Development of a Computerized Memory Screen. Shannon M. Foster, Dev Ashish, Michael A. Kisley, Hasker P. Davis. University of Colorado at Colorado Springs.

It is not news that the societal implications of aging statistics are alarming. Individuals are living longer and baby-boomers are nearing old age. Additionally, as individuals age their chance of developing Alzheimer's disease (AD) increases. Some estimates suggest that by age 80 an individual has a 50% chance of developing AD. Researchers have been working hard to find an inexpensive and reliable method for detecting early cognitive decline. Several attempts have been made to define early symptoms of cognitive decline in older adults; including, Age-Associated Memory Impairment (AAMI), Age-Associated Cognitive Decline (AACD), and Mild Cognitive Impairment (MCI). Previously our lab has reported that from a sample of approximately 800 individuals over the age of 55, 30% met the criteria for at least one category of cognitive decline.

Over the last year, our lab has been working to develop a computerized memory screen to detect cognitive decline. We began this process by searching the literature to find measures reported to have the best sensitivity in detecting early signs of cognitive decline. This search indicated that delayed recall and the Trails Making Test are sensitive measures of early decline. In addition to these measures, we also included measures sensitive to executive function decline, depression, anxiety, and alcoholism, four conditions common in old age and known to be associated with decreased cognitive ability.

After determining which measures to use, we set upon the task of developing a touch screen, computerized program that would be short enough to administer in a doctor's office, yet sensitive enough to capture early cognitive decline. To best balance between efficiency and sensitivity, we developed 5 different versions of the computerized memory screen.

In order to streamline the scoring and reporting of test results, we programmed the computer to complete these functions based on the individual's age and level of education. In addition, the program is capable of interpreting the results to determine whether the individual meets the criteria for AAMI, AACD, and/or MCI.

We are currently in the process of validating the 5 memory screens. To do so, we are recruiting individuals who have already completed the University of Colorado Aging Clinic (CUAC) Memory Clinic screen and asking them to take 1 of the 5 computerized screens. When we have collected an adequate sample of data we will compare each screen's sensitivity to the Mini Mental Status Examination and Brief Dementia Scale, two tests frequently used in primary care facilities. Convergent validity of each measure will be assessed by comparing it with delayed recall and the Wisconsin Card Sorting Test. Divergent validity will be assessed by comparing performance on a test of vocabulary ability.

After a screen has been selected and validation has been completed, the screen will be available for use in doctor's offices. This will provide an efficient and reliable means for detecting early signs of cognitive decline. Detecting early cognitive decline is essential if we wish to intervene when individuals are most capable of effectively utilizing pharmacological intervention or assistive technology.