



A Comparison of Six Cephalometric Analyses

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This summer I had the opportunity to work in the Oral Medicine and Radiology Department of Penn Dental, where I conducted research centered around a clinical tool within orthodontics called cephalometrics. As a newly finished freshman looking to go into dentistry, I was excited to learn more about this career as I had limited experience working in this field. Going into this project I knew little about orthodontics, let alone cephalometrics, but my mentors Dr. Mel and Dr. Graham were more than happy to help me learn fundamental skills including identifying the anatomical landmarks of the face, and gradually I became more comfortable evaluating cephalometric analyses.

The goal of this project was to find the limitations of cephalometric analyses in order to show how a new 3D analysis could be useful. A cephalometric analysis is an application of cephalometry, in which orthodontists and dentists take linear and angular measurements of the face to determine growth patterns and treatment planning. I examined six main analyses including “Downs Analysis” and the “Wits Appraisal” and read through the original articles of each author. Looking at the analyses individually, I could find limitations specific to each; for example, one analysis did not have a stable reference plane, and another did not consider growth factors. However, the fundamental limitation of all the 2D analyses were the fact that they were 2D. Taking 2D measurements based off a 3D reality will always yield some inaccuracies. This limitation could eventually lead to research that will help establish a 3D analysis.

This project helped me in a number of ways. After being immersed in this field for ten weeks, I have learned a great deal about the importance of facial growth and measurements in relation to diagnosing malocclusions and planning treatment procedures. Furthermore, I have also improved the way in which I read and analyze articles. By consistently reading articles that had a great deal of jargon, I have refined my skills in identifying the important objectives of the paper and I have learned to avoid getting lost in the details; this will definitely help me in the future when reading more complex articles on subjects I may not be completely familiar with. Finally, thanks to my research mentors, I have gained a greater appreciation of the work and dedication that goes behind these research projects and I thank them for all their help.