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"The widely accepted assumption that intellectual capacity diminishes in older adults is challenged by our research results—we have shown that it is age-related impaired visual perception that greatly affects this group's ability to perform well on intelligence tests. In other words, their competence is better than their performance. As the population becomes increasingly older, we must be dedicated to understanding such issues to improve life quality."

GROVER C. GILMORE

Mind + Spirit

Applied Social Sciences

Testing the Intelligence of Older Adults: Vision Linked to Cognitive Competence

As people grow older, do they really lose intelligence or is something else happening that lowers their IQ scores over time? This was the question that **Grover C. Gilmore, Ph.D.,** dean of Case's Mandel School of Applied Social Sciences and professor of psychology and social work, wanted to answer. Heeding his training that had taught him "to look for the simpler explanation first," Dr. Gilmore's research found that the competence of older adults is better than their performance. In other words, they are smarter than they seem.

GROVER C. GILMORE

To test his hypothesis that visual perception problems in older people impaired their ability to perform well on intelligence tests, Dr. Gilmore and his team conducted an experiment that tested both college students and older adults for their ability to encode, remember, and search for visual symbols. The results showed that when the impaired visual perceptions associated with old age were simulated on the same material, the college students exhibited the same diminished cognitive skills as the older adults. The research further showed that even subtle deficits, such as a reduction in spatial contrast sensitivity, can also impair performance on intelligence tests. Such deficits are often missed because they occur gradually over time and are not identified by regular eye examinations. Accordingly, Dr. Gilmore refers to them as "hidden deficits."

"As people grow older they are entering into a literally dimmer world. For Alzheimer's disease patients, that effect is even more pronounced," notes Dr. Gilmore. His research results not only proved the critical role that vision plays in cognitive competence, but allowed the team to actually improve the performances of Alzheimer's disease patients. One of the major findings showed that people with dementia can better and more safely navigate their environments when there is a higher contrast between furniture, floors, and walls. Adults with dementia also increase the amount of food eaten when the tableware is in high contrast to the table, such as using a white plate on a dark wood table.

"One of the desired outcomes of our research is to create an awareness of such changes so that older people can take steps to accommodate their visual deficits by using brighter lights, large print, and sharper contrasts in their surroundings, such as on the edges of steps," adds Dr. Gilmore. Currently, his work focuses on developing visually fair neuropsychological tests and in developing methods to enhance the visual environments of Alzheimer's patients.

http://msass.case.edu/faculty/ggilmore/index.html