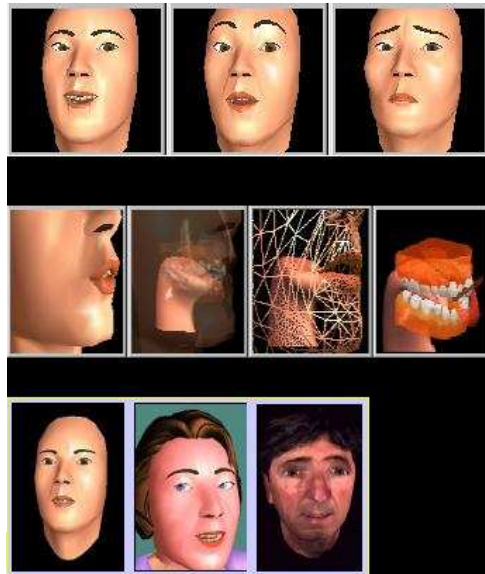


DEVELOPMENT AND EVALUATION OF A COMPUTER- ANIMATED TUTOR FOR LANGUAGE LEARNING

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Abstract: Speech and language science evolved under the assumption that speech was a solely auditory event. However, a burgeoning record of research findings reveals that our perception and understanding are influenced by a speaker's face and accompanying gestures, as well as the actual sound of the speech. Perceivers expertly use these multiple sources of information to identify and interpret the language input.

Given the value of face-to-face interaction, our persistent goal has been to develop, evaluate, and apply animated agents to produce realistic and accurate speech. Baldi is an accurate three-dimensional animated talking head appropriately aligned with either synthesized or natural speech. Baldi has a tongue and palate, which can be displayed by making his skin transparent. Based on this research and technology, we have implemented computer-assisted speech and language tutors for deaf, hard of hearing, and autistic children. Our language-training program utilizes Baldi as the conversational agent, who guides students through a variety of exercises designed to teach vocabulary and grammar, to improve speech articulation, and to develop linguistic and phonological awareness. Research and application are also underway employing Baldi for second language learning and accent neutralization. Baldi can teach English as a second language, improve pronunciation and vocabulary, and reduce accents of non-native English speakers.

Some of the advantages of the Baldi pedagogy and technology include the popularity and effectiveness of computers and embodied conversational agents, the perpetual availability of the program, and individualized instruction. Through a range of engaging characters, the tutor increases student attention and time on task. Students enjoy working with Baldi because he is always patient, he doesn't become angry, tired, or bored, and he is in effect a perpetual teaching machine. The science and technology of Baldi holds great promise in language learning, human-machine interaction, and education.