauty ratings for each image; resulting in beauty ratings by male participants, beauty ratings by female participants and total beauty ratings by males and females of each image.

Facial landmarks. Of the 154 images from the LOOK, 14 practices images were excluded. Thus, the 140 images scored for viewing time and self-reported sexual attraction rating were measured and had a beauty score calculated. Twelve facial landmarks were located and used to measure the faces according to the four beauty calculations, which comprise the *beauty score*. Images were enlarged to 500% to clearly and accurately identify all facial landmarks. Facial landmarks and their descriptions are listed in Table 3, and the landmarks were identified for each image, regardless of age or gender of the image model.

Table 3

Facial Landmarks

Landmark Number	Landmark Description
11	Point at outer right side of the eye
12	Point at inner right side of the eye
13	Point at the outer left side of the eye
14	Point at the inner left side of the eye
18	Most lateral point on left side of nose
20	Most lateral point on right side of nose
22	Highest point on the left side of lip
23	Midpoint on upper lip
24	Highest point on right side of lip
25	Left most point of lip
27	Right most point of lip
29	Tip of chin

Note: Adapted from (Schmid et al., 2006)

Figure 1 shows an image from the LOOK with the facial landmarks identified and numerically labeled. Once landmarks were identified, a digital caliper was used to measure facial calculations to the hundredth millimeter. Facial landmarks were used to measure four facial calculations using symmetry, neoclassical canon, and the golden ratios shown to have a significant relationship with rater-reported beauty and were found to predict beauty ratings (Schmid et al., 2006) each calculation is described in depth below.

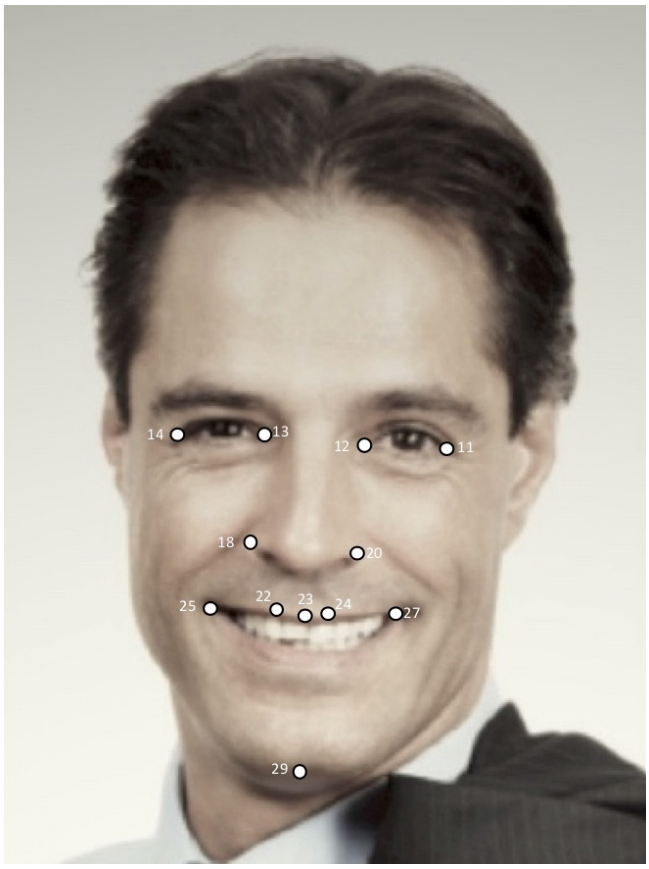

Figure 1. LOOK image cropped and enlarged to clearly show facial landmarks

Neoclassical canon. The canon shown to predict beauty states interocular distance (distance between inner corners of the eyes) is equal to right or left eye width. This requires three measurements: distance between inner corners of the eyes (distance between landmark 12 and 13), width of right eye (distance between landmark 11 and 12), and width of left eye (distance between landmark 13 and 14; Schmid et al., 2006). To calculate compliance with this canon, a coefficient of variation was used. The coefficient of variation is the ratio of the standard deviation of the distances to the mean of the distances. A value of zero indicates compliance with the canon whereas the larger the absolute value, the further the face strays from the canon.

Symmetry. Symmetry was measured by calculating the difference in vertical distances of two landmarks from the vertical midpoint of the face (landmark 23). The pair of landmarks found to be predictive of beauty for both male and female raters was the symmetry of the upper tips of the lips (landmarks 22 and 24).

For this study, the symmetry of individual features was calculated using degree of difference between the left and right side of a face of an individual. These facial symmetry measures (FSM) are a function of the perpendicular distance (d) from a given feature point to landmark 24. Using the following equation from Schmid et al. (2006), the degree of asymmetry between the right and left side of the face will be calculated: Difference: $FSM_{Diff}(d)=d_{ijL}-d_{ijR}$ (Schmid et al., 2006). A facial symmetry measure difference of zero indicates symmetry and the greater the difference, the more asymmetrical the facial symmetry of the image.

Golden ratios. The distance between two facial landmarks was divided by the distance between two different facial landmarks. The value of this ratio was subtracted from 1.618 to assess the adherence to the golden ratio. Two ratios were found to predict beauty across all gender combinations of rater and image and are shown below in Table 4: mouth width to distance between eyes, and distance between top of lip and bottom of chin to nose width. The closer these two image ratios are to the golden ratio, the higher the beauty rating is predicted to be (Schmid et al., 2006). To compare these ratios to the golden ratio, the image ratio was subtracted from the golden ratio. An absolute value of zero indicates compliance with the golden ratio, and absolute values that moved away from zero are predicted to be rated as less beautiful.

Table 4

Golden Ratios Included in Beauty Scores

Ratio Number	Numerator Landmarks	Denominator Landmarks	Description
5	25-27	12-13	Mouth width to interocular distance
7	23-29	18-20	Lips-chin distance to nose width

Beauty scores. Scores composed of four separate calculations based on the aforementioned neoclassical canon, symmetry, and the golden ratios are found to have a significant relationship with beauty across all gender combinations of images and raters and are found to predict beauty ratings from raters (Schmid et al., 2006). Each calculation resulted in an absolute score, wherein the closer to zero a calculation is, indicating compliance with the respective standard of facial beauty measured, the more beautiful the face is predicted to be. As the calculations deviate from its respective objective standard of beauty, the higher its numerical value. All four calculations were averaged to create the overall beauty score so the smaller the beauty score the more beautiful the image is predicted to be.

Data Analysis

Male beauty ratings and female beauty ratings were correlated to examine potential gender differences within subjective beauty ratings. Four facial calculations were used to create a *beauty score* (BS) for each of image of the LOOK. To understand the relationship between objective facial beauty and subjective full-body beauty ratings, beauty scores were correlated with total beauty rating and with both male beauty rating (mBR) and female beauty rating (fBR) for each image. Viewing time by males was correlated with male beauty rating and viewing time by females was correlated with female beauty rating; viewing time was also correlated with total beauty rating. Beauty scores were correlated by viewing time by males, viewing time by females, and total viewing time.

Results

There were 32 males and 37 females who participated in the study. Of these participants, seven males and six females did not meet inclusion requirements because their self-reported sexual preference on the Kinsey scale was something other than exclusively heterosexual. As such, the adjusted number of participants included in data analysis was 25 males and 31 females with an age range of 18 to 26 and 18 to 63, respectively. Demographics of the participants included in this study are found below in Table 5.

Table 5

Participant Demographics

	Males (n = 25)		Females (n = 31)	
	Number	Percentage	Number	Percentage
Ethnicity				
Caucasian	22	88	25	81
Hispanic	1	4	4	13
Pacific Islander	1	4	1	3
African American	1	4	0	0
Mixed Race	0	0	1	3
Year in school				
Freshman	7	28	12	38.5
Sophomore	12	48	4	13
Junior	4	16	3	10
Senior	2	8	12	38.5
Marital Status				
Single	21	84	19	62
Married	4	16	11	35
Divorced	0	0	1	3

1. In order to better understand beauty's role as a confounding variable of viewing time, objective facial beauty scores were created, and subjective beauty ratings were collected for each image of the LOOK. A correlation was used to explore the relationship between subjective beauty ratings by males and subjective beauty ratings by females. Overall beauty ratings by females (M = 4.89, SD = 0.92) were higher than beauty ratings by males (M = 3.60, SD = 0.88). A Pearson's r correlation

coefficient was computed to assess the relationship between male and female beauty ratings and found female beauty rating is strongly and positively correlated with male beauty rating ($r = 0.900$, $n = 140$, $p = 0.000$).

2. To determine the relationship between the two constructs of beauty: facial beauty via objective beauty scores and full-body beauty via subjective beauty ratings, a Pearson's r correlation was computed to assess the relationship between male beauty ratings and beauty score and there was not a significant correlation ($r = -0.077$, $n = 140$, $p = 0.369$). A Pearson's r correlation was also run to assess the relationship between female beauty ratings and beauty score and found no significant correlation ($r = -0.157$, $n = 140$, $p = 0.064$). Included in Appendix D is a table listing the beauty score and beauty rating for each image of the LOOK; some of the images have higher beauty ratings and/or beauty scores than others.
3. A Pearson's r correlation was computed to assess the relationship between the beauty score, male and female beauty rating, and male and female viewing time. The results of these correlations are found below in Table 6. There was a significant correlation between beauty score and viewing time for males and females. Male viewing time was significantly correlated with beauty score and beauty rating by males; the strongest correlation was with male beauty ratings ($r = 0.518$, $n = 140$, $p = 0.000$). Female viewing time was not significantly correlated with beauty ratings but was significantly correlated with beauty score ($r = 0.341$, $n = 140$, $p = 0.000$). Also included in Table 6 are the correlations between male viewing time and female viewing time with the specific objective facial measurements that contributed to the overall beauty score. There is clear consistency in correlations between males' and

females' viewing time and objective measurements of mouth to eye ratio and mouth to nose ratio.

Table 6

Correlations of Viewing Time

	Neo-classical Canon	Symmetry	Mouth to Eye Ratio	Mouth to Nose Ratio	Beauty Score	Male Beauty Rating	Female Beauty Rating
Male Viewing Time	-.221**	.032	.463**	.222**	.207*	.518**	.415**
Female Viewing Time	-.049	.217**	.333**	.254**	.341**	.128	-.011

**indicates p < .05 for all values on the table and ** indicates p < .01*

Discussion

This study examined the relationship between two constructs of beauty and viewing time and found that while viewing time is not perfectly correlated with either objective facial beauty scores or subjective full-body beauty ratings there is an overlap; correlations ranged from 0.2 to 0.5. Participants viewed the 140 images included in the sexual interest profile for the LOOK and rated each image on a seven-point Likert scale based on how beautiful they found the image. These rates were averaged across male and female participants for each image resulting in subjective male beauty ratings and subjective female beauty ratings.

Regarding the relationship between male and female subjective beauty ratings, there was a strong positive correlation. This indicates that while universal standards of full-body beauty have not been found in the literature within the group of participants for the study, full-body beauty was generally agreed upon by males and females. Overall, females assigned higher beauty ratings than males, but there is no clear reason why this occurred. Some of the images were rated higher, or more beautiful than other images though it is unclear what specifically causes the variance of beauty ratings.

Each image underwent four facial beauty calculations based on symmetry, neoclassical canon and golden ratios; these four calculations were averaged creating a beauty score. The

images were enlarged in order to clearly identify facial landmarks and accurately measure each calculation. The beauty score indicated the extent to which each image adhered to these universal standards of facial beauty. The relationship between objective facial beauty scores and subjective full-body beauty ratings by males and by females was assessed and found not significant correlation between either female beauty ratings or male beauty ratings. Given the clear separation of facial beauty and full-body beauty in the literature it stands to reason that these are two separate concepts and they do not appear to influence each other.

Data from a previous study on the LOOK was used to correlate viewing time with beauty ratings (Baird, 2015). Male viewing time was shown to have a strong and positive correlation with male beauty ratings. However, female viewing time was not significantly correlated with female beauty rating. The correlation between male viewing time and male beauty ratings is consistent with the literature on viewing time of beauty and viewing time of sexual interest and suggests that further research to understand these variables could improve the accuracy of viewing time measures of sexual interest. The lack of a significant correlation between female viewing time and female beauty ratings is less straightforward. In Baird's 2015 study she found that self-reported exclusively heterosexual women looked longest at mature adult males, juvenile males, but viewed the category of adult males almost the same amount of time they viewed mature adult females, adult females, and juvenile females. These results do not support the assumption that individuals will look longer at individuals they are sexually interest in, however, it is possible that this apparently inconsistent profile may be explained by the research that states individuals will look longer at individuals they find beautiful; this may also explain female subjective beauty ratings as being overall higher than male beauty ratings.

The viewing time data was also used to explore the relationship between objective beauty scores and viewing time for both males and females. Male viewing time was found to have a weak, but significant correlation with beauty score and female viewing time was shown to have a moderate and significant correlation with beauty scores. It is unclear why beauty score is significantly correlated with both male and female viewing time when subjective beauty ratings were not, but this appears to affirm that facial beauty and full-body beauty are different constructs and both should be considered further given their relationship with viewing time.

Implications

Presently, viewing time measures of sexual interest are used in clinical settings as an alternative to invasive and costly penile plethysmography and is included in forensic evaluations such as sex-offender specific evaluations, psychosexual evaluations and sexually violent predator evaluations. While some of these viewing time measures have significant research on their validity, reliability, and responsiveness to falsification, they are limited by their lackluster discriminative ability to differentiate offenders from non-offenders and by not having a norm-referenced mean pattern of responding to compare individual profiles against. Individual profiles are analyzed as ipsative, meaning viewing time of age and gender categories are compared within themselves. The results of this study show a relationship between two constructs of beauty and viewing time.

The relationship between beauty and viewing time is well documented in the literature, but the effects of this relationship on viewing time measures of sexual attraction is mostly unexplored. Sexual interest is a precursor to sexual arousal, and the theoretical basis that one will look longer at someone or something they find sexually interested is foundation for using viewing time to measure sexual interest. Given the relationship between both measures of

beauty and viewing time shown in this study, viewing time measures of sexual interest may benefit from accounting for viewing time of beauty, as that will yield a viewing time more accurately representative of sexual interest. This study provides a clear reason to further explore the relationship of beauty on viewing time.

Male beauty ratings and female beauty ratings were strongly and positively correlated, indicating that while there may be gender differences in the perception of beauty, these differences are unimportant. Females rated the images higher overall. Why females rated the images as more beautiful is unclear and outside the scope of this paper, and thus may be an interesting area for further exploration that may help to explain the viewing time profiles of exclusively heterosexual females.

Facial beauty scores and full-body beauty ratings showed no significant correlation, meaning that they should not be used independently to measure beauty; they appear to be different constructs measuring different aspects of beauty. Facial beauty has been found to have universal standards of beauty whereas the beauty of an individual as a whole is subject to varying cultural, racial, ethnic, and societal standards of beauty. This difference in standards could explain the difference of perceived beauty of a model when only their face is visible and when their entire body is visible. Further research on viewing time measures of sexual interest and beauty would benefit from incorporating a measure of both facial and full-body beauty as there is variance across both beauty scores and beauty ratings and both constructs have been shown to correlate with viewing time to some degree.

Male viewing time from Baird (2015) was correlated with male beauty ratings and beauty scores to explore possible relationships. There was a strong positive correlation between male viewing time and male beauty ratings; male viewing time was also significantly correlated with

beauty scores. This is important to note as it suggests that both constructs of beauty may be a confounding variable of viewing time for males.

Baird (2015) found that viewing time patterns of males followed self-report sexual attraction whereas viewing time patterns of females did not as they viewed mature adult females, adult females, and juvenile females about the same amount of time as they viewed adult males. However, viewing time for females did not correlate with beauty ratings by male, females, or combined males and females, which may provide insight on the female viewing time patterns found in Baird's study (2015).

The results of this study can be used in two important ways to improve screening and diagnosis of sexual offenders. The first procedure would be an ipsative approach. Using an ipsative logic individuals would be asked to take the test twice the first administration would ask participants to rate the images according to sexual attractiveness. The second administration would ask participants to rate images according to beauty. At an ipsative level, beauty ratings could then be used as a covariate within subject to estimate a less confounded sexual attraction value.

A second procedure would be norm-referenced. In this case, the beauty scores per slide contained in Appendix D could be used as covariates in discriminate function analysis to determine whether viewing time can discriminate between non-offenders and sexual offenders.

Limitations

The intention of the study was to administer the LOOK on the iPad mini in order to replicate the design of previous studies and measure viewing time when instructed to rate beauty compared to rating sexual attraction. By having individuals administered the LOOK with the instructions of rating the images for beauty and not sexual attraction, the viewing time

measurements would allow for a regression to be used to analyze the data and could lead to a better understand of the relationship between beauty and viewing time. The sample size of the study was relatively small and a majority of participants were between age 18 to 30, limiting the generalizability of the beauty ratings. While the ethnic distribution is representative of the demographics of Brigham Young University, there was an overwhelming majority of participants who identified as Caucasian. This lack of ethnic diversity should be taken into account when generalizing to other, more diverse, populations.

Future Research

It is evident from this study that the relationship between beauty and viewing time merits further research; this research may aid in improving the accuracy of viewing time measures of sexual interest and increase the discriminating power. Given the temporal stability of the LOOK (Baird, 2015) it may be beneficial to administer the LOOK to individuals twice: once asking them to rate images for sexual interest, and once asking them to rate for beauty. Such a study would eliminate cofounding variables of using two similar but different participant populations and provide valuable information on the relationship between viewing time of sexual interest and viewing time of beauty. The LOOK has been shown to result in males and females having different viewing time patterns, and one explanation may be the relationship between beauty and viewing time.

While the beauty ratings were taken from a similar population to those administered the LOOK whose viewing time was correlated with beauty ratings, there is very limited ethnic diversity and age range, and all participants from both studies have a similar level of education. A larger pool of ratings from a more diverse population—including participants with various ethnicities, education levels, etc.—would provide future research with more representative

beauty ratings, which could be applied to a wider array of sexual attraction profiles and make results more generalizable.

It may also be valuable to use a participant pool of known sex-offenders to gather beauty ratings in order to see if there is a relationship between viewing time and beauty in that specific population. Alternatively, having such a population complete the LOOK twice, rating once for sexual interest and once for beauty, would provide rich information on the impact beauty has on viewing time.

Conclusion

This study examined the relationship between two constructs of beauty and viewing time and found that while viewing time is not perfectly correlated with either objective facial beauty scores or subjective full-body beauty ratings there is an overlap; correlations ranged from 0.2 to 0.5. It is possible that adding beauty values to predictions would covary out beauty from estimates of sexual attraction based on viewing time. This may increase the discriminatory power of viewing time measures of sexual interest allowing them to differentiate between offender and non-offender groups.

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APPENDIX A

Literature Review

Viewing Time Measures of Sexual Interest

Viewing time measures of sexual interest have gained popularity within the past two decades as research and development on these measures continues to grow. Human sexual response can be broken into a three-step sequence starting with an aesthetic response, the approach response, and the genital response; viewing time is a way to measure one's sexual interest in the aesthetic response stage (Singer, 1984). These measures assess how long an individual views non-pornographic images of males or females of various ages in order to determine which age and gender category of images the individual views longest (Wilson & Miner, 2016). Wilson and Miner (2016) explain that measures of viewing time (VT) require "test takers to view pictures of models of varying ages and gender while measurements are taken of the differential length of time the individual looks at each picture. . . [T]hose photos that the test taker lingers on longest (during VT assessment) are assumed to represent the age and gender category in which he has the greatest sexual interest" (p. 108).

Currently there are two commercially available measures that use viewing time as the measure for sexual interest in adults; Abel Assessment of Sexual Interest-3 and the Affinity 2.5. The LOOK was developed based on research of these two measures in order to develop a viewing time measure of sexual interest that creates a participant profile exclusively from viewing time and addresses shortcomings of two aforementioned measures. All three of these measures have been unable to identify individuals who have been convicted of sexual offenses (offenders) from those who have not been convicted of sex-offense charges (non-offenders). This lack of discriminative power limits the usefulness of these measure and results in participant

profiles that are ipsative, meaning individual profiles are interpreted intra-individually without a norm-referenced group. The lack of norm-referenced scoring and less than desirable discriminating power limits these measures from being used as screening tools for deviant sexuality, and suggest further research may improve viewing time measures of sexual interest.

The Abel Assessment of Sexual Interest-3

The Abel Assessment of Sexual Interest-3 (AASI-3) is the third revision of this measure and it includes an evaluation suite of fifteen measures that must all be administered in order to create a participant profile. The AASI-3 is only for adult administration and it requires a seventh grade reading level, so individuals with intellectual disabilities, learning disorders, or those who are illiterate are unable to be administered the AASI-3. Of the measures that construct the AASI-3, only one (Visual Reaction Time Measures Sexual Interest [VRT]) involves viewing time yet it cannot be administered as a standalone assessment.

The VRT is completed on the computer and has test-takers rate various non-pornographic images of fully clothed females and males of various ages and records viewing time, which is summed to a constant and then used to create an individual profile (Abel et al., 1994; Abel et al., 1998; Abel et al., 2004; Baird, 2015; Cattell, 1944; Tong, 2007). The participants are shown 15 practice images and two sets of 80 images twice; once to image themselves being sexual with the individual in the image and again to image being sexual with the individual in the image and rate how sexually appealing the thought of being sexual is. During the administration of the practice images the evaluator is tasked with observing the participant and providing helpful suggestion (e.g., if the participant is rating all the images as neither sexual arousing or sexually disgusting the evaluator may ask if the participant finds any of the individuals arousing and comment that is hard to believe; Abel Screening, Inc., 2010).

The Affinity 2.5

The Affinity is comprised of two tasks; first participants are asked to rank eight line drawings from most sexually attractive to least sexually attractive. After completing the ranking, the participant views 80 color images of fully clothed males and females across various ages and developmental stages from small child to adult. The participant uses a sliding 15-point scale to rate the sexual attractiveness of each image. Viewing time is measured during this task (Hansen, 2011).

Initially the Affinity was developed for individuals who both had committed sexual offenses and had cognitive and developmental delays (Glasgow, 2009; Glasgow, Osborne, & Croxen, 2003; Wilson & Miner, 2016). The viewing time component of the Affinity was designed to check the validity of self-reported ratings, and only over time has it been developed into a measure of sexual interest which could explain why the initial line drawing ratings have better discriminating ability than the viewing time measure (Glasgow, 2009; Glasgow et al., 2003; Wilson & Miner, 2016).

Data from the Affinity 2.5 is reported as both raw data and mean ranks. Each of the 80 images is assigned a rank according to the viewing time. The ranks are then averaged within gender and age categories to produce a score for each category. These results are ipsative; however, since raw data is also available, independent research on the data is possible. While data from the Affinity 2.5 and its predecessor the Affinity 2.0 have been used to create reference group patterns, the reference group scoring will not be incorporated into the next version of the Affinity which is still in development (Baird, 2015; Hansen, 2011).

The LOOK

The LOOK was developed in order to fill a void in current methods of measuring sexual attraction. Picking up where other measures have fallen short, the LOOK measures sexual interest exclusively through viewing time; self-reported sexual interest ratings are included in the participant profile, but the ratings have limited clinical value. The LOOK is administered on the iPad mini and has 154 images made of 14 differentiated age and gender categories from infants to elderly adults (Baird, 2015). The images used in the LOOK are varied in facial expression, age, body type, hair color, body position, and racial groups determined by looking at the variance in the United States (Baird, 2015). After completing a brief demographic form participants are shown fourteen practice images, one image from each age and gender category, in order to familiarize themselves with the LOOK. Once the practice images have been administered the participant is seamlessly transitioned to the remaining 140 images which are randomly administered.

An image appears on the screen along with a black dot in one of the four corners and a Likert scale below the image. The black dot is used to collect data on choice-reaction time (CRT): "In general, CRT is an information-processing method to measure the interest or preference of individuals by determining the amount of attention that they allocate to given stimuli" (Mokros, Dombert, Osterheider, Zappalà, & Santtila, 2010, p. 1082). CRT is used to record how long participants view each of the different images before pressing the black dot. Rating time is measured by the time it takes for participants to rate the image on the Likert scale after pressing the black dot. Dot time and rate time are added together to create total viewing time. Total viewing time is used to create individual profiles for viewing time across image categories.

Participants must first locate and touch the dot in order to unlock access to the Likert scale below the image. Participants cannot progress to the next image until the dot has been pressed and the participant has given a sexual attraction rating on the Likert scale. Baird (2015) explains the Likert scale as "3 very sexually attractive, 2 sexually attractive, 1 mildly sexually attractive, 0 neutral, -1 mildly sexually unattractive, -2 sexually unattractive, -3 very sexually unattractive. Once the image has been rated, the next image appears immediately" (p. 10).

The LOOK has been proven to be temporally reliable and has been tested to establish expected patterns for non-pedophilic, exclusively heterosexual, college-age males and females (Baird, 2015). The LOOK currently is unable to differentiate between non-offending groups of exclusively heterosexual college age students and those with a history of sex-offending. As the LOOK uses viewing time as the way to measure participant's sexual interest in the images, understanding what can account for longer viewing times would help rule out what factors are causing the lack of differentiation between groups.

Beauty

Studies have shown that people look longer at things they find beautiful whether looking at art, people, or landscapes (Barrett, 2002; Rhodes, Geedes, & Jeffery, 2002). This tendency begins in infancy, continues throughout the lifespan, and is seen across cultures and ethnicities (Andreoni, 2008; Barrett, 2002). In the study by Schmid et al. (2006), they found that women's viewing time of faces did not significantly impact their rating of beauty, but for men, there was a significant increase in rating with each additional second spent looking at the faces. With both men and women, the gender of the face being viewed did not impact these findings (Schmid et al., 2006). Beauty has been separated in the literature into two distinct constructs: facial beauty and full-body beauty. While both constructs are subject to ethnic, racial, socio-economic, and

cultural standards that vary, some universal standard of facial beauty have been agreed upon (Schmid et al., 2006).

Full-Body Beauty

There are several commonly acknowledged beauty ideals, such as low body fat in women, ample breast size, and ideal height for men exceeding ideal height for women. While not all people share these ideals, they are openly recognized as descriptions of how one "should" look (Baumann, 2008). Full-body beauty is widely researched, yet there is minimal agreement on any universal standards of full-body beauty, both for males and females. Often, evolutionary and/or mating factors are considered when exploring the question: What makes someone beautiful? Most commonly used to assess full-body beauty is participant ratings which allows researchers to explore the relationship between participant ratings and participant demographics.

Facial Beauty

While there are some ethnic differences in what is considered a beautiful face, there are several overarching rules or measurements that allow us to more objectively gauge facial beauty. These rules are what help us determine how to define and identify facial beauty.

When establishing a criterion to judge beauty, there are several universal factors that contribute to a facial beauty. Symmetry is one of the most agreed upon factors when trying to objectively look at beauty for both men and women (Cruz & Mullet, 2014; Eisenthal, Drod & Ruppin, 2006; Chen, Xu & Zhang, 2014). Beauty is different between genders, and at times what is an ideal for men is the opposite for women (Synnott, 1987). There are also submerged ideals, such as how the spacing between one's eyes should be exactly as wide as one eye (Dilio, 2005; Habbema, 2004).

Facial measurements to determine beauty have been the subject of longstanding discussion from philosophers to artists, surgeons, and feminists. Averageness, symmetry, neoclassical canons, and the golden ratio continue to be researched today as indicators of beauty. Research with the goal of figuring out what beauty is has been increasing, not just in psychology, but in computer science, ortho and maxilla-facial surgery, and plastic surgery journals. The field of computer science wants to use beauty as a way to improve computer facial recognition. The medical fields hope to understand beauty in order to recreate it during surgery. Facial beauty is typically divided into two types, one having to do with pleasing features, and the other having to do with extremes as seen on high fashion models. For the purposes of this study, we focus on facial beauty as defined by a combination of symmetry, the golden ratio, and neoclassical canons. Studies have looked at one or two of these components at a time and mainly use one of two images, moving facial features to see if participants agree with the previously stated theories

Symmetry. Dividing the face in half vertically and comparing how identical each side is in terms of feature placement has been shown to have a correlation with beauty, and especially with observer ratings of beauty (Meenai & Abbas, 2010).

The golden ratio. The golden ratio has been talked about and used throughout the centuries by artists, builders, and mathematicians and is defined by the number Phi, Φ=1.618 (Hassaballah, Murakami, & Ido, 2013). The golden ratio can be used to compare ratios of various points on the face such as height of face, width of face, distance between the center of the eyes, width of the mouth, etc. (Hassaballah et al., 2013). This is one of the most frequently researched ways to measure beauty as it provides an objective definition of beauty and can be easily replicated across ethnicities, and gender. Research participants who rank beauty or attractiveness of images when features are altered to fit the golden ratio tend to rank images

higher in beauty/attractiveness than when the features of the image stray from the golden ratio (Meenai & Abbas, 2010).

Neoclassical canons. Beauty canons have been used since ancient times to help explain what beauty is and to help artists define what is aesthetically pleasing about a face. Marcus Vitruvius used the concept of facial trisection, where the face can be divided into thirds by horizontal lines passing through the hairline, glabella, and subnasale and the menton. Renaissance artists used neoclassic canons in their artwork, and today sculptors, painters and even plastic surgeons incorporate them in their work (Laurentini & Bottino, 2014). Of the seven canons proposed by Farkas et al. (1985) described in Table 1, five (formulas 2, 4, 5, 6, and 8) were found to have a significant relationship with attractiveness (Schmid et al., 2006).

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APPENDIX B

Methods Submitted at Prospectus

Data

The data used for this study were collected previously at Brigham Young University by Sierra Baird and Joy Cox. Baird's (2015) participants were students at Brigham Young University recruited from undergraduate psychology course and were awarded extra credit for participating in the study. Data was collected from 56 males and 75 females who were administered the LOOK.

Cox's (2015) participants were all facing criminal charges of a sexual nature and were administer the LOOK as part of a battery for psychosexual evaluation or reevaluation. Psychosexual evaluations were requested by the court or another interested party to assist with making sentencing decisions. All participants were males age 18 or older.

In addition to using participant data, the current study will also use the images in the LOOK to create beauty scores for each image. All images used in the LOOK will be given a beauty score based on their facial beauty. There are 154 images purchased from Shutterstock and broken into 14 different categories: elderly female, elderly male, mature adult female, mature adult male, adult female, adult male, juvenile female, juvenile male, pre-juvenile female, pre-juvenile male, small child female, small child male, infant female, and infant male. The people in the images range in ethnicity and race according to demographics proportional to the variance in the United States (Baird, 2015).

Procedures

The images used will be from the LOOK and enlarged so that facial landmarks are clearly visible and easily identifiable. All images in the LOOK will be analyzed with the same

facial markers and calculated from the same measurements regardless of the age of the individual in the image. The author will both locate facial landmarks and measure the faces according to the three factors in order to determine the objective attractiveness score. As listed in Table 7 and illustrated in Figure 2, 23 facial landmarks will be located in order to measure the various proportions gathered from the Schmid et al. study (2006) showing significant correlation between rater-reported attractiveness and the principles from symmetry, neoclassical canons, and the golden ratio.

Table 7

Expanded Facial Landmarks

Feature Point	Feature Description
01	The point on the hairline in the midline of the forehead
03	Most prominent midline point between eyebrows
05	Highest point on the free margin of the left ear
10	Highest point on the free margin of right ear
11	Point at outer right side of the eye
12	Point at inner right side of the eye
13	Point at the outer left side of the eye
14	Point at the inner left side of the eye
15	Lowest point on lower margin left eye
16	Lowest point on lower margin right eye
17	Lowest point of left ear
18	Most lateral point on left side of nose
19	Midpoint of nose
20	Most lateral point on right side of nose
21	Lowest point of right ear
22	Highest point on the left side of lip
23	Midpoint on upper lip
24	Highest point on right side of lip
25	Left most point of closed lip
26	Midpoint of closed lip
27	Right most point of closed lip
28	Point on lower border of lower lip or upper border of chin
29	Tip of chin

Note. Facial landmarks Schmid et al. (2006)

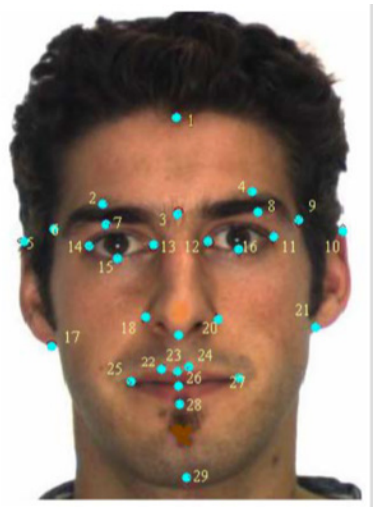

Figure 2. Image from Schmid et al., 2006

Canons. All canons listed in Table 1 will be included in the objective beauty score with the exception of canon 7. Special consideration will be given to formula 5 (Interocular distance = Nose width) as the relationship between the proportion and beauty varies inversely for females and correlates normally for males.

Symmetry. Symmetry is measured by creating a vertical line using facial landmarks 1, 3, 19, 23, 26, 28, 29 and fitting the least squares regression line through the points (Schmid et al., 2006). Symmetry of individual features will be calculated using degrees of difference between the left and right side of a face of an individual. These facial symmetry measures (FSM) are a function of the perpendicular distance (d) from a given feature point to the line of symmetry created by the previously described regression line. Using the following equations from Schmid et al. (2006), the degree of asymmetry between the right and left side of the face will be calculated.

Difference: $FSM_{Diff}(d)=d_{ijL}-d_{ijR}$

Ratio: $FSM_{Ratio}(d)=(d_{ijL})/(d_{ijR})$

LN(Ratio): $FSM_{LNRatio}(d)=\ln(d_{ijL})/(d_{ijR})$

Adjusted Difference: $FSM_{AdjDiff}(d)= [(d_{ijL}-d_{ijR})/((d_{ijL}+d_{ijR})/2)]$

Schmid et al. (2006) analyzed 17 ratios and found three to be significant with attraction scores given by participant raters. The three pairs of symmetry points that will be measured are the nose (points 18 and 20), the mouth (points 25 and 27), and the upper tips of the lips (points 22 and 24). The last pair (points 22 and 24) will only be used with male images as the increased difference between these points were shown to increase female attractiveness scores by 0.1 for every unit increase in the difference ($p < 0.0001$).

Golden ratio. Golden ratios are defined by Meisner (2013) and Narain (2003) and analyzed by Schmid et al. (2006). The numbers are the facial landmark points identified in Table 2 where the x or y refers to the x-coordinate or y-coordinate of the points used in calculating the ratio. Schmid et al. (2006) found that the ratios in Table 8 are related to attractiveness scores, and scores increased as the ratios got closer to the golden ratio. The ratios in Table 9 had inverse relationships with attractiveness scores. As the ratios got further away from the golden ratio, attractiveness scores increased (Schmid et al., 2006).

Table 8

Golden Ratios

Ratio Number	Numerator Points	Denominator Points	Description
2	y10-y21	x18-x20	Ear length to Nose width
5	x25-x27	x12-x13	Mouth width to Interocular distance
6	y23-y29	x12-x13	Lips- chin distance to Eye fissure width
7	y23-y29	x18-x20	Lips- chin distance to Nose width
14	y1-y29	x17-x21	Length of face to Width of face
17	x25-x27	x18-x20	Mouth width to Nose width

Note. Golden Ratios obtained from Meisner, 2006, and Narain 2003 from Schmid et al. 2006

Table 9

Inversely Related Golden Ratios

Ratio Number	Numerator Points	Denominator Points	Description
3	y10-y21	x18-x20	Mideye distance to Interocular distance
4	x15-x16	x18-x20	Mideye distance to Nose width
8	x12-x13	x12-x11	Interocular distance to Eye fissure width
10	x18-x20	x12-x11	Nose width to Eye fissure width
16	x18-x20	y19-y26	Nose width to Nose – mouth distance

Note. Golden Ratios obtained from Meisner 2006 and Narain 2003 from Schmid et al. 2006

Schmid et al. (2006) showed that attractiveness is higher when ratio 16 is equal to itself (nose width is approximately equal to the mouth-to-lips distance) instead of equal to the golden ratio. For ratios 3 and 4, images are shown to be more attractive when the distance between the middle of the eyes is larger than the Interocular distance or nose width. Attractiveness scores were highest when ratios 8 and 10 are around 1.

As seen in Table 10, when Schmid et al. (2006) ran multiple stepwise regressions, a subset of prediction emerged. Images that follow canon 6, symmetry pair 22-24, and golden ratios 5 and 7 were shown to be most attractive to participant raters across all gender combinations (Schmid et al., 2006).

Table 10

Variables in Final Model

Rater/ Image	Canon Formulas	Symmetry Pairs	Ratio Numbers
Female/Female	**6**, 8	**22-24**	**5**, 6, **7**, 14, 17
Female/Male	2, **6**	7-8, 18-20, **22-24**	**5**, 6, **7**
Male/Female	2, 4, 5, **6**, 8	**22-24**	2, **5**, **7**, 14, 17
Male/Male	2, 4, **6**, 8	18-20, **22-24**, 25-27	**5**, 6, **7**

Note. Canon formulas, symmetry points, and golden ratios in final model (Schmid et al., 2006)

Measure

The LOOK is an iPad-based viewing-time tool that was built based on the research of previous viewing time instruments. In past studies the average completion time for the measure is seven minutes, and all participants were able to complete administration within 10 minutes.

The LOOK was developed as a measure to assess sexual attraction based on viewing time. Participants view images of fully clothed people from 14 different categories. The categories are elderly female (ELF), elderly male (ELM), mature adult female (MAF), mature adult male (MAM), adult female (ADF), adult male (ADM), juvenile female (JUF), juvenile male (JUM), pre-juvenile female (PJF), pre-juvenile male (PJM), small child female (SCF), small child male (SCM), infant female (INF), and infant male (INM) (Baird, 2015). Within each category there are 11 images. One image from each category is used at the beginning of the assessment in order to orient participants to the measure, and data is not collected for those 14 images.

The remaining 10 images in each group are used with data collection. The image appears on the screen along with a black dot in one of the four corners and a Likert scale below the image. The black dot is used to collect data on choice-reaction time (CRT), which Mokros et al. (2010) explains as "an information-processing method to measure the interest or preference of individuals by determining the amount of attention that they allocate to given stimuli." The CRT is used to record how long participants view each of the different images before pressing the black dot. Rating time is measured by the time it takes for participants to rate the image on the Likert scale after pressing the black dot. Dot time and rate time are added together to create total viewing time. Total viewing time is used to create individual profiles for viewing time across image categories.

Participants must first locate and touch the dot in order to unlock access to the Likert scale below the image. Participants cannot progress to the next image until the dot has been pressed and the participant has given a sexual attraction rating on the Likert scale. Baird (2015) explains the Likert scale as "3 very sexually attractive, 2 sexually attractive, 1 mildly sexually attractive, 0 neutral, -1 mildly sexually unattractive, -2 sexually unattractive, -3 very sexually unattractive. Once the image has been rated, the next image appears immediately" (p. 10).

Data Analysis

Schmid et al. (2006) used all possible measures (canons, symmetry, and golden ratios) to predict raters' subjective evaluations of attractiveness of 420 images. They used stepwise regression to generate parsimonious prediction models. We propose to use Schmid et al.'s (2006) models to first create a beauty score (*BS*) for each of image of the LOOK. Beauty scores will be correlated with viewing time (VT) on an individual basis. Viewing time is made adding dot time and rate time for each individual and each image. Beauty scores will also be correlated with average viewing time across all administrations for each image individually. A logistical regression using Cox's sample (2015) of sex offenders and Baird's sample (2015) of non-offenders will be run using viewing time and beauty scores as covariates. This will partial out the effect of "beauty" from the observed viewing time and may discriminate between offenders and non-offenders.

APPENDIX C

Consent to be a Research Subject

Introduction

This research study is being conducted by Rachael Pinkerman, Ph.D. student, and Lane Fischer, Ph.D., at Brigham Young University to determine shared standards of beauty. The study will be building on existing research of the LOOK and therefore will adhere to the same eligibility requirements of previous studies. You were invited to participate because you are over 18 and have no history of pedophilia.

Procedures

You will arrive in MCKB 269 where a researcher will meet you and read through this form explaining the study. You will be taken to a private room in the CPSE research lab (271 or 275 MCKB) where you will be asked to complete a packet which includes rating a series of images from the LOOK, and filling out a brief questionnaire. The LOOK is a computer-administered measure of sexual interest and the images you will be rating are those shown in the LOOK. You will be alone in the room will not be disturbed by the researcher at any time. Should questions arise feel free to return to MCKB 269 and ask the researcher. You will then be asked to rate a series of images of clothed models in everyday activities according to how beautiful they are to you. No pornographic images are used in the LOOK. Following completion of rating the images, you will be asked to fill out a brief questionnaire regarding some simple demographics, and sexual preference. The procedure will take approximately 15 minutes to complete. Once finished with the packet you will return to MCKB 269 where the researcher will collect your packet and award you credit via SONA.

Risks/Discomforts

There are minimal risks for participation in this study. However, you may feel some discomfort about disclosing sexual preference or rating images of people. The possibility of a breach of confidentiality of potentially sensitive information regarding sexual preferences will be mediated by using numbered packets organizing all participant data by packet number, keeping this signed consent form unconnected to ratings given to the LOOK images or the questionnaire, and limiting researcher access to consent forms and data connected to participants.

Benefits

There are no direct benefits to you. However, it is hoped that through your participation researchers will learn more about how people respond to such rating tasks and help us better understand beauty.

Confidentiality

All information provided will remain confidential. The research data will be kept on password

protected computer and only the researchers will have access to the data. Your responses will be assigned a subject number that will be disconnected from your name. Your responses will be input to Excel into a password protected file which only the researchers will have access to. The questionnaire will also be coded only by a subject number, transcribed into Excel and SPSS and separated from your name. After the research is completed, the packets containing beauty ratings & questionnaires will be destroyed and data will be kept on a password protected USB in a locked cabinet in 340E MCKB. Although the questionnaire will ask about your sexual preference, no information will be available to the university or the Honor Code Office.

Compensation

Participants may receive extra credit or clinical hours in their classes that offer such compensation. An alternative method of compensation may be provided at the discretion of your instructor. Credit will be awarded through SONA and participants will be given 6 credits.

Participation

Participation in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely without jeopardy to your class status, grade, or standing with the university.

Questions about the Research

If you have questions regarding this study, you may contact Rachael Pinkerman at (385) 215 9216, rachael_pinkerman@byu.edu or Lane Fischer at (801) 422-8293, lane_fischer@byu.edu for further information.

Questions about Your Rights as Research Participants

If you have questions regarding your rights as a research participant contact IRB Administrator at (801) 422-1461; A-285 ASB, Brigham Young University, Provo, UT 84602; irb@byu.edu.

Statement of Consent

I have read, understood, and received a copy of the above consent and desire of my own free will to participate in this study.

Name (Printed): _____ Signature _____ Date: _____

APPENDIX D

Demographics and Sexual Interest Questionnaire

Demographics:

Age: _____ Gender: _____ Ethnicity: _____

Year in School:

☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Graduate Student

Marital Status:

☐ Single ☐ Married ☐ Divorced ☐ Widowed

Sexual Interest:

I would describe my sexual preference as (please mark only one):

- ☐ Exclusively heterosexual with no homosexual interest
- ☐ Predominantly heterosexual with incidentally homosexual interest
- ☐ Predominantly heterosexual with more than incidentally homosexual interest
- ☐ Equally heterosexual and homosexual interest
- ☐ Predominantly homosexual with more than incidentally heterosexual interest
- ☐ Predominantly homosexual with only incidentally heterosexual interest
- ☐ Exclusively homosexual with no heterosexual interest

APPENDIX E

Complete Table of Beauty Scores and Beauty Ratings

Table 11

Beauty Score and Beauty Rating of LOOK Images

LOOK Image	Beauty Score	Male Beauty Rating	Female Beauty Rating	Total Beauty Rating
ELF 1	0.69	3.04	4.68	3.95
ELF 2	0.67	1.92	2.87	2.45
ELF 3	0.62	1.96	3.42	2.77
ELF 4	0.60	2.24	3.81	3.11
ELF 5	0.47	1.88	3.68	2.88
ELF 6	0.66	2.00	3.65	2.91
ELF 7	1.10	2.00	3.74	2.96
ELF 8	0.48	1.92	3.32	2.70
ELF 9	0.85	2.28	4.23	3.36
ELF 10	0.58	2.64	4.65	3.75
ELM 1	0.90	2.60	4.29	3.54
ELM 2	0.51	2.88	4.00	3.50
ELM 3	0.44	2.80	3.52	3.20
ELM 4	0.47	2.52	3.35	2.98
ELM 5	0.60	1.96	2.61	2.32
ELM 6	0.63	2.08	2.77	2.46
ELM 7	0.71	2.12	2.94	2.57
ELM 8	0.77	2.60	3.45	3.07
ELM 9	0.59	2.12	3.00	2.61
ELM 10	0.56	2.16	3.23	2.75
MAF 1	0.64	3.92	5.35	4.71
MAF 2	0.78	3.92	5.29	4.68
MAF 3	0.81	2.92	3.94	3.48
MAF 4	0.64	3.28	4.97	4.21
MAF 5	0.60	2.84	5.06	4.07
MAF 6	0.58	2.76	4.77	3.88
MAF 7	0.91	2.12	3.77	3.04
MAF 8	0.61	2.56	4.06	3.39
MAF 9	0.67	3.08	4.81	4.04
MAF 10	0.68	3.32	5.10	4.30
MAM 1	0.71	3.68	5.26	4.55

MAM 2	0.85	3.76	5.35	4.64
MAM 3	1.16	3.44	4.35	3.95
MAM 4	0.95	2.80	3.61	3.25
MAM 5	0.79	3.56	5.00	4.36
MAM 6	0.63	2.00	2.65	2.36
MAM 7	0.75	3.20	4.71	4.04
MAM 8	0.95	3.12	4.39	3.82
MAM 9	0.87	3.40	4.77	4.16
MAM 10	2.13	2.40	3.32	2.91
ADF 1	0.75	4.76	6.10	5.50
ADF 2	0.68	4.60	4.84	4.73
ADF 3	1.48	4.12	5.68	4.98
ADF 4	0.57	5.80	6.52	6.20
ADF 5	0.95	5.72	6.45	6.13
ADF 6	0.59	4.60	5.81	5.27
ADF 7	1.09	5.72	6.45	6.13
ADF 8	0.65	4.84	5.61	5.27
ADF 9	0.59	4.20	5.13	4.71
ADF 10	0.60	5.56	5.84	5.71
ADM 1	0.78	4.56	6.19	5.46
ADM 2	0.88	3.36	3.94	3.68
ADM 3	0.60	4.52	6.26	5.48
ADM 4	0.93	3.64	4.42	4.07
ADM 5	0.63	4.40	5.52	5.02
ADM 6	0.84	3.80	5.19	4.57
ADM 7	0.71	4.44	5.65	5.11
ADM 8	0.79	4.04	5.42	4.80
ADM 9	0.63	4.12	5.29	4.77
ADM 10	0.47	4.20	5.26	4.79
JUF 1	1.06	4.00	4.94	4.52
JUF 2	0.87	4.04	5.03	4.59
JUF 3	0.93	4.72	5.90	5.38
JUF 4	0.42	4.32	5.97	5.23
JUF 5	0.82	3.80	5.26	4.61
JUF 6	0.81	4.72	6.03	5.45
JUF 7	0.94	5.16	5.97	5.61
JUF 8	0.82	4.56	5.26	4.95
JUF 9	0.47	4.72	5.77	5.30
JUF 10	0.55	3.48	4.52	4.05
JUM 1	0.69	3.04	3.55	3.32

JUM 2	0.83	4.16	4.19	4.18
JUM 3	1.02	3.20	3.97	3.63
JUM 4	0.62	2.92	3.74	3.38
JUM 5	0.60	3.36	4.23	3.84
JUM 6	0.91	2.60	2.97	2.80
JUM 7	0.57	2.96	4.13	3.61
JUM 8	0.62	2.60	3.87	3.30
JUM 9	0.70	3.56	4.32	3.98
JUM 10	0.78	3.12	4.39	3.82
PJF 1	0.75	3.44	5.03	4.32
PJF 2	0.66	4.08	5.65	4.95
PJF 3	0.68	3.56	5.00	4.36
PJF 4	0.66	3.12	4.81	4.05
PJF 5	0.90	3.04	4.61	3.91
PJF 6	0.74	3.36	4.97	4.25
PJF 7	0.71	3.24	5.00	4.21
PJF 8	0.76	4.04	5.81	5.02
PJF 9	0.69	3.64	4.71	4.23
PJF 10	0.42	3.40	4.45	3.98
PJM 1	0.46	3.36	4.77	4.14
PJM 2	0.69	3.56	5.48	4.63
PJM 3	0.59	3.40	4.87	4.21
PJM 4	0.52	3.24	4.48	3.93
PJM 5	0.62	2.64	3.90	3.34
PJM 6	0.57	3.64	4.87	4.32
PJM 7	0.61	2.84	4.10	3.54
PJM 8	0.60	3.56	5.52	4.64
PJM 9	0.61	3.04	4.16	3.66
PJM 10	0.58	2.88	4.23	3.63
SCF 1	0.43	3.56	4.71	4.20
SCF 2	0.38	3.08	4.81	4.04
SCF 3	0.56	3.96	5.42	4.77
SCF 4	0.36	3.68	5.35	4.61
SCF 5	0.51	4.60	6.16	5.46
SCF 6	0.43	4.16	5.84	5.09
SCF 7	0.43	3.60	5.03	4.39
SCF 8	0.41	4.40	6.13	5.36
SCF 9	0.72	3.64	5.68	4.77
SCF 10	0.51	3.72	5.58	4.75
SCM 1	0.47	3.52	5.19	4.45

SCM 2	0.48	3.96	5.68	4.91
SCM 3	0.54	3.84	5.55	4.79
SCM 4	0.49	3.68	5.52	4.70
SCM 5	0.50	3.36	4.71	4.11
SCM 6	0.57	3.72	5.23	4.55
SCM 7	0.64	3.96	5.48	4.80
SCM 8	0.56	4.08	5.55	4.89
SCM 9	0.50	3.64	5.10	4.45
SCM 10	0.39	3.04	4.32	3.75
INF 1	0.53	4.56	5.61	5.14
INF 2	0.40	4.48	5.42	5.00
INF 3	0.30	4.68	5.77	5.29
INF 4	0.40	4.76	5.90	5.39
INF 5	0.54	4.32	5.84	5.16
INF 6	0.37	4.32	5.94	5.21
INF 7	0.74	4.56	5.74	5.21
INF 8	0.43	4.48	5.94	5.29
INF 9	0.54	4.48	5.74	5.18
INF 10	0.54	4.08	5.26	4.73
INM 1	0.37	4.32	5.90	5.20
INM 2	0.69	4.44	5.74	5.16
INM 3	0.60	4.40	5.39	4.95
INM 4	0.58	4.24	5.74	5.07
INM 5	0.56	3.84	5.16	4.57
INM 6	0.44	4.00	5.42	4.79
INM 7	0.46	4.40	5.71	5.13
INM 8	0.64	4.36	5.84	5.18
INM 9	0.46	3.80	5.19	4.57
INM 10	0.78	4.68	5.90	5.36

Note. ELF = elderly female; MAF = mature adult female; ADF = adult female; JUF = juvenile female; PJF = pre-juvenile female; SCF = small child female; INF = infant female; ELM = elderly male; MAM = mature adult male; ADM = adult male; JUM =juvenile male; PJM = pre-juvenile; SCM = small child male; INM = infant male.