

AAO Foundation Award Final Report

Principal Investigator	Margherita Santoro, DDS, MA
Co-Investigator	
Secondary Investigators	Karim Jarjoura, DDS (Orthodontic program Student)
Award Type	Subtenly, Baker, Eastman Award
Project Title	Accuracy of Digital and Analogue Cephalometric Measurements assessed with the Sandwich Technique.
Project Year	2004
Institution	Columbia University
Summary/Abstract (250 word maximum)	<p>The purpose was to evaluate the accuracy of cephalometric measurements obtained with digital tracing software when compared to equivalent hand traced measurements. The Sandwich Technique was used to ensure the equivalence of the digital images to the hard copy radiographs. According to the technique, a storage phosphor plate and a conventional radiographic film are placed in the same cassette and exposed simultaneously. The method eliminates positioning errors and potential differences associated with multiple radiographic exposures that affected previous studies.. The sample consisted of digital and analogue radiographic images obtained from fifty patients at the completion of orthodontic treatment. Nine cephalometric landmarks were identified and thirteen measurements calculated by a single operator, both manually and with the use of digital tracing software. Measurement error was assessed for each method by duplicating measurements of 25 randomly selected radiographs, and using the Pearson's Correlation Coefficient. A paired t-test was then used to detect differences between the manual and digital methods. The results indicate an overall greater variability in the digital cephalometric measurements. Statistically significant differences ($P<0.05$) between the two methods were observed for SNA, ANB, S-Go:N-Me, U1/L1, L1-GoGn and N-ANS:ANS-Me. However, only the U1/L1 and S-Go:N-Me measurements showed differences greater than 2 SE ($P< 0.0001$). It can be concluded that the 2 tracing methods provide similar clinical results, therefore efficient digital cephalometric software can be reliably chosen as a routine diagnostic tool. The user-friendly Sandwich Technique showed remarkable effectiveness as an option for interoffice communications.</p>
Were the original, specific aims of the proposal realized?	Yes
Were the results published? If not, are there plans to publish? If not, why not?	<i>Published in Am J Orthod Dentofacial Orthop 2006; 129:345-51</i>
Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?	The available time has been invested in successful efforts to publish. The award recipient is now the Program Director at Columbia University and new research projects and presentations absorb most of her time.