that NC Ss outperformed all dementia Ss on all variables. IVD and PD Ss obtained lower ConA ($p < .012$) and Frag ($p < .028$) scores than AD Ss, PD Ss obtained lower CIA ($p < .023$) and PL ($p < .026$) scores than AD and IVD. IVD and PD Ss made Om than AD Ss ($p < .018$, $p < .030$). PD Ss made more Per than AD ($p < .001$) and IVD ($p < .002$) Ss.

Although poor VC ability is often described in the clinical literature as a result of biparietal pathology, AD Ss produced drawings that were much less impaired than IVD and PD Ss. The underlying mechanism that accounts for AD Ss’ very mild impairment in comparison to NC may result from problems in their capacity to appreciate subtle visuoperceptual relationships. The subcortical groups produced drawings that were significantly more fragmented with more perseverations, suggesting problems in planning. Greater numbers of omissions were also noted, implicating a concomitant deficit in visual attention. For IVD and PD Ss the underlying mechanism appears to be a deficit in frontal systems, while a mild primary visuoperceptual deficit may be present in the AD group.

**Lineweaver, T. T., Bondi, M. W., & Thomas, R. G.**

*Practice Effects on the Modified Wisconsin Card Sorting Test in Normally Aging Adults.*

The effects of practice on test performance across multiple years of assessment is an important issue within the field of neuropsychology. To examine these effects on the modified Wisconsin Card Sorting Test (mWCST; Nelson, 1976), 229 neurologically intact healthy community dwelling adults were administered this test on an annual basis. The mWCST differs from the Wisconsin Card Sorting Test (Heaton, 1981) in that the modified version utilizes only the unambiguous stimuli (2 decks of 24 cards), requires only 6 correct sorts before the sorting rule is changed, allows the examinee to complete the first three categories in a self-selected order, and notifies the examinee whenever the rule is changed, although the new rule must still be deduced by the examinee. The number of annual assessments varied between participants, ranging from one to ten years. Longitudinal data for the number of categories achieved, the number of non-perseverative errors, and the number of perseverative errors were analyzed using random effects modeling. This technique identifies separate regression lines for each individual across the ten-year time span and weighs each individual’s contribution to the overall regression equation dependent upon the amount of data provided by the individual. Both linear and quadratic terms were included in each model to examine performance patterns across time. Results indicated that significant practice effects did occur within this sample on all three of the mWCST variables. Thus, the number of categories achieved significantly increased across the 10-year time span, and, similarly, the number of non-perseverative and perseverative errors significantly decreased across time. Additionally, for all three of the mWCST variables both the linear and the quadratic terms were significant. These results, together with plots of the means across the ten years, suggest that the elderly adults in the sample displayed larger amounts of performance improvement across the first few years in the study, with the magnitude of these practice effects diminishing across time. Recognizing and understanding practice effects on this and other neuropsychological tests is essential to interpreting test results both within clinical and within research contexts.


*Normative Data for the Mattis Dementia Rating Scale.*

The Mattis Dementia Rating Scale (DRS) is a commonly used measure of cognitive status in elderly patients; however, normative studies to date have been limited by small sample sizes and/or lack of representation of advanced age groups. As part of Mayo’s Older Americans Normative Studies (MOANS), the current paper provides improved normative data for normal elderly individuals on the DRS.
The DRS was administered to 623 normal elderly persons as part of a larger test battery. For the purpose of MOANS studies, the "normal elderly" include independently functioning, community dwelling persons over age 54 with no active medical, neurologic, or psychiatric disorders with potential to affect cognition. Details regarding recruitment and other aspects of the MOANS research projects are reported elsewhere.

Participants ranged in age from 56–100 years, with a mean age of 79.2 (SD = 7.6) and a mean education of 13.2 (SD = 3.2) years. Females comprised 68% of the sample. Ninety-one percent of the sample was right handed. The mean DRS score was 134.7 (SD = 6.8). Performance on the DRS correlated significantly with age (r = –.32) and education (r = .33) but not sex (r = .03).

Normative data were derived for nine age groups, ranging from below age 69 to age 90 and above. Midpoint age intervals were used to maximize the data, with an a priori decision to include at least 70 participants in each age group. The distribution of DRS total raw scores within each mid-point age group was normalized by assigning standard scores (i.e., mean = 10, SD = 3) based on actual percentile ranks.

The resulting DRS normative data are more useful for older Americans than those currently available. In addition to the larger sample size and better representation of participants with more advanced age, the current data also have the advantage of being part of a series of MOANS projects. As such, the clinician has the ability to make accurate comparisons of DRS scores to patient performances on all other tests having MOANS norms. As noted in previous MOANS studies, the current normative sample lacks ethnic and cultural diversity and thus limits its use with minority patients. A series of neuropsychological studies within the African American community, however, is currently underway to help address this limitation.

Martinez, I. G., Donahoe, C. P., Barker, L. H., & Rice, J.
The Effects of Education and Ethnicity on Cognitive Performance of Male Geriatric Veterans with Chronic Medical Problems.
This study examined the cognitive performance of Hispanic (N = 41), Angle (N = 73), and African-American (N = 13) elderly male veterans (M = 76.4) who attended a geriatric outpatient clinic or resided in an inpatient rehabilitation center. Subjects were administered each Cognistat subtest, Clock Drawing, Digits Backward, and the Initiation and Perseveration subtest of the Mattis Dementia Rating Scale. ANOVAs were performed to examine differences between ethnic groups on each measure of cognitive performance. Results indicated significant differences between the three ethnic groups for Attention, Comprehension, Repetition, Naming, Construction, Memory, Calculation, and Similarities (Cognistat); and Digits Backward. No significant differences were found for Orientation and Judgment (Cognistat); Clock Drawing; and Initiation and Perseveration (Dementia Rating Scale). However, when ANCOVAs were performed using education as a covariate, no significant differences were found, except Orientation and Repetition (Cognistat). Moreover, education was found to be significantly and positively correlated (between .23 and .44) with all measures of cognitive performance, except Orientation and Judgment (for Cognistat); Clock Drawing; and Initiation and Perseveration. These results suggest that differences in cognitive functioning found between ethnic groups can be explained by differences in their educational backgrounds. Clinicians may need to be cautious in interpreting apparent cognitive impairments in persons from socioculturally distinct ethnic groups using scores on these commonly used methods of evaluating cognitive impairment. Although clinicians may be aware that education affects performance on measures of cognitive performance, the absence of appropriate norms based on educational diversity may increase the difficulty of accurately measuring true cognitive impairment.