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**AAO Foundation Final Report Form
(a/o 1/3/2018)**

Please prepare a report that addresses the following:

Type of Award: **Orthodontic Faculty Development Fellowship Award**

Name(s) of Principal Investigator(s): **Dr. Terpsithea Christou**

Institution: **University of Alabama at Birmingham (UAB), School of Dentistry, Depart**

Title of Project: **Re-evaluating principles in delivering a more esthetic smile. New direction in diagnosis and treatment execution.**

Period of AAOF Support: **07-01-19 to 06-30-20**

Amount of Funding: **\$20,000**

Summary/Abstract : **The purpose of this study was to evaluate and compare smile treatment outcomes between patients treated with Invisalign clear aligners (Align Technology, Santa Clara, Calif) and those treated with traditional fixed appliances by integrating variables such as lip symmetry, smile index, smile cant, buccal corridors, and gingival display into smile outcome evaluation. Methods: Records from 58 patients, 29 of whom received Invisalign treatment (mean age 19.03 years) and 29 of whom received traditional fixed- appliance treatment (mean age 13.83 years), were compared for their smile outcome. Pretreatment scores, posttreatment scores, and differences between within-group smile score before and after treatment were determined for each group. Fifteen variables comprised the smile outcome, and the data were analyzed with the Mann-Whitney U test and the Wilcoxon t test for 2 dependent samples. Results: Six variables within the fixed-appliance group presented with better smile scores than those within the Invisalign group; buccal corridors (%) (mean difference 5 8.42%), buccal corridors (mm) (5.35 mm), smile cant (0.42-), maxillary dental midline (0.21 mm), gingival display (0.56 mm), and smile index (1.09%) for P \0.05. Invisalign performed better on 2 variables that determined maxillary incisor position (1.26 mm) and inclination (2.09-). No significant difference (for P 5 0.05) was shown between pretreatment and posttreatment scores for either of the 2 groups. Conclusions: Using the 15 variables in this study, the results suggested that for patients with Class I nonextraction, treatment with traditional fixed appliances changes the patient's smile more than Invisalign treatment, and fixed appliances appear to be more effective in improving the variables that quantify post-treatment smile outcome. (Am J Orthod Dentofacial Orthop 2020;157:357-64)**

Detailed results and inferences:

1. If the work has been published please attach a pdf

PDF is attached. Thank you

Response to the following questions:

1. Were the original, specific aims of the proposal realized?

My proposed plan included 4 sections:

A.Educational plan: Part of my educational plan was to work on developing my skills on how to conduct evidence-based research. I was able to get training and work on systematic reviews/metanalysis methodology research. My efforts led to the publication of the following manuscript which is very relative to my AAOF work on smile and dental esthetics:

Clin Cosmet Investig Dent. 2019; 11: 89–101.

Published online 2019 May 2. doi: [10.2147/CCIDE.S189708](https://doi.org/10.2147/CCIDE.S189708)

PMCID: PMC6507071

PMID: [31118823](https://pubmed.ncbi.nlm.nih.gov/31118823/)

Clinical effectiveness of orthodontic treatment on smile esthetics: a systematic review

Terpsithea Christou,¹ Anna Betlej,¹ Najd Aswad,¹ Dorothy Ogdon,² and Chung How Kau¹

In addition, two more manuscripts with titles: “Clinical effectiveness of the Invisalign system. A systematic review and metanalysis” and “Effects of accelerating movement devices on Invisalign treatment” are Registered with PROSPERO with numbers CRD42018081717 and CRD42020137917 respectively, and there are currently work in progress.

B.Research plan: Completed and analyzed below. Thank you.

C.Teaching plan: My main plan was to expand my teaching responsibilities and become course director of my own esthetics course. I am very grateful for the opportunity that AAOF gave me since it was the major factor that initiated my work toward this direction. I am proud to say that I am now Director of my own course with title : “Dentofacial Esthetics” and it is very relevant to the work that I published with the help of the AAOF award. The course is being taught every spring. Attached please find detailed information about the course.

D.Clinical plan: I still serve as a Clinic Director of the Orthodontic Department at UAB. I conduct weekly meetings with my staff and monthly meetings with representatives of different orthodontic brands. We discuss the needs of the clinic in regards to inventory and get introduced to any new technologies or innovations that become available to orthodontics.

Additionally, I am now certified facial/lip injector for Botox/Fillers after a meeting I attended in Chicago before Covid started. The information from the meeting helped me better understand and respect the complexity of facial anatomy and learn more about the risks that might be involved in the process of achieving an improved smile or younger facial characteristics by the aforementioned means.

2. Were the results published?

- a. If so, cite reference/s for publication/s including titles, dates, author or co-authors, journal, issue and page numbers

- b. Was AAOF support acknowledged?

Yes

3. Have the results of this proposal been presented?

- a. If not, are there plans to do so? If not, why not?

The proposal with results was planned to be presented at the 2020 AAO were I was invited as a guest speaker. However, due to Covid-19 the conference happened virtually and it was limited to only one day of presentations.

4. To what extent have you used, or how do you intend to use, AAOF funding to further your career?

AAOF has been a great opportunity for me and the development of my career.

I was able to conduct the research project that I proposed by using the AAOF funding. I managed to publish this work at the very well respected orthodontic Journal AJODO with the guidance of my mentors that have been great help and support for my development as an educator, researcher and individual who seeks to improve herself. After my publication some respected people in the orthodontic community acknowledged my job and I was invited to be a speaker at AAO.

AAOF helped me build my foundation for becoming a better teacher, researcher, and mentor. I now plan using the information from the AAOF project and expand it and in the near future present this data at my own course that I will be teaching and directing. I am grateful that I was able to receive this grant.

DENTOFACIAL ESTHETICS

Course Name:	Dentofacial Esthetics
Course Number:	
Course Weight:	3 hours
Course Director:	Terpsithea Christou, DDS, MS Assistant Professor Clinic Director Department of Orthodontics School of Dentistry University of Alabama at Birmingham 1919 7th Avenue South I SDB 314 Birmingham AL 35294-0007 P: 205-934-3190 F: 205-975-7590 Email: tetich@uab.edu
Time and Location:	Spring Term 2021; Wednesdays 3:00-4:00pm; SDB 317
Attendance:	Attendance is required for all students. Under unforeseen and special circumstances, students should inform the course master that they are not able to attend.
Student Evaluation:	This is a pass/fail course. Students are expected to contribute through Power Point presentations that are saved for use with future classes. In addition, students are evaluated through Q&A on didactic material and patient's records that is presented to them during each session.
Remediation:	The student will have an opportunity to discuss the projects with the course master in order to obtain the pass rate.
Course Evaluation:	Student's input as to the effectiveness of the course will be obtained at the end of course through an electronic survey and one-on-one course review.
Accommodations:	If you are registered with Disability Support Services, please make an appointment with the course director as soon as possible to discuss accommodations that may be necessary. If you have a disability but have not contacted Disability Support Services, please call 205-934-4205 or visit DSS at the 9 th Avenue Office Building, 1701 9 th Avenue South, Suite 100.

Course Objectives and Goals:

The learner will be able to:

1. Recognize the different anatomical structures of the skin and face.
2. Become familiar with the process of facial aging and the anatomy of facial expressions.
3. Acknowledge old and modern perceptions of facial attractiveness and utilize this knowledge during patient consultation.
4. Possess knowledge on the basics of dental photography and camera settings for any digital SLR camera.
5. Establish a foundation of orthodontic biomechanics using the Invisalign System.
6. Design the orthodontic treatment plan using the Invisalign Clin Check Software and present relevant case studies.
7. Address issues in regards to smile esthetics in micro and macro dimensions.
8. Differentiate the available in the market injectable fillers and know their indications, uses as well as danger zones and complications.
9. Know the Principles and Techniques of tooth whitening.

Course Syllabus:

1. Textbooks:

- A. Invisalign:
 - a. Clear Aligner Technique by Sandra Tai
 - b. The Insider's Guide to Invisalign Treatment by Barry J. Glaser
- B. Anatomy of facial expressions by Uldis Zarins
- C. Illustrated Guide to Injectable Fillers by Paasch
- D. Dental Portrait and Shade Analysis, Photography from A to Z by Edward McLaren
- E. Tooth Whitening in Esthetic Dentistry. Principles and Techniques by So-Ran Kwon, Seok-Hoon Ko, Linda H. Greenwall

2. Evidence based articles published in prestigious journals.

CODA Standards Addressed:

For Spring 2021, the course addresses the following statements within the Commission on Dental Accreditation document on Advanced Education Programs in Orthodontics and Dentofacial Orthopedics:

4-3 Clinical Sciences:

4-3.1 Orthodontic treatment must be evidence-based. (EBD is an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences.) (Adopted by the American Association of Orthodontists House of Delegates 05/24/2005)

Examples of evidence to demonstrate compliance may include:

- orthodontic literature applied to clinical treatment decisions

4-3.4 A graduate of an advanced dental education program in orthodontics must be competent to:

- coordinate and document detailed interdisciplinary treatment plans which may include care from other providers, such as restorative dentists and oral and maxillofacial surgeons or other dental specialists;
- treat patients with at least one contemporary orthodontic technique;
- develop and document treatment plans using sound principles of appliance design and biomechanics;

4-4 Supporting Curriculum. The orthodontic graduate must have understanding of:

- The variety of recognized techniques used in contemporary orthodontic practice.