EVALUATION OF FACIAL ATTRACTIVENESS USING 3-D IMAGES

THESIS
Submitted to the Faculty of Oral and Dental Medicine,
Cairo University in partial fulfillment of the
requirements for the Master Degree in Orthodontics

By

Anas Ahmad Al-Omari
B.D.S (Cairo University), 2004

Faculty of Oral and Dental Medicine
Cairo University
2009

Supervisors

Dr. Faten Hussein Kamel Eid

Professor of Orthodontics
Faculty of Oral and Dental Medicine
Cairo University

Dr. Khaled Hazem Attia

Associate Professor of Orthodontics
Faculty of Oral and Dental Medicine
Cairo University

Dr. Wael Tawfik Attia

Associate Professor of Orthodontics
National Research Center

استخدام صور ثلاثية الأبعاد لتحديد جاذبية الوجه

رسالة بحث قُدّمت لكلية طب الفم والأسنان – جامعة القاهرة
كجزء من متطلبات الحصول على درجة الماجستير في تقويم الأسنان

مقدمة من الطبيب
أنس أحمد العمري
بكالوريوس طب الفم والأسنان
جامعة القاهرة
٢٠٠٤

كلية طب الفم والأسنان

جامعة القاهرة

٢٠٠٩

المشرفـون

الدكتورة/ فاتن حسين كامل عيد

أستاذة تقويم الأسنان

كلية طب الفم و الأسنان

جامعة القاهرة

الدكتور/ خالد حازم عطية

أستاذ مساعد تقويم الأسنان

كلية طب الفم و الأسنان

جامعة القاهرة

الدكتور/ وائل توفيق عطية

أستاذ مساعد تقويم الأسنان

المركز القومي للبحوث

ABSTRACT

Aim: The aim of study was to evaluate the effect of occupation, age, gender, marital status of rater on the perception of facial attractiveness using 3 dimensional images and to find out the most influential facial view on their perception.

Material and methods: 30 subjects were selected, 15 females and 15 males. For every subject, 5 different facial views were obtained, Full Frontal (FF), Full Profile (FP), Lower Frontal (LF), Lower Profile (LP), and Dynamic (D) views. The panel of raters were 20 orthodontists, 50 dentists, and 100 laypersons with equal number of males and females, 109 of raters were single and 61 were married. The raters made their scorning on a scale from A to E (Most attractive to Least attractive, respectively). 3dMDface system and software was used for the three-dimensional stereophotogrammetrical construction of the subjects. The collected data were statistically analyzed on a continuous scale from 0 to 100 using ANOVA, Pearson's Correlation Coefficient and Independent Samples Test.

Results: 1) The occupation, age, and marital status of raters play no role in the perception of facial attractiveness.2) Female raters gave significantly higher mean score than male raters in their perception of facial attractiveness of female images, while no significant difference was found for male images.3) Dynamic view was the most preferred view among female images while the Lower Frontal view was the most attractive male view. Full frontal view was the least preferred view for both female and male images.

Conclusion: we can't rely only on Full frontal view in the perception of attractiveness, we would rather have a realistic 3 dimensional vision at the

entire face.

Acknowledgment

I would like to express my deep and sincere gratitude to ***Dr. Yehya Abdul Aziz Mostafa,*** Professor of Orthodontics, Faculty of Oral and Dental Medicine, Cairo University, under his supervision I chose the subject of my research and began my thesis, for his inspiration, understanding, encouragement and personal guidance.

My warm thanks are due to ***Dr. Faten Hussein Kamel Eid***, Professor of Orthodontics, Faculty of Oral and Dental Medicine, Cairo University for her kind support, extensive advice and guidance that have been of great value to me.

I am grateful to my supervisor, ***Dr. Khaled Hazem Attia***, Associate Professor of Orthodontics, Faculty of Oral and Dental Medicine, Cairo University, for his detailed and constructive comments and excellent advice during the preparation of this thesis, and important support throughout this work. His extensive discussions around my work have been very helpful for this study.

I owe my sincere gratitude to ***Dr. Wael Tawfik Attia,*** Associate Professor of Orthodontics, National Research Center, who gave me the opportunity to work with him and who provided me with untiring help.

During this work I have collaborated with many colleagues for whom I have great regard, and I wish to extend my warmest thanks to all those who have helped me in my work.

I dedicate this to my country,

&

To my wonderful family, for their loving care and support.

Table of contents

List of Tables

List of Figures

INTRODUCTION

Since the early dawn of time, civilisations and cultures across the sphere both ancient and modern realised the magnitude of pleasing personal appearance. As a result, a great emphasis had been placed on facial aesthetics and physical attractiveness. It was not late until superficial and stereotyping had become a trait in the human nature, and judgement based on outward appearances was inevitable. Nevertheless, the concept of aesthetics is widely subjective, adhering to no permanent rules and diverse depending on the critic. Therefore, it is beyond doubt tremendously devious to establish objective criteria for defining a precise concept of beauty.

Evidently, facial features are the distinctive aspect in defining human physical attractiveness; they carry substantial importance for being the first impression outline. An increasingly common daily practice nowadays amongst people of all genders is aesthetic judgement and in particular observation of facial features. Heaps of people are eventually becoming experts in this field and therefore extra attention and effort to pursuit their ultimate goal are allocated.

For the past two decades, orthodontists responded to the patient's aesthetic concerns by understanding precisely how to perceive the facial attractiveness of patients. Although orthodontic treatment is based

primarily on occlusal relationships, greater attention is now paid for enhancing dentofacial characteristics to produce optimal facial aesthetics. The study of facial aesthetics is important because dentofacial characteristics may negatively affect individual's social interactions.

Orthodontists are strongly advised to value the patient's or parent's chief complaint, familial and cultural facial preferences prior to making recommendations for facial changes; and to tread carefully in assigning negative valuations of individual facial features and overall facial aesthetics.

In basic terms, people tend to rely on a plain glimpse in the mirror to evaluate the distinguished facial features and thus weigh up beauty and public acceptance. This assessment is utterly incorrect because it is based only on a frontal view aspect, which is just a part of the equation. In conjunction, most records obtained to analyze facial features in order to determine its beauty level are in two dimensions (2D) form of photographs and radiographs or, more recently, in the form of video images.

The world we knew had changed forever since the discovery of three-dimensional (3D) imaging technologies. These technologies have been developing at a rapid pace over the last decade allowing contemporary machines and advanced software to grow in sophistication and complexity.