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Developing Understanding through Global Case Studies
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Culturally Sensitive Neuropsychological Assessment in Black Americans

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6 Culturally Sensitive Neuropsychological Assessment in Black Americans

Vonetta M. Dotson and Anthony Y. Stringer

Section I: Background Information

Terminology and Perspective
A variety of terms have been used to describe Americans of African descent throughout history, including Negro, Afro American, Black, and African American. Currently, Black and African American are the most commonly used terms, with individual differences in the preferred term. In this chapter, we will use the term Black American to broadly refer to persons of African ancestry living in the United States. This includes both Hispanic and non-Hispanic Black individuals and encompasses immigrants who have not only come from Africa but also from other regions including the Caribbean, Central America, and Europe.

Our perspective is that of African American neuropsychologists working as scientist-practitioners in academic settings in the southeast United States (Atlanta, Georgia).

People
The Black population of the United States is diverse and includes descendants of enslaved people, descendants of immigrants, and recently arrived immigrants. Black Americans make up approximately 14% of the national population, according to 2019 estimates. Of the 46.8 million people in the United States who identified as Black in 2019, 87% identified as solely non-Hispanic Black, 8% as non-Hispanic Black and another race, and 5% as Hispanic Black. Immigrants make up approximately 10% of the Black population in the United States, most of whom are from African or Caribbean countries. Black Americans tend to live in the south, with 56% of the Black population living in the south in 2019.

History of Inequality and Racism
The Black American experience has been shaped by historical and current racism and discrimination. Most Black Americans can trace their lineage to Africans who were kidnapped in their native lands and sent to the Americas through the transatlantic slave trade from the sixteenth to the nineteenth century. After emancipation, black codes and Jim Crow laws continued to limit the freedom of Black Americans by hindering occupational opportunities, housing, education, voting rights, and healthcare. The Civil Rights Act of 1964 ended legalized segregation and prohibited discrimination based on race, color, religion, sex, and national origin but did not eliminate the many laws and policies built into fundamental structures of our society (e.g., redlining, backed by the Federal Housing Administration, that prohibited Black Americans from buying

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homes in suburbs and building equity). Longstanding racial disparities in the criminal justice system, ranging from policing and pretrial detention to sentencing and parole outcomes, have widespread impacts on Black American life at the individual and community level. By depleting resources and social capital, biases in the criminal justice system affect emotional and physical health, family structure, employability, and housing. These deeply entrenched laws and policies persist and perpetuate economic, educational, and health disparities, including neuropsychological outcomes, in the Black community.

In addition to these direct effects of racism and discrimination, vicarious threat and trauma experienced by Black Americans have been shown to impact physical and mental health. Studies also show experiences of everyday discrimination, including microaggressions, are associated with negative physical and emotional consequences for Black Americans.

**Education**

Educational opportunities for Black Americans have increased over time, but disparities still exist. The percentage of Black adults with at least a college degree rose from 15% in 2000 to 23% in 2019, paralleling the 9-point increase from 24% to 33% in the entire US population in the same time period. The numbers are higher in Black immigrants (28%), and Black immigrants from Africa are actually more likely than the general US population to have a college degree or higher. However, Black Americans remain underrepresented in elite universities, such as Harvard and Brown. At all levels, educational attainment is lower in the Black community compared to the non-Hispanic white population. For example, 87.2% of Blacks compared to 93.3% of non-Hispanic whites had at least a high school diploma in 2019.

The quality of education is a particularly important issue when it comes to neuropsychological assessment. In the United States, learning opportunities vary dramatically depending on social status. Unequal access to key educational resources, including funding, skilled teachers, quality curriculum, and optimal class size, contribute to race differences in educational outcomes. Biased treatment by teachers also contributes to disparities. For example, Black students receive more disciplinary actions such as being suspended or expelled and are less likely to be recommended for gifted-education programs, even after adjusting for relevant factors such as standardized test scores. Research has consistently shown that quality of education, often measured by single-word reading ability, impacts cognitive performance across the lifespan and explains much of the race-related differences in cognitive function.

**Socio-Economic Status**

Socio-economic status (SES) is an important consideration in the assessment of Black Americans. Across indicators of SES, such as education, household income, wealth, and homeownership, Blacks are disadvantaged. For example, according to 2019 estimates from the US Census Bureau, the median income for non-Hispanic Black households was $43,771, compared to $71,664 for non-Hispanic white households. Compared to non-Hispanic whites, Black Americans are more than twice as likely to live in poverty (21.2% vs. 9%) and to be unemployed (7.7% vs. 3.7% in 2019)—disparities that have been compounded in the time of the COVID-19 pandemic. An important factor in these economic disparities is the consistent devaluation of assets in Black neighborhoods, which hinders the accumulation of wealth for Black homeowners. For example, according to the Brookings Institution, homes of similar quality are valued on average $48,000 lower in majority-Black compared to majority-white neighborhoods. Another factor is race differences in single-parent households. About 30% of Black households are headed
by a woman with no partner present, over three times what we see in white households (9%).

SES is an important mediator of racial disparities in physical and mental health and has been linked to various markers of brain health.

Role of Religion

The church has historically played a significant role in the Black American community. Black Americans are more likely than any other racial or ethnic group in the United States to engage in religious activities, such as attending church services. Approximately three-fourths of Black Americans consider religion to be very important in their lives, and half report attending church services at least once a week. However, there are generational differences. Only 28% of younger Blacks report attending church at least weekly. Black older adults are more likely than their younger counterparts to participate in religious activities outside of church services and to attend Black congregations.

The church has been an important agent of change and resilience in the Black community, often serving as a primary, and even sole, source of safety, education, and support. As such, it is not surprising that research shows many Black Americans turn to ministers for mental health concerns more often than mental health professionals or physicians. Studies have shown that church attendance and social support from church networks can be a protective factor against depressive and anxiety symptoms, substance use disorders, suicide, and overall psychological distress.

Health Status

Heart disease, cancer, and stroke are the leading causes of death in the Black American community. While the prevalence of these conditions has decreased over the last two decades, rates are still high and racial disparities remain. Approximately 44% of Black men and 48% of Black women have some form of cardiovascular disease. Compared to whites, Black Americans are more likely to die from a variety of medical conditions, including stroke, cardiovascular disease, diabetes, cancer, HIV/AIDS, and pneumonia. Racial disparities are also prominent during the COVID-19 pandemic, as Black Americans are more likely to suffer severe illness and COVID-related death compared to whites, in part due to the higher prevalence of preexisting conditions that complicate the course of the disease. Similar to disparities in other health outcomes, these differences have been attributed to social determinants, such as inequalities in health care access, unemployment, and poverty.

Mental Health Views

Black Americans carry a greater burden of psychological symptoms compared to the general population. Despite a lower prevalence of psychological disorders in many studies, the severity, chronicity, and negative sequelae of psychological conditions are higher in Black Americans. Of note, subthreshold symptoms, such as feelings of sadness and hopelessness, have been shown to be more prevalent in Blacks. In addition, there are age differences, such as a higher prevalence of depression in Black older adults compared to non-Hispanic white older adults. Moreover, reports of rising rates in the Black community of serious mental illness and suicidal ideation, plans, and attempts over recent years highlight the importance of screening for psychological symptoms in the neuropsychological assessment of Black Americans.

Rates of mental health services use in the Black community is less than half the rate in whites, with an estimated one-third of Black Americans with a diagnosed psychological disorder receiving
professional treatment. This under-treatment can be attributed to a number of factors, including discrimination and bias in the healthcare system and cultural views of mental health. Stigma of mental illness can deter Black Americans from seeking help due to concerns their family and friends will see them as “crazy.” Other factors contributing to low mental health service use include lack of insurance or under-insurance, lack of mental health literacy, cultural mistrust of medical and mental health professionals, and discrimination.

Neuropsychological Approach

Normative differences in neuropsychological test performance in Black and white samples are known to occur in the absence of neurological disease, leading some neuropsychologists to advocate the use of race-based norms to avoid false-positive bias in test diagnostic interpretation. The most common race-based normative systems for use in the United States are the Revised Comprehensive Norms for an Expanded Halstead-Reitan Battery: Demographically Adjusted Neuropsychological Norms for African American and Caucasian Adults, which cover the adult age span, and the Mayo Clinic norms for Black older adults. An alternative approach utilizes multiple regression techniques that combine race and other factors with a known correlation with test performance to derive an expected test score that can be compared to the score obtained on the test. Discrepancies between predicted and obtained scores theoretically should reflect factors outside of race and other variables in the prediction equation. This approach has been utilized to predict intelligence test scores and has potential for adoption for predicting other areas of cognitive functioning.

These approaches are race-inclusive and should not be considered “race-neutral” as they share unintended and potentially harmful consequences in the way they handle race as a factor in clinical decision-making. While initially intended to decrease the likelihood of false-positive diagnostic error (e.g., misclassifying a Black patient as having dementia as a result of using Caucasian norms), both approaches create a higher hurdle for Black Americans to exceed, compared to whites, to qualify for compensation in forensic contexts. Both approaches also risk further entrenching racist stereotypes about Blacks and other US minority populations. Race often becomes a proxy for numerous other harder to measure factors including prenatal care, nutritional status, educational quality, extracurricular opportunities, expectations that influence examinee performance, biases in examiner interpretation of performance, health status, access to and intensity of healthcare services, the impact of environmental stressors (including racism), socio-economic status, etc. Research suggests literacy and other factors readily account for differences between racial groups in neuropsychological performance.

Unfortunately, the challenge of collecting data on the many variables that may account for racial differences in cognitive performance has led neuropsychologists to settle for the “convenience” of race as a proxy for the presumptive impact of socio-economic inequity. Consequently, a healthy Black American from an upper socio-economic class with an Ivy League education may be predicted to perform worse than a non-Hispanic White at the same or a more disadvantaged rung in society, an incongruous expectation arising regardless of whether race-based norms or race-inclusive multiple regression approaches are utilized.

Test norms are an important consideration, but a recent review article calls to attention other racist practices in psychological assessment that affect the Black community and other minoritized groups, such as the use of racist stimuli in testing material. For example, the inclusion of the noose in the Boston Naming Test not only carries the potential for a negative psychological impact on Black examinees, but it can also negatively impact test performance due to stereotype threat, and it can contribute to mistrust in the healthcare system. Clearly, an important priority
for the field of neuropsychology is to not only diversify the field to meet the needs of an increasingly diverse American society but also to directly address and end racist practices that have largely gone unquestioned in the field.

Section II: Case Study — “Seeing the Bigger Picture in Race, Resilience and Examiner Expectation”

The following case illustration will highlight some, though not all, of the issues introduced in Section I. Possible identifying information and several aspects of history and presentation have been changed to protect patient identity and privacy.

Presenting Concerns

Patient A.B. (not actual initials) was a 44-year-old, right-handed, Black male who was seen for neuropsychological examination because of progressively worsening memory problems. He came to medical attention approximately six months prior to the neuropsychological examination because of complaints of headaches, blurred vision, and memory difficulty. Magnetic resonance imaging (MRI) identified a pituitary adenoma, and A.B. subsequently underwent a trans-sphenoidal (i.e., through the nose, sphenoid bone, and sphenoidal cavity) resection, a common approach to treating pituitary tumors. Surgery resolved his blurred vision and decreased the frequency of his headaches but precipitated the onset of hypogonadism and worsened memory problems.

Language Proficiency, Educational, and Vocational History

A.B. was fluent in standard English and did not speak any other languages. A.B. completed high school with “C” average grades. He denied any history of grade failure, learning disability, attention deficit diagnosis, and school suspensions or expulsions. A.B. served in the US Army for 22 years, working in logistical operations. He served in active combat during Operations Desert Storm and Iraqi Freedom. In the years since his army discharge, A.B. worked in logistics and purchasing departments in the civilian aerospace and defense industry. He was on medical leave from his job at the time of his evaluation because of his worsening memory problems after surgery. Co-workers complained that he forgot work assignments. He began taking detailed notes to compensate for his memory failures but eventually had to stop work because of his poor performance. He remained hopeful of returning to work if his memory improved.

Psychological History

A.B.’s childhood was traumatic. At age 12, he witnessed his father kill his mother and then commit suicide. A.B. was currently married and lived with his wife of 13 years in a private residence. He had no children.

During combat deployment, he frequently witnessed violence and death, events that he continued to reexperience in nightmares and flashbacks. For example, after returning from his last deployment, there had been multiple incidents in which he believed he heard soldiers screaming. The last flashback was 2 to 3 months prior to his neuropsychological examination. After returning from combat, A.B. had a 21-day Veterans Administration psychiatric hospitalization for posttraumatic stress disorder (PTSD).
A.B. additionally acknowledged problems with anger management. In the two years prior to his neuropsychological examination, he had become physically violent twice, though neither incident resulted in injury to others or arrest. A.B. endorsed past suicidal ideation with a plan for ending his life when he first returned from Iraq. He also reported suicidal ideation after his tumor diagnosis but denied having any plan for acting on these thoughts. At the time of his examination, A.B. denied suicidal ideation, plan, or intent. He did report past episodes when he exhibited manic symptoms, including a decreased need for sleep, feelings of grandiosity, pressured speech, increased activity, irritability, and agitation. During these episodes, he averaged 4 to 5 hours of sleep a night with the use of a sleep aid but often went without sleep entirely.

Finally, A.B. acknowledged consuming 2–3 alcoholic beverages an average of 3–4 times weekly prior to his tumor surgery but reported no consumption in the past six months. He denied ever having problems at home, work, or in his community related to alcohol consumption and reported no other drug or tobacco use.

Additional Health History

A.B. suffered one diagnosed and a second suspected concussion during his military service. The first occurred 23 years prior to the examination during a parachute jump when he lost his balance when landing, fell and hit his head. He was unconscious for a few minutes and experienced a post-traumatic amnesia of approximately 10 minutes but no retrograde amnesia. He was diagnosed with a concussion and hospitalized overnight for observation. The second suspected concussion occurred three years prior to the neuropsychological examination when he hit his head on a wall following a blast detonation. He did not suffer a loss of consciousness but felt dazed for several minutes. He did not seek medical evaluation or treatment following this second incident. A.B. did not experience any residual cognitive problems following either incident.

At the time of his evaluation, A.B. additionally had hyperlipidemia and hypertension. A recent blood test detected elevations in the liver enzymes aspartate and alanine aminotransferase. His medications included over-the-counter pain relievers for his occasional headaches; prazosin for hypertension; simvastatin for hyperlipidemia, vardenafil for erectile dysfunction; testosterone hormone supplementation; and sertraline, quetiapine fumarate, lorazepam, and risperidone for mood and sleep regulation.

Daily Functioning

A.B. was independent in basic activities of daily living (ADLs) but had difficulty with more complex activities because of poor memory. He had trouble remembering routes, computer passwords, and prospective tasks such as appointments, errands, and bill payment due dates. His wife took over bill payments and provided reminders for appointments and to take medications.

Behavioral Observations

Rapport was easy to establish and maintain. A.B. was friendly and cooperative throughout the evaluation. He provided good eye contact but demonstrated an anxious affect. He appropriately engaged in and initiated casual conversation. He worked at an appropriate pace. While he was able to maintain his attention throughout testing, he had difficulty sitting still and frequently shook his legs and shifted in his seat. He was also mildly impulsive, sometimes starting tasks before instructions were completed. The Victoria Symptom Validity Test (VSVT) was administered to more objectively gauge motivation and validity of testing. On the VSVT, A.B. scored
within the valid range for items that appear “easy” (23 out of 24 correct) and on items that appear “difficult” (18 out of 24 correct). Thus, A.B. appeared to put forth adequate effort.

Test Results

Test Score Classification

Severity classifications vary across individual neuropsychologists. While the mild range of impairment is sometimes defined as beginning at 1.5 or even two standard deviations below average, if we require a further one standard deviation test score drop to change impairment classification, moderate range performance will fall three standard deviations below average (99.7th percentile) so that performance is worse than 99.7% of the normative group. Severe range performance will then be worse than 99.9% of the normative sample. In effect, the moderate and severe classifications become functionally meaningless. For this reason, in this chapter test scores that are one, two, and three standard deviations below average are respectively labeled mild, moderate, and severe impairment. As a result, the mild range of impairment corresponds to the 16th percentile, the moderate range to the 5th percentile, and the severe range to the 1st percentile, preserving a functionally useful and interpretable distinction between these impairment classifications.

Attention

A.B. was alert and interactive throughout the examination. He was able to sustain his attention over time and was not distracted by background noise. The span of verbal information that he could process was average, as was his ability to simultaneously listen to incoming information and mentally manipulate it so that he could report it in reverse sequence. Similarly, visual processing span was average, as was his ability to simultaneously pay attention to visual sequences and reverse their order. Overall, A.B. showed intact attention.

Perception

On visual field testing, A.B. was unable to perceive stimuli in the upper right quadrant of his left eye. Responses to unilateral and bilateral simultaneous stimulation in visual, auditory, and tactile modalities were within expected limits. Visual acuity was 20/20 OD and 20/25 OS without corrective lenses. Line bisection and color perception were intact. Basic visual form perception was assessed with the Object Decision Test,54 which requires the patient to correctly choose which of four plausible appearing black silhouettes is a real object. Normed in Great Britain, the test refers to objects by names less familiar to people in the United States (e.g., “pram,” “lorry”). The patient, however, does not have to identify objects by name. Nonetheless, the test includes some objects that could be insufficiently familiar to people in the United States to be identified by silhouette alone (e.g., oilcan, teapot). A.B.’s form perception fell in the mildly impaired range based on British norms. A.B.’s ability to match and discriminate complex visual stimuli on the Benton Facial Recognition Test,55 which uses Caucasian faces exclusively, was mildly impaired.

In contrast, A.B. performed better on most spatial perception tests. He was fully intact in his stereoscopic depth perception, judgment of the orientation of lines in space, his ability to picture mentally how a complex stimulus would look after it was rotated in space, and his ability to determine the number of rectangular blocks needed to build various pictured three-dimensional geometric structures. The only spatial ability showing mild impairment was judgement of the
relative positions of points in space, also assessed with a British normed test that is part of the same test battery as the Object Decision Test.\textsuperscript{54}

Finally, recognition of presumed familiar stimuli was fully intact. Specifically, A.B. accurately identified the characteristic color of various objects named to him (e.g., that grass is green, charcoal is black). He also accurately identified stimuli shown to him including fingers (e.g., thumb, index finger), famous people (e.g., US presidents Barack Obama and Gerald Ford), and landmarks (e.g., the Washington Monument).

\textit{Psychomotion}

A.B.’s resting gaze was central, he showed no impersistence in maintaining the fixation of his gaze in either lateral direction, and he was able to shift his gaze in all directions upon command. Grip strength was intact bilaterally. Speed of alternating hand movements (pronation and supination) was within expected limits bilaterally. Performance on a speeded manual finger-tapping task was within expected limits (based on age and sex) for his left hand but was in the mildly impaired range for his dominant right hand. Speed was intact with his left hand on a fine motor dexterity task where A.B. was asked to quickly place small pegs into differentially oriented holes, but speed on this task was mildly impaired with his right hand. He accurately performed a novel sequence of hand movements (i.e., repeatedly putting his hands in fist, edge-down, and palm-down positions) and tandem reciprocal movements (e.g., showing one finger when the examiner showed two, and vice versa).

There were no signs of perseveration in A.B.’s copies of triple loop figures. He accurately reached for targets with each hand. He readily pantomimed previously learned movements involving facial muscles (e.g., sniffing a flower), hands (e.g., turning a key in a lock), or use of hands to perform a habitually linked series of movement (e.g., sealing a letter in an envelope and placing a stamp in the correct location). A.B.’s drawings of simple geometric figures from a model, however, were mildly impaired with his right hand but intact with his left hand. His drawing of a more complex figure with the right hand, however, was within the average range for his age.

\textit{Language and Calculation}

A.B.’s conversational speech was fluent, with normal articulation, prosody, grammar, and syntax. Confrontation naming utilizing low-frequency objects was intact. He had no difficulty with the mechanics of writing. He accurately read numbers and arithmetic signs and had no trouble performing basic mental addition, subtraction, multiplication, and division.

\textit{Learning and Memory}

Visuospatial memory was assessed using the Tombaugh\textsuperscript{56} administration of the Taylor Complex Figure. This test required A.B. to draw a complex figure from memory, with the expectation that he would recall an increasing number of details with each timed exposure to the figure over four learning trials. He performed in the mildly impaired range for immediate recall. He demonstrated variability across learning trials, and his performance was ultimately mildly impaired by the fourth learning trial. On all recall trials, A.B. maintained the overall gestalt of the complex figure, with his performance only lowered by the number of details that he included. After a 15-minute delay, he again performed in the mildly impaired range for recall of the figure, although he retained all the details that were recalled on the most recent learning trial.

Verbal memory was assessed with the California Verbal Learning Test,\textsuperscript{57} which consists of five learning trials of a 16-word list, followed by short and long delay recall trials. Immediate recall was
average, with six words recalled. A.B. recalled five words when an alternate list was presented, also in the average range. He recalled 12 of 16 words at the end of the fifth presentation (performance in the average range). After a short delay, A.B. recalled nine words, performance in the average range. After a 20-minute delay, he performed in the mildly impaired range, recalling 8 of 16 words. He did not seem to benefit from semantic cuing. A.B. avoided repeating words he had already recalled on a given trial, and he also did not intrude extraneous words that were not from the list presented to him. When asked only to recognize words from the list, distinguishing them from distractors, A.B. correctly identified only 11 of 16 words and made two false-positive errors. This put his recognition score in the severely impaired range; however, his recognition was still superior to his delayed recall. When asked to choose between a word from the target list and an obviously incorrect word, he did not make any errors, suggesting that he was not attempting to feign memory difficulties.

A.B.’s verbal memory abilities were also assessed using the Logical Memory subtest of the Wechsler Memory Scale—3rd Edition, which consists of two short stories that are learned respectively over one or two trials and recalled after a 30-minute delay. His ability to acquire the details of the stories was high average, and his ability to remember the details of the stories after a delay was average.

Problem Solving and Reasoning

A.B. was fully oriented to person, place, time, and situation. He was administered a short form of the Wisconsin Card Sorting Test to assess problem solving and the ability to maintain cognitive sets across changing stimulus conditions. The test included periodic verbal queries about possible sorting strategies, and A.B. identified all three alternate sorting strategies at the beginning, middle, and end of the test. He achieved six sorts of the cards, a performance in the average range. He avoided repetition and set loss errors. We next administered the Short Category Test. This test is designed to assess complex concept formation and abstract categorizing. A.B. performed in the mildly impaired range on this test.

Intellectual Functioning and Academics

On the Wechsler Abbreviated Scale of Intelligence 2nd Edition (WASI), A.B. obtained a Verbal IQ of 98 (45th percentile; average range), Performance IQ of 87 (19th percentile; low average range), and Full Scale IQ of 91. His Full Scale IQ placed him at the 27th percentile as compared to same-age peers. An estimate of A.B.’s likely premorbid intellectual functioning was calculated using demographic and educational background and oral reading performance on the Wechsler Test of Adult Reading (WTAR). The WTAR yielded estimates of premorbid Verbal, Performance, and Full Scale IQ scores in the Low Average Range. A.B.’s currently measured intellectual test performance from the WASI was at or above these premorbid estimates.

Emotion and Behavior

A.B.’s affect was anxious. He reported problems with depression, PTSD, and anger management, as documented above. A.B. completed the Minnesota Multiphasic Personality Inventory-Restructured Format (MMPI-R) to assess his current emotional functioning and personality characteristics. While his pattern of responses suggests that he approached the test in a consistent manner, his profile indicates that he likely over-reported and exaggerated psychopathology. Given this, his profile was invalid and considered an overestimate of current psychopathology. His response pattern is most likely a cry for help and an indication of significant emotional distress.
Diagnostic Impressions

Neuropsychological examination revealed intact attention. Basic visual perceptual testing revealed an upper right quadrant field cut confined to his left eye. A field cut in only one eye would have to result from a preoptic chiasm lesion. The proximity of the pituitary to the optic pathway makes it likely this was an unintended consequence of surgery. A.B.’s good visual acuity, even in the left eye (i.e., 20/25 without corrective lenses) and his intact performance on a range of perceptual measures with equally demanding visual requirements, suggests the mild impairment on the Object Decision and Benton Facial Recognition tests was not due to this minor visual field cut.

Cultural factors must be considered in interpreting these two visual perceptual tests. The Object Decision Test uses British norms and includes stimuli that the patient may never (e.g., a yacht) or relatively rarely (e.g., an oilcan and teapot) have personally encountered. While potentially identifiable when shown in full detail, depiction in black silhouette shorn of all feature cues requires greater than casual familiarity with these objects, especially when needing to distinguish the objects from equally plausible appearing foils. Similarly, the use of Caucasian faces alone to judge perceptual ability on the Benton Facial Recognition Test may create a greater challenge for Black Americans.

A.B.’s intact performance on multiple spatial tests that do not use culture-specific stimuli adds to the suspicion that the above findings may reflect the impact of culture on test performance. Indeed, the only perceptual test not utilizing culture-specific stimuli, on which A.B. scored below the intact range, was a measure requiring judgment of position in visual space. While this test also uses British norms, it is not as clear why nation of origin would impact perception of spatial position. Given the potential remapping of visual coordinates in the cortex following onset of blindness in one eye quadrant, this finding may reflect a neuropsychological deficit rather than the confounding influences of culture and normative bias.

Black Americans born and reared in the United States are likely to be more acculturated to the traditionally dominant white subculture than a more recent US immigrant. A.B.’s 22 years in the military likely added to his acculturation given the emphasis on US patriotic symbols in the army. Hence, A.B. readily performed tests intended to detect agnosia using stimuli such as the faces of US presidents and pictures of US monuments. A.B. showed no evidence of agnosia to any category of stimuli. He showed intact strength, speed, and coordination in his left hand but had a mild decrease in fine motor speed in the right hand. He had a good ability to plan, sequence, and cognitively regulate movements. No difficulties with oral language or mental calculations were noted. A.B. had mild difficulty learning visuospatial information with repetition, but he retained what he learned over a 15-minute delay and primarily showed a limited acquisition of detail. Verbal learning was intact for both lists and meaningfully organized narratives, though he did show mild difficulty retaining list information. While A.B. recognized more list items than he could freely recall, normatively his recognition performance was in the severe range. The fact that verbal memory was better with narratives, than with lists, suggests he benefitted from having information semantically organized and meaningfully integrated.

Performance varied across measures of reasoning and problem solving. A.B. demonstrated a good ability to perceive alternative problem-solving strategies and was both flexible and systematic in applying those strategies. He had mild difficulty, however, with categorical reasoning such that he could not always identify the target principle for grouping stimuli. An estimate of premorbid functioning that included race and reading performance as predictors yielded intellectual scores that were either comparable to or lower than A.B.’s actual obtained IQ scores, illustrating the challenge of using such approaches with Black Americans. A successful military and civilian career working in logistics and purchasing, including time in the typically high-demand aerospace
industry, requires at least average intellectual functioning, if not higher. A.B.’s Full Scale IQ is at
the bottom of the Average Range and likely is lowered by his relatively poorer scoring on the per-
ceptual and timed motor tests contributing to the Performance IQ. Hence, rather than concluding
that IQ scores are better than expected based on the race-inclusive prediction, historical informa-
tion suggests current functioning could be lowered.

A.B. experienced traumatic events during childhood and subsequently during his military service
and appeared to meet criteria for PTSD. Additionally, he has had both manic and depressive epi-
sodes, consistent with Bipolar I Disorder. At the time of his examination, his psychological distress
was so high that he invalidated his MMPI through symptom over-endorsement, a response pattern
interpreted as a cry for help. These psychiatric disorders, however, predate the onset of his acute
cognitive impairment and do not provide a viable explanation for his neuropsychological profile.

The neuropsychological examination documented cognitive impairments that were concordant
with the decrease in adaptive functioning at home, work, and in community settings, warranting
a diagnosis of Major Neurocognitive Disorder. The most probable etiology is the one most prox-
imate to the onset of his cognitive complaints, namely the pituitary adenoma and subsequent
surgical resection. The visual field cut is most clearly related to this etiology; however, mild defi-
cits in right-hand speed and categorical reasoning may further implicate trauma to superiorly
adjacent frontal lobe regions. The dissociation between mildly lower memory for lists that require
the patient to generate an organizational strategy and intact memory for already semantically
organized information may also be explainable by left frontal lobe involvement. Poorer recall of
detail than gestalt is more common with left hemisphere pathology and does not detract from this
proposed functional localization. This parsimonious explanation notwithstanding, the impact
of two mild concussive episodes, PTSD, bipolar disorder, and a history of psychological trauma
beginning in childhood cannot be excluded as contributors to this patient’s current presentation.

Feedback and Follow-Up

A.B. and his wife attended a feedback session with the examiner. The results of the examina-
tion were reviewed. They were encouraged that the cognitive impairments were overall mild and
potentially addressable through a program of cognitive rehabilitation that focused on teaching
practical, compensatory strategies for the effects of these impairments on everyday functioning.
A.B. was also encouraged to utilize mental health services available through his local Veteran’s
Administration (VA) Medical Center, and with his permission, a written report was subsequently
sent to his psychiatrist and psychologist.

Cognitive rehabilitation was instituted approximately one month following the examination, con-
sisting of weekly, one-on-one sessions with a therapist. The primary focus was on training A.B. in
memory compensation strategies that he could use at work. A.B. remained emotionally stable dur-
ing this time and consistent in attending individual and group counseling sessions through the VA.
A.B. was discharged from cognitive rehabilitation after approximately 12 weeks, and at that time
was considering an attempt to return to work part-time on a trial basis.

Section III: Lessons Learned

Race-inclusive Normative Interpretation

Patient A.B. illustrates the challenge arising from race-inclusive predictions of premorbid func-
tion. A successful career in logistics in both the military and private industry is incongruous with
the WTAR premorbid estimate of low average intellectual functioning. Despite A.B.’s history of
multiple concussions, pituitary adenoma, PTSD, and bipolar disorder and his inability to perform his work up to the required minimum standard, comparison of current intellectual functioning with the premorbid estimate fails to detect any functional change. In this circumstance, a false negative outcome arguably is worse than a false-positive result. If we conclude there has been no meaningful functional decline, are disability benefits justified, and should we proceed with cognitive rehabilitation? While these decisions obviously do not hinge on a single result in a neuropsychological examination, intellectual test scores are sometimes used as an overall index of level of functioning and may set an expectation for how well a patient should perform in other cognitive domains that are correlated with intelligence, including memory and executive function. If we accept that A.B. has always been intellectually low average, do the mild memory deficits represent a decline or his baseline level of function? There is no universally applicable or infallible guideline when considering whether to use race-inclusive normative or predictive approaches with Black American patients, and clinicians are advised to proceed in full knowledge of the complex interpretative challenges involved.

Race-based norms and multiple regression approaches that include race as a prediction variable have the potential advantage of decreasing false-positive diagnostic errors. Neither are race-neutral in that they both lead to potentially deleterious consequences for Black Americans, including the possibility of a false negative conclusion, denial of benefits, and failure to treat. In recognition of the advantages and disadvantages of these approaches, we recommend comparing how interpretation of a Black American patient’s test scores might change with and without the use of race-inclusive normative approaches, consideration of the potential harms that might result depending upon the choice to use or not to use race-inclusive approaches, and explicit discussion and justification of the clinician’s decision in each instance.

Academic vs. Functional Achievement

Black Americans have lower academic achievement compared to white Americans regardless of whether this is measured in years of education and degrees obtained or school performance at a given level of education. Consequently, use of academic achievement will lead to a lower expectation of performance for Black Americans, creating a similar problem to what has already been described for race-inclusive normative approaches. Use of academic achievement to estimate premorbid functioning ignores many racial inequities, including historical and ongoing differences across racial groups in academic advising, quality of education, and college preparation, college and university admissions, and the economic resources made available to pay for education. As already noted, race becomes a convenient, though imprecise proxy for the effect of these many hard-to-measure variables and their impact on premorbid performance.

In developing a fuller picture of the premorbid status of Black patients, it is useful to consider functioning within other settings and institutions that allow patients more opportunity for self-efficacy and self-actualization. This may include vocational or occupational achievements, though Black Americans may face many of the same inequities here as in academic institutions. The patient’s standing within the Black family as matriarch, patriarch, or reliable sibling; and accomplishments within church settings as choir singer, musician, lay preacher, deacon, pastoral care volunteer, etc., may all provide a more complete impression of a Black patient’s premorbid functioning with less distortion from endemic racial biases and inequities. Even when church participation is limited, Black Americans may belong to fraternities, sororities, and a variety of social
clubs and sports leagues that make available opportunities for personal achievement and provide
the neuropsychologist with information on premorbid functioning supplemental to achievement
in academic institutions.

With respect to A.B., though academic achievement was marginal and limited, his successful
military and civilian careers provide a useful counterpoint to what might otherwise be low expec-
tations for his neuropsychological performance.

In evaluating the usefulness of education as a predictor of performance, neuropsychologists
should consider factors that may differentially impact Black Americans’ academic achievement.
When potential biases and inequities may have affected academic achievement, neuropsycholo-
gists should seek additional sources of information on premorbid functioning, including occupa-
tional accomplishments, social standing in the Black family, and achievement in church and other
community settings.

**Functional Resilience and Prognosis**

A similar point can be made with regards to setting expectations for improvement for Black
patients. Contemporary life is generally regarded as stressful; however, bearing the brunt of
institutional racism and racial microaggression adds an extra layer of tension and stress. Black
Americans who not only survive but, in fact, manage to thrive under such conditions demonstrate
a level of emotional strength and psychological resourcefulness that should not be ignored.

A.B. amply illustrates the importance of paying attention to the functional resilience of Black
patients. He has a number of negative prognostic indicators, including early exposure to trauma,
multiple concussions, and multiple psychiatric diagnoses. This has all certainly taken a toll, yet
he had successful military and civilian careers, maintained a stable marriage, and never devel-
oped a postconcussive syndrome despite the potential secondary gain inherent in the awarding of
service-connected disability benefits within the US VA system. Resilience in the face of so many
challenges might justify greater optimism about prognosis in this case. Once diagnosed and in reha-
bilitation, A.B. did indeed progress to the point that a return to work became a realistic possibility.
If we were to say that A.B. exceeded expectations in his eventual functional outcome we may be
guilty of having set unrealistically low expectations, without duly considering all he has survived.

Demonstrable functional resilience in the face of personal and societal challenges justifies an
optimistic prognosis and supports the martialling of resources to treat Black patients even in the
context of a complex clinical presentation.

**Pathognomonic Performance**

Not all neuropsychological tests yield a normally distributed distribution of scores. While intel-
lectual functioning measures yield score distributions that are either normally distributed or are
corrected to approximate a normal distribution, we do not expect a test of hemispatial neglect
or aphasia, for example, to yield such a score distribution. Some neuropsychological tests are
designed to detect the presence of performance that does not occur in healthy, nonneurological
populations. We do not see marked directional biases in line bisection or a failure to follow one-
step commands in healthy populations irrespective of their racial composition.
The importance of such pathognomonic signs is evident in A.B.’s neuropsychological profile. The right upper quadrant field cut in the left eye only is a clear sign of neurosurgical trauma that lends localizing confidence when considering the pattern of performance on other neuropsychological tests. Our ability to arrive at a parsimonious functional localization is greatly enhanced by this unambiguous clinical sign. While contemporary neuropsychologists may focus more on the sophisticated psychometric instrumentation that distinguishes our field from related medical disciplines, pathognomonic indicators are less likely to be influenced by cultural factors and can serve as important interpretive guides in assessing Black patients.

Inclusion of tests that yield results that are pathognomonic of neuropsychological disorder is an advantage in assessing Black patients as such tests are less susceptible to the effect of the myriad variables subsumed under the proxy of race.

**Cultural Influences on “Hold” and Pathognomonic Test Performance**

In contrast to neuropsychological tests that detect pathognomonic patterns are so-called “hold” tests that are relatively resistant to the influence of neurological disease. Reading performance, for example, typically is spared when primary oral and written language areas in the dominant cerebral hemisphere are not damaged.* Reading tests therefore are often used as a means of estimating premorbid ability in areas with little apparent relationship to reading. For example, oral reading performance combined with demographic data is used to predict Performance IQ. This is also not a “race-neutral” approach. To the extent that race is a proxy for culture, it is important to note that Black Americans may pronounce words differently than white Americans, reflecting unique familial and regional variability in word pronunciation. This is especially true when the reading tests include irregular words whose pronunciation cannot be derived from the rules of American English phonology and, hence, must be learned entirely through imitation of others or generalization from words possessing a similar orthography.

A related problem arises on pathognomonic tests. Agnosia, or the inability to recognize familiar stimuli, does not occur in nonneurological populations. Yet detecting agnosia requires stimuli to be familiar. This problem is sometimes overcome by using stimuli from the patient’s life (e.g., pictures of close relatives to detect facial agnosia), yet this abandons standardization across individuals. The other option is to use stimuli presumed to be familiar to most people. Faces of recent presidents, for example, may be substituted for family members, or pictures of famous landmarks may replace pictures of locations within a patient’s home to standardize detection of face or topographical agnosia. Black Americans may differ, however, from Caucasians in their familiarity with various stimuli. Often the perspective and experience of a white test developer or white patient is centered in the design of such tests.

While much of the white American population over a particular age may recognize Ronald Reagan, the Eiffel Tower, or the music of Neil Diamond, Black Americans of the same age may not, so that inclusion of these stimuli may confuse a lack of premorbid familiarity with a postmorbid agnosia. American society has a growing mixture of subcultures. Being born and reared in America does not guarantee equal assimilation into the white Anglo-Saxon Protestant subculture that has traditionally been considered dominant. Formal measures of acculturation with...

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*This is an oversimplification for purposes of discussion, as reading performance is susceptible to the influence of many nonlinguistic factors, including attention and sensory perception.
an established relationship to neuropsychological test performance are generally not available so that most examiners will be forced to rely on more informal methods of querying to determine premorbid familiarity with categories of test stimuli.

A.B. was intact in his performance across multiple tests of stimulus recognition. If, however, he had failed to recognize presidents or landmarks, it would have been essential to query his degree of prior exposure. The impact of cultural familiarity was most evident, however, in his perceptual test performance. There was a clear difference in his performance on perceptual tests that relied on culture-specific or race-specific stimuli compared to tests that used more abstract stimuli. In addition, we have already noted the low estimate of premorbid intellectual functioning on the WTAR, a test that entirely conflates standard English pronunciation with reading ability (i.e., one may read and correctly interpret a word even if it is not pronounced in standard English). The possibility that this low premorbid estimate arose in part due to nonstandard pronunciation during reading cannot be excluded.

Neuropsychologists must consider the Black patient’s familiarity with “standard” English oral and written word pronunciation when attempting to use reading performance as a hold measure for estimating premorbid ability.

In addition, the degree of acculturation, whether measured formally or estimated informally, into the traditionally dominant white Anglo-Saxon Protestant subculture must be considered in the evaluation of Black Americans when neuropsychological tests include stimuli whose exposure may vary across racial or cultural groups. In the absence of formal, validated acculturation measures, testing of limits should include querying Black Americans regarding their familiarity with stimuli (or stimulus categories) included in tests.

The Need for an Expanded Toolkit

Finally, the question should be asked, why include tests with a potential cultural bias or inappropriate norms in the assessment of Black patients? The unfortunate answer is that relying entirely on tests demonstrably uninfluenced by culture or with normative databases that include a representative sample of Black Americans will limit the comprehensiveness of the assessment. It may be just as inequitable to not attempt a full and complete assessment of the Black patient as it is to incorporate problematic test instruments in the overall battery. This highlights the critical need for an expanded test toolkit. Given the growing cultural and ethnic diversity of the US population and the infrastructure available to each of the major US test development companies, the failure to expand our clinical toolkit over the next decade will be a telling indictment of neuropsychology as a clinical profession. Where we are as a diagnostic profession is neither where we should be, nor hopefully where we will be, in the coming years. Expanding out toolkit of culturally appropriate neuropsychological tests should be the top priority for the entire clinical profession.

References


23. Center PR. Black Americans are more likely than overall public to be Christian, Protestant. 2018.


