

A SID Device

Stimulating Infant Vision Development

A Brief Synopsis of a New NIH Research Proposal

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At present, there is no low vision aid in the world for visually impaired infants and toddlers except very thick plus and minus spectacle lens glasses, and then there are lots of trial and error and professional guesstimating. There never has been available an infant-toddler micro-telescope. For the last twenty years, I have been developing a new microtelescope for such a special population. Normal adult telescopes are based on an optical infinity design, and then for a near effect, plus lens caps are fitted over the objective lens. However, human visual skills start at the mouth and fingers or moves from near space outwards, the exact opposite direction from adult telescopic design. This fact has never previously been considered by optical designs for low vision infants and toddlers. My micro telescope will include a series of loaner devices for out child patient, who will wear them home. After careful observation by both parents and with detailed note taking, the family will return to their low vision practitioner two to four weeks later for a progress examination. This progress visit always includes parents, doctor and baby. Perhaps a new unit with a longer focal length, a wider field or higher magnification zoom design will be tried next. This process continues until baby's behavior has that "AH-HA" response in his or her trial wear. Microtelescopes will be designed from 1/2x to 5x with zoom capability from 3 inches forward out to 40 inches and then even more outwards to 80 inches. The final design extends outwards into optical infinity (20 feet). Some significant observation of baby's vision performance include more reaching out with hands, more smiling, cooing, displaying more interest in targets, etc.. A top educational expert in Lexington, KY at the American Printing House for the Blind will consult and help us set up objective visual development landmarks and behavioral criteria that is age and pathology appropriate. At least three optometry colleges, SCO, PCO and SUNY pediatric/low vision departments will participate in this multi-center study. Johns Hopkins pediatric department hopefully will also participate. I anticipate each school will be able to do complete studies of 10 low vision cases age 6 months to 4 years of age. Initial treatment, depending on the eye pathology will use binocular microtelescopic design.

Optical engineering will also be part of this project. My present SID adjustable microtelescopic prototype uses a mixture of flint glass objective and CR39 eyepiece. But the main problem here is excessive weight on an infants face, plus I want to maximize its light gathering capability and provide the widest peripheral field possible. Design specs will require using 100% plastic lenses with the highest index possible now reaching 1.76. The newest and best AR coatings will be applied to all lens surfaces. Using 1.76 index lens materials will be revolutionary and improve all future low vision devices, aids and instrumentation used to treat eye pathology cases of all ages.