Neuropsychological Assessments with Asian Indians
One Size Does Not Fit All

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Section I: Background Information

Terminology and Perspective
People descended from India are referred to as Indians, Asian Indians, “desi”, East Indians, or Indian American/Canadian, etc. My preferred terminology is Indian for those living in India and Asian Indian for those residing in the United States.

One aspect of my identity that frames my perspective for this chapter is of a Gujarati- and Hindi-speaking naturalized American citizen who immigrated to the West as an adolescent. I was professionally trained in the northeastern United States, where I currently teach and practice neuropsychology in a private setting. As reflective of my own transnational bicultural identity, this chapter straddles information about Indians and Asian Indians. I do not claim to speak for the entire community and cannot offer all background information about India.

Geography
India is the 7th largest country in the world, spanning 29 states and 7 union territories. It is located in South Asia and is bound by the Indian Ocean, Arabian Sea, and the Bay of Bengal. It shares land borders with Pakistan, China, Nepal, Bhutan, Bangladesh, and Myanmar.

History
Humans likely first arrived on the Indian subcontinent from Africa between 73,000 and 55,000 years ago. The Indus valley civilization began 4,500 years ago. The ancient cities of Mohenjo-Daro and Harappa were the most advanced of their time. Alas, the region has been invaded many times, starting with Indo-Aryan tribes in 1500 BC. After rule by Hindu dynasties, from the 8th century onwards, India faced conquests by Arab, Turkish, and Persian Moghuls. European colonization began with Portuguese traders in the 1500s and the British East India Company’s raj from 1858 until India’s independence on August 15, 1947. The region was subsequently partitioned into primarily Hindu India and mostly Muslim Pakistan, with ongoing ethnic tensions. Almost a century of imperial rule impacted India’s global economic and social position and the psychology of its people. Yet, subsequent Indian nationalism engenders pride in cultural and historical accomplishments, such as being the birthplace of early modern language (Sanskrit), alternative medicine (Ayurveda), brain surgeries, yoga, mathematics, chess, the world’s first university (Nalanda University in 4th century BC) and several ancient religions.

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People

India is the world’s largest democracy, with a population of over 1.3 billion people and the largest youth population in the world. I was born in the Indian city of Mumbai, where I spent the first nine years of my life. India has a surface culture of vibrant colors, intoxicating fragrances, melodious music, energetic dances, fun festivals, spicy foods, and lively clothing. I remember people who are hard-working, passionate, humble, generous, caring, respectful, and full of laughter and life despite hardships and sorrows. Yet, the deep culture of people from modern Mumbai is as different from other metropolitan and rural communities as the unique languages, educational backgrounds, socio-economics, values and customs, that exist throughout the country. Indians are by no means a “one size fits all” people. Within-group ethnic diversity and cultural pluralism is the norm.

Immigration and Relocation

India has the world’s largest transnational community, with 18 million of its citizens living in the United Arab Emirates, United States, Saudi Arabia, or other places throughout the globe. Common reasons to leave India include economic opportunities, family reunification, or temporary school or work-related relocation.

In the United States, Asian Indians make up 1% of the population and the third-largest foreign-born resident population. In addition to US-born and naturalized citizens, Asian Indians include legal permanent residents, students, workers, and spousal visa holders, refugees, and undocumented immigrants.

Historically, before the 1800s the British East India Company brought indentured Indian servants to the American colonies. The first recorded immigration wave (1899–1908) included 6,800 Punjabi Sikhs arriving in California from primarily semiliterate, agricultural, or military backgrounds. The 1917 Immigration Act barred migration from India (“Asiatic barred zone”) with warnings of a “tide of turbans.” After the Immigration and Naturalization Act of 1965 the second phase allowed wealthier, more educated Punjabi and Gujarati speaking professionals to enter and pursue the American dream. The 1990 Family Reunification Act allowed migration under family sponsorship visas. This group was less educated, sought service sector jobs, and faced more challenges for access to services and social networks. More recent employment-based relocation has included an influx of skilled professionals, particularly in technology and medicine, mainly from southern states of India. These immigration trends help understand differences in linguistic, educational, occupational, and socio-economics depending on when an Indian came to the United States.

Acculturation and Systemic Barriers

The cultural psychology of immigration is worth considering since sometimes cognitive complaints may reflect emotional distress due to acculturation stress or racism. Migrating to a foreign land can involve culture shock when learning new social rules, managing stressors of coping with unfamiliar environments, and changing cultural identities. Patients may be struggling with pre-immigration traumas, stressors related to green card or visa, changes in cultural identity or socio-economic status, and racism or stereotype threat. Those born to Indian immigrants may live vicariously through their family’s immigration stressors, while others may prefer to eschew their ancestral homeland and maintain an “American” identity. Some Indians effectively navigate immigration stress using Berry’s acculturation model’s strategy of integration, while separation, marginalization, or assimilation is less effective for Asian Indians.

Integration to mainstream culture becomes more challenging when Asian Indians are faced with racism due to skin tone, “accents”, “body odor”, choice of clothing, food preferences, religious
beliefs, or oppression due to other aspects of intersectionality. Complaints of glass ceiling effects are rampant in workplaces. Racial injustices include increased hate crimes against Sikh men who wore turbans after 9/11, increased government scrutiny (e.g., FBI surveillance of Muslim communities, greater profiling in immigration policies), and increased “communities on fire” with violence and xenophobic political rhetoric, often motivated by anti-Muslim sentiment.14,15 In a recent survey, 1 in 2 South Asians in the United States report regularly encountering discrimination.11 Yet, along with other Asian American communities Asian Indians grapple with the “model minority myth” based on stereotypes of achieving socio-economic success due to higher education, work ethic, low criminality, and family/marital stability. However, this myth has been used historically to create racial wedges and exclude those with genuine economic need from receiving social assistance.

Understanding these systemic barriers within the context of personal biases is important since stereotype threat and perceived discrimination impacts examiner-examinee racial discordance during neuropsychological testing16 and is linked to neuropsychological test performance for Asian Indians in the United States.17

**Language**

Accurate evaluation of language proficiency ensures that evaluations assess cognitive ability and not English language proficiency. India is one of the most linguistically diverse nations in the world. Multilingualism is the norm, with 22 official languages with their own written scripts. These languages are of Indo-Aryan, Dravidian, Austroasiatic, and Sino-Tibetan origin.18 Hindi, Bengali, Marathi, Telugu, Tamil, Gujarati, Urdu, Kannada, Odia, Malayalam, and Punjabi are commonly spoken, but there are over 19,000 spoken dialects, many without writing systems. Most Indian languages have significant linguistic and cultural differences from English.

In the United States, 82% of Asian Indians are proficient in English.19 In India, 11% of the population speaks English, 26% are bilingual, and 7% are trilingual.20 English and Hindi are commonly spoken in India, but depending on the context, different languages can be used for ethnic identity, business transactions, official dealings, or entertainment.21 Use of language mixed and borrowed words are frequent in daily communication. While there may be overlap among some languages, knowledge of one language does not imply knowledge of another regional language. This is important to keep in mind when working with interpreters and translators, or decisions to refer to another provider.

Recommendations for testing bilingual speakers in the Indian context include evaluating the linguistic proficiency of the patient and examiner, considering language interference from borrowed/language-mixed words when interpreting responses, and not separating monolingual and bilingual norms for select cognitive batteries.22 It is practically impossible to develop/adapt tests in all Indian languages and dialects, but some tests and normative data are currently available and others are emerging (see Appendix and Porrselvi & Shankar (2007)23 for a review).

**Communication**

Understanding communication preferences helps establish rapport, gather accurate history, ensure testing fairness, and deliver effective feedbacks. While private communication patterns among family or friends can vary, public communication for most Indians tends to be polite, respectful, and indirect. Even before COVID-19 social distancing, many Indian Hindus traditionally preferred to formally join hands (namaste) or touch an elder’s feet in greeting instead of shaking hands. For some, initiating a conversation without being asked could be considered disrespectful, since Indian schools teach students not to speak unless spoken to. So, patients may not volunteer information unless explicitly asked.
Age, seniority, and educational achievements are highly regarded. Formal language tends to be preferred for authority figures (e.g., Dr., Sir/Madam, Mr./Mrs, uncle/aunty) rather than first names. Doctors tend to be revered, so in interactions with neuropsychologists, verbal responses could be incongruent. For example, patients may blindly follow recommendations without questions or criticism, despite internal conflict. On the other hand, they may also verbally agree with recommendations but not act on them because direct verbal refusals such as saying ‘no’ to a doctor could be perceived as harsh. More evasive communication styles such as hand or head gestures, vague responses (e.g., “I’ll try”), or silence may be used instead. However, this isn’t true for all Indians. Global exchanges through social media have brought Westernized influences, with many preferring direct communications.

For Indian immigrants, nonverbal gestures and Indian English vernacular can challenge communication in clinical encounters. Gender boundaries may be communicated nonverbally. For example, some may avert eye and physical contact with the opposite gender. It may be challenging for some to work with a different gendered person in a small testing room for extended periods of time.

I recall a funny incident with an older Indian immigrant who was not fluent in English. He was asked by our receptionist whether he wanted coffee. He responded with an “Indian head shake”, which looks like a mix between a nod and a head shake. Our receptionist was utterly puzzled about whether he meant “yes”, “no”, or “maybe.” After unsuccessful attempts to clarify, she brought coffee that he politely accepted. She left pleased that she had deciphered the cryptic gesture. Once the doors to my office closed, he laughed and offered the full cup of coffee to me. He told me in Hindi that he doesn’t drink coffee and was trying to express that he understood what she was asking but didn’t want her to feel bad by refusing. This was his way of not making a firm commitment without being offensive. So, guess who then drank the coffee to not offend our receptionist? And even I don’t like coffee!

Education

Accurate assessment of education quality and quantity is important for neuropsychological test interpretation. In the United States, many Asian Indians are well-educated, with 85% having at least some college education. Yet, in India, while 95% complete primary school (class 1–8), subsequent dropouts lead to 69% completing secondary (class 9–12) and only 25% completing post-secondary school.

There are also vast disparities in the quality of educational experiences in India. Schools can be funded by government, private, or international sources with different resources and “mediums” of instruction (i.e., local language emersion versus English-based instruction). Schooling can range from village leaders teaching children under a tree to urban classrooms bulging with 65+ children to some of the most elite private and technical schools in the world. Therefore, it is important to ask about the quality of educational experiences, beliefs about education, and mediums of instruction during school.

The mindset around learning is also worth understanding since it can affect test-taking style. In Indian schools, focus is frequently on rote memorization rather than application. Standardized examinations occur at transition points and are stressful for students and families since they determine financial and social success. This contributes to an environment that values academic and occupational achievement, particularly in science, technology, engineering, and mathematics (STEM) fields. Achievement is often viewed as something that can be developed through hard work versus innate intelligence.

There is significant outbound student mobility from India, which has the second-largest international student population worldwide. Unfortunately, there are many Indian migrants with advanced degrees whose training is not recognized after immigrating to the West. I evaluated a
pediatrician from India who accepted a research assistant position to support his family. Over time, this eroded his self-esteem, impacted mood and chronic pain, and took him down a slippery slope of prescription drug abuse with associated cognitive deficits. Uncovering this core issue during the assessment helped accurately determine his treatment needs.

**Literacy**

India has one of the largest illiterate populations in the world (~1 in 4 people). Literacy rates are higher in urban areas (87%) compared to rural (73%), with gender disparities between men (84%) and women (70%). In rural areas, contributors to these disparities include shortage of classrooms, lack of sanitation or drinking water, caste disparities, and gender role expectations.

Formal and informal ways of learning to read and write in multiple languages at various ages are common in India. Most Indian schools formally teach three languages such as English, Hindi, and a regional language. In some schools, a foreign language such as French or German may be an option. Interpreters should be asked about their multilingual literacy in all the patient’s preferred languages due to high likelihood of language code-switching during evaluations. Asking about the nature and type of formal and informal educational experience also helps understand how patients create and communicate using written materials in multiple languages.

I was referred to a Gujarati-speaking patient due to dementia concerns. The neurologist observed difficulty recalling words during a cognitive screener administered in English. The patient also worked very slowly when completing a simple written alphanumeric sequencing task. In gathering history, I learned that he had briefly attended a rural school in his village in India where he was taught to speak, read, and write in basic Gujarati for “a couple” of years. After immigrating to America over 40 years ago, he picked up basic conversational English, but with limited reading or writing ability in English. As a cashier, he was able to calculate change for his customers. He could also recite numbers and the Gujarati alphabet aloud during his neuropsychology appointment. Yet, his performance was much slower on written tasks. He explained that in school, they used small, hand-held chalkboards rather than paper and pencil to write. He was taught to take his time when writing to ensure accuracy. Thus, he was forming each number in his mind on his mental chalkboard first before transferring it to the paper. He did not have processing speed concerns - he just had a different test-taking approach. When presented with simple words to remember in Gujarati rather than English, he could learn and recall the words, highlighting intact memory abilities. This patient could have been misdiagnosed with dementia, which may have robbed him of driving or led to unnecessary treatments and costs.

**Socio-Economic Status**

While Asian Indians in the United States have high annual household incomes compared to the general population, there is a bimodal distribution for wealth, with many living in poverty. India has a developing market economy with positive long-term growth projections due to its young population (more than 80% are younger than 44 years old) and integration into the global economy. India struggles with paradoxical disparities between rich and poor. Mansion gates open onto shanty-towns where young children hold even younger siblings on their hips and beg for money. Tasty and nutritious food is abundant yet inaccessible to children who can be found picking food from garbage. Poor communities also don’t have resources to afford medical or mental health care. Urban areas have access to bottled or public water, but in remote villages, girls
and women walk for miles carrying water from rivers or lakes. Sanitation levels vary greatly, with some of Asia’s biggest slums riddled with extremely poor living and toileting facilities. Air pollution is common in over-populated urban cities with detrimental effects on pulmonary and other health conditions, yet rural communities enjoy open fields and fresh air. These socio-economic disparities and lack of access to nutritional and environmental resources impact Indian children’s physical, cognitive, and brain development. \(^{31,32}\) Most recently, the COVID-19 pandemic adversely impacted mortality for Indians from poor and illiterate backgrounds due to comorbidities associated with socio-economic inequities. \(^{33}\)

I evaluated a middle-aged Indian immigrant for attentional concerns. In relaying history, he shared that during adolescence he was an “awful” student who was easily distracted, got into trouble with his teachers, and failed his classes. This could have been attributed to an attention-deficit/hyperactivity disorder. Yet, after becoming more comfortable, he disclosed that these academic difficulties occurred during a time of stress and family disruption. His father had unexpectedly abandoned the family, and his mother had to make ends meet as a maid. He described a situation where they lived meagerly with poor nutrition and unhygienic living conditions. He frequently became sick with illnesses that went uninvestigated. He couldn’t attend to his health and education because of increasing financial responsibilities to support his mother and sister. There were no social support services that came to his rescue, and the new family unit struggled. These economic and social circumstances likely impacted brain-behavior development, with downstream influences on his ability to make educational and occupational gains.

**Values and Customs**

Awareness about commonly held values and customs in Indian communities can support rapport, thoughtful interviews, and successful feedback sessions. Yet, it’s important to recognize that individual values vary greatly, and patients are always the best source of their unique world views.

In general, traditional Indian views value hospitality, respect, humility, selflessness, inter-dependence, family-centrism, and collectivism. These values manifest in an amalgam of perspectives and behaviors. For example, gifts or food items can be offered to doctors to show gratitude and respect, and rejection of these gifts may be hurtful. In accord with values of collectivism and belongingness, children may be taught from a young age that individual decisions need to be in harmony with family and social structures. In my practice, some Indian patients have chosen to reject treatment recommendations that involved allocating limited financial resources on themselves instead of their families.

Though contemporary Indian culture is trending away from traditional, arranged marriages and joint family structures, many Indians continue to make family decisions cooperatively. I once completed a feedback session with a frightened woman recently diagnosed with multiple sclerosis. During the session, she brought both her in-laws, husband, sisters-in-law, and teenage children. My office no longer had any place to move. Yet, we knew that the treatment plan we had come up with jointly was well understood and likely to be successfully implemented with the support and commitment she received from her entire concerned family that day.

Those who immigrate at young ages or were born in the West are more likely to be integrated into mainstream culture, so they may think or behave differently from their parents, which can be a source of intergenerational conflict. Youth born in the United States who have Indian immigrant parents may be secretive about dating, clothing, smoking, drug or alcohol use. This can impact accurate assessment of the influence of factors such as substance abuse on an evaluation.

It is also worth noting that time is valued differently between Indians and the West. Many Indians prefer to function at a relaxed pace rather than feeling confined to inflexible routines or structures. This may translate into arriving late to appointments, impromptu meetings, and rescheduling appointments. The time pressure of neuropsychological assessments has not always
been appreciated by some of my less test-wise Indian immigrant patients. Notably, Asian Indians accustomed to competitive academic environments in India have been ready to go before the stopwatch is even pulled out!

**Gender and Sexuality**

In India there are gender disparities in cognitive functioning for women moderated by region (e.g. southern versus northern India), educational attainment, health, and socio-economics. Paradoxically, while Hindu scriptures revere women as Goddesses, there are gender inequalities with low female to male sex ratios in certain regions due to “missing women” who perish due to socially determined excess female mortality. In traditional male-dominated patriarchal homes, women are viewed as mother figures and homemakers who don’t pursue higher education or work outside the home. Understanding these values helps avoid Westernized assumptions and supports culturally consistent treatment planning. For example, some of my traditional female patients have not wanted to make health decisions without their husband or family’s involvement. In situations of financial dependence, this has guided referrals to free or low-cost clinics.

Indians tend to be conservative sexually. Discussions about sexual functioning relevant in some neuropsychological contexts have not spontaneously emerged with my Indian patients. In addition, despite historical literary evidence of a spectrum of sexual and gender identities in ancient texts (e.g., Kama Sutra), discrimination toward the LGBTQ+ community is common. A colonial-era law that made gay sex punishable with up to ten years in prison was only recently struck down in 2018 by the Supreme Court of India. It was only a few years prior in 2014 that the Supreme Court of India officially recognized hijras or a third gender of people in India.

The intersection of social challenges in LGBTQ+ communities with those of the Indian culture can create unique systems of disadvantage. A young Asian Indian gay patient presented for an ADHD evaluation, but was instead clearly depressed and struggling to come out to traditional Indian parents who were cluelessly planning an arranged marriage. Creating an affirming space can allow neuropsychologists to appreciate the influence of extrinsic and intrinsic contextual factors on cognitive complaints.

**Spirituality and Religion**

In India, the majority religion of Hinduism co-exists with Islam, the largest minority religion. Other faiths include Sikhism, Christianity, Buddhism, Jainism, Zoroastrianism, Judaism, and the Baha’i Faith. People of different religions, castes, and cultures generally live in harmony and celebrate each other’s festivals (e.g., Holi, Diwali, Eid, Navroz, Christmas). Yet, there are painful religious and caste-based conflicts historically rooted in colonial influences that lead to violence that has impacted the physical and psychological health of millions of Indians. Islamophobia and Hindu-Muslim conflicts are rampant, including current escalations. Caste-system politics and societal stratifications have created injustice, socio-economic inequalities, and violence within and outside the caste group structure. The oppression of Dalit and indigenous peoples of South Asia is also present in the United States. As a religious minority, I listen closely when caste-oppressed South Asians share workplace discrimination experiences so that I can affirm the presence of these within-group injustices and their potential impact on emotional and cognitive health.

**Health Status**

Our recent review on biopsychosocial and health characteristics in the Asian Indian population in the United States highlights concerns about health data aggregation with Asians broadly and
the marginalization of the Asian Indian community in the neuropsychology literature.\textsuperscript{36} This is despite disproportionally high rates of salient health conditions with increased cognitive burden. This includes metabolic and cardiovascular disorders (e.g., coronary artery disease, hypertension, type 2 diabetes) with associated mortality burden, particularly for younger Asian Indian males. Stroke and dementia although prevalent are poorly understood in the community. Other primary health conditions also prevalent in the community include cancer (prostate, colorectal, lung, breast, ovarian, uterine), tuberculosis, and HIV/AIDS, although one in five South Asian Americans lacks health insurance to treat these conditions.\textsuperscript{37} There has also been a disparate impact of COVID-19 across South Asian communities in the United States,\textsuperscript{38} with the neuropsychological impacts of these health conditions in the community neglected in the literature so far.

\textit{Mental Health Views}

Asian Indians have elevated depression, stress, suicide, smokeless tobacco use, and domestic trauma rates, yet understanding of the culturally relevant treatment needs for the community is limited.\textsuperscript{36} In India too, there are barriers to accessing services due to stigma and discrimination against people with mental disorders.\textsuperscript{39} It is common to go to a medical doctor for physical ailments, yet seeking help from an “outsider” about personal issues could be viewed shamefully. There may be a tendency to rely on alternative coping systems involving elders or extended family/friends who drop by uninvited to converse about each other’s problems. Consultation with religious leaders such as yogis, pandits, imams or priests may be more acceptable for some than seeking out help from a psychologist. Mental health services may be a luxury few can afford. Holistic options may be used as alternatives. Some may believe that cognitive or emotional issues can be cured by trying harder. Some Hindus may view their problems as “karma” due to a pre-destined fate for which nothing can be done. However, influences of age, education, family dynamics, geographic location, and acculturation status all moderate such beliefs.

\textit{Approach to Neuropsychological Evaluations}

Despite a long immigration history and increasing US census representation, neuropsychological considerations for Asian Indians as a distinct group have been absent. In the absence of neuropsychological tools adapted to the Asian Indian immigrant context, a one size fits all approach cannot be used. Each case needs careful consideration for whether it is more appropriate to use existing measures and norms developed in a Western context or whether tools from India are a better fit. There are some linguistically diverse global and domain-specific tests that have been adapted/translated in various Indian languages, and specific test batteries have recently been developed, standardized, and normed in multiple languages at a larger scale using Indian epidemiological samples (see Appendix for list).

Neuropsychology in India started over 40 years ago from Western influence but has faced challenges related to growing training pathways, infrastructure, lack of awareness, linguistic, educational and literacy-related diversity, and access/affordability concerns.\textsuperscript{40} There are very few doctoral-level neuropsychologists in India, most of whom work at the National Institute of Mental Health and Neurosciences or practice as clinical psychologists in neurological or psychiatric settings. Thus, many Indians immigrants are unlikely to be familiar with neuropsychological services.

Often, when Asian Indians present for services, it is under the guise of physical or somatic complaints since body concerns are more culturally acceptable.\textsuperscript{41,42} In my practice with Asian Indians, clinical referrals come from trusted primary care physicians, with rare self-referrals or referrals from mental health providers. I believe this is in part because neuropsychologists serve as a bridge from
Asian Indians

the medical/neurological to psychological world. We act as a gateway to engage in discussions about emotional and social concerns along with neurological considerations. Physical or cognitive complaints can uncover psychological or social issues. During clinical interviews, paying close attention to unspoken and indirect messages can help identify true cognitive, emotional, or social needs.

When Indian immigrants present for an evaluation, they may be unsure about what to expect or why they were referred. A preliminary orientation to the nature and purpose of assessment can increase comfort. Providing clear explanations about the focus on the body and brain may ease fears about stigmatization. For example, explaining that sadness or nervousness can affect chemicals released in the brain and body has allowed patients to feel more invested. I also prepare patients for the nature of the clinical interview by indicating that my questions about history are not meant to be inquisitive but to understand them better and be helpful. Family members may prefer to share concerns privately out of respect for their loved one. The idea of confidentiality (with its limits) may be new, so patients may welcome assurance that private information will not be disclosed to anyone not authorized.

If testing is indicated and appropriate, even though I understand multiple Indian languages, I can't read or write in all those languages, so I consider whether a regional language-specific interpreter or referral to another Indian provider is more appropriate. During testing, it's important to minimize measurement bias by evaluating whether available tools are psychometrically, linguistically, and regionally appropriate for each Indian patient. I also try to assess test wisdom to ensure physical/emotional comfort, understanding of the test setting, and/or computer savviness. For some patients from illiterate or rural backgrounds, psychometric testing may not be appropriate.

In feedback sessions, due to the reverence given to doctors and preference for directive stances, Indian patients and families often expect advice and clear directions on what to do next. For patients with language barriers or those less familiar with how to implement treatment recommendations, I often pick up the phone during the session to provide connections to culturally or linguistically appropriate referrals. Occasionally, Indian patients feel insecure about terminating the assessment relationship after establishing trust, so extra steps need to be taken to support smooth transfer of care.

If referring for psychotherapy or cognitive remediation, allaying patients' concerns about the unknown by orienting them to what to expect can be helpful. Culturally aware interventions in the hands of a multiculturally competent provider are most likely to be effective and reduce risks for premature termination of care. Recommendations for family-based therapy can be helpful for some patients who do not view their own well-being as different from that of the family unit. Some of my Indian patients have not welcomed groups, which they considered publicly humiliating or unnecessarily intrusive. Yet, some of their children and extended family have been quite ready to hear about much-needed respite and supportive resources.

Overall, these personal and professional experiences, as well as my knowledge about India and awareness of my own skills and limitations helped prepare me to meet Mrs. Rama and see her as more than a “40-year-old, right-handed, Asian Indian woman with twelve years of formal education referred by her family doctor due to concerns about her cognition.” Despite some common aspects of our cultural heritage, I knew that Mrs. Rama had her own story to tell that I needed to carefully hear and learn from in order to be helpful to her.

Section II: Case Study — “I’d Rather Have a Stroke than Be Depressed”

Note: Possible identifying information and aspects of history and presentation have been changed to protect patient identity and privacy.
Behavioral Observations

Mrs. Rama came to her neuropsychology appointment alone after being dropped off by her husband who left for work. She was 20 minutes late, which we later joked about being “Indian Standard Time.” She brought intake paperwork which she completed with the help of her husband. She was alert, fully oriented, polite, and pleasant. She wore the top of a traditional Indian outfit and had red powder sprinkled in the middle part of her hair to indicate she was a traditional married Hindu woman. She was conversational in Indian English. She expressed a preference for the evaluation to be conducted in her first language, Hindi. The rest of her informed consent process and mental status exam was unremarkable. There were no difficulties noted in her vision, hearing, movements, speech, language, social or sensory-motor functions. While she was politely responsive to humor, her facial expressions were generally restricted, and she cried at various points when discussing her history. She appeared nervous at the outset and initially expressed uncertainty about what to expect. She visibly relaxed as the interview progressed and after receiving clarifying explanations about the process in assessing brain-behavior relationships. Prior to gathering history, I prefaced my questioning by clarifying that I was not trying to be inquisitive but wanted to understand her experiences. She was occasionally evasive, and I did not press her directly for information during those moments. We built a good rapport. During the testing session, she indicated she was used to standardized testing from her schooling days in India, yet I took care to ensure that she was comfortable in our testing environment. She remained focused and eager to do well and gave good effort throughout the session. We started our conversation with her reasons for seeking the current evaluation.

Presenting Concerns

Mrs. Rama shared that she became concerned about something being “wrong” with her after seeing her father and a family friend have a stroke. She approached her family doctor for concerns about forgetfulness about names of acquaintances at her place of worship and absent-mindedness (e.g., walked away with groceries without paying, misplacing her purse). She sometimes found it hard to understand what people were saying to her; however, this didn’t occur when speaking in Hindi. She denied any expressed concerns from her husband or others. She denied acute medical events and stated these cognitive difficulties had been there “on and off” for a few years. She denied problems with balance, falls, head injuries, vision, or changes in her reading or writing.

Daily Functioning

Mrs. Rama had never worked outside her home. She spent her days cooking, cleaning, and half-heartedly watching Hindi television serials or movies. She had been getting tired easily for the past few years and didn’t feel motivated. She had never driven and relied on her husband for transportation. Her husband also managed finances, but she managed her own medical appointments on a calendar. She had friends from the Hindu temple where she worshiped but had been avoiding socialization. She also rarely made long-distance calls to her friends in India anymore.

Health History

Mrs. Rama denied problems with her birth or early development. She was medically healthy and only took medication to control type II diabetes. She struggled with obesity after dietary changes since moving to the United States. She reported occasional headaches treated with over-the-counter medications. Her most recent blood work was unremarkable, with normal thyroid function, vitamin D and B12 levels. Neuroimaging was not available at the time of her initial appointment. She had no
Asian Indians

history of smoking, drinking, or abusing drugs. She was a strict vegetarian based on her religion. She slept well at night and napped during the day. She denied night-time awakenings, a history of snoring, gasping, or morning headaches. There was no known family history of dementia. Her father died of a stroke, and her mother had a history of psychosis. She did not have siblings or children.

Educational History

In India, Mrs. Rama was taught in a rural setting in Hindi-medium schools, which included some instruction in English. She passed nationally administered 12th grade Indian School Certificate Examinations in English. She was enrolled in college in the Humanities before discontinuing her education in less than a year. She denied history of distractibility, being held back, or struggling academically in any particular subject. She described herself as an average student. She had not completed any formal classes in English as a Second Language or schooling after migrating to the United States.

Language Proficiency

Using a language experience and proficiency questionnaire, I determined that Mrs. Rama's dominant language was Hindi. She acquired Hindi first since it was spoken at home by her family. She currently had 80% exposure to Hindi, 15% English, and 5% Punjabi. She described herself as having “excellent, 9/10” ability to speak, understand, read and write in Hindi, which was taught formally throughout her schooling. Internalized language involving thinking or dreaming was also in Hindi. Mrs. Rama's English language proficiency was “adequate, 5/10” for speaking, reading, and writing. She described herself as “very good” at understanding Punjabi but had “low” capacity to read and write in Punjabi.

It was clear that Mrs. Rama's dominant language was Hindi, followed by English, and then Punjabi. Her degree of English language proficiency was not sufficient to match age-based expectations of available English-based neuropsychological test measures. She expressed a preference for testing in Hindi. An evaluation in her native language was the most accurate way to ensure that the testing captured her current cognitive status rather than English language proficiency. I am able to speak, read and write in Hindi and felt comfortable proceeding with a Hindi evaluation.

Cultural History

Mrs. Rama was an only child born into a traditional, religious Hindu family in India. Her parents lived jointly with her paternal grandparents, uncles and aunts, and their children. When Mrs. Rama was born her parents were thrilled despite initial disappointment expressed by her grandparents that she wasn’t a boy. She was aware of her “burden” to her family as a female since childhood.

Mrs. Rama's father worked at a local clothing shop, and her mother did not work outside the home. Her family lived modestly in a clean, hygienic environment with good access to nutritious food and clean water. She denied history of abuse stating she was a “good girl” who escaped the occasional corporal punishment inflicted on her male cousins. Expectations in her family were that, like her older cousins, when she reached a marriageable age, she would have an arranged marriage with someone selected by her family from her religion and caste. Yet, Mrs. Rama would often worry about not getting an acceptable marriage proposal due to her mother’s mental health.

Mrs. Rama shared that her mother was known as the “pagal” (crazy) lady in her town after several public psychotic episodes. Early on, her mother was kept locked in her home during these episodes, and her family would pray for her to get better. She eventually received psychiatric treatment, but this was a source of shame for the family. A marriage proposal for her older cousin was broken due to this situation. Mrs. Rama learned early to be ashamed and secretive about mental health.
In college, she fell in love with a Muslim man and knowing that their inter-faith relationship would not be accepted by their families, they ran away to a big city together. They became estranged from both families. Mrs. Rama shared that her family considered her to be selfish since she had ignored the family’s honor. Yet, the couple was in love and happily settled in the big city. Mrs. Rama described feeling at peace and happy during those days. They successfully built a circle of friends, and she was active in social circles. She enjoyed reading, yoga, cooking, shopping, exercising, watching television/movies, and attending community and spiritual gatherings. Over the years, Mrs. Rama and her husband were unable to conceive children, which became a source of shame. She viewed this as being her “karma” (action) based on her inability to fulfill her “dharma” (duty) to her family and religion.

Eventually her husband’s company transferred his job to the northeastern United States, and they left India with trepidation yet excitement about new opportunities. Mrs. Rama shared that when she reached America at the age of 32, she experienced culture shock. She initially enjoyed the luxuries of the West including abundance of food, living space, entertainment, places to see, and things to buy. Yet, after a few months she began to feel anxious about communication barriers and trying to learn entirely different ways of doing things. She was on a spousal visa and could not work. Her husband traveled frequently for his job, and they lived in a suburban area without easy access to transportation. Her neighbors did not reach out to her socially. This was in stark contrast to her lifestyle in India, where neighbors would drop by uninvited to socialize over tea. She began to miss the communal and familiar aspects of her life in India, including the subtropical climate of her home when faced with harsh winters. She isolated herself within the safety of her home, which compounded her loneliness.

Privately, Mrs. Rama became guilt ridden about past decisions to abandon her family and home and became resentful about leaving India. As time went on, she became more spiritual and immersed in her own cultural identity as a Hindu woman. Over time, even her faith became a solitary act in her puja room at home, compared to communal prayer and chanting sessions.

Mrs. Rama experienced racist encounters that impacted her acculturation. She became scared about interacting with “Americans” after being yelled at during communication barriers where she was told “go back to where you came from” or “learn English if you want to live in my country.” Her husband and main confidant was supportive but did not know what to do about these situations and so suggested she “walk away and forget them.”

**Emotional Functioning**

Mrs. Rama expressed feeling lonely, sad, and crying frequently. She shared thoughts about wishing she had never been born but denied active suicidal ideation due to her faith. She became preoccupied with excessive guilt about not having resolved her relationship with her father before he died of a stroke a few years ago. While she regularly sent money to India for her mother’s psychiatric care, she also felt ashamed about abandoning her and did not want to face her family and “bring them more shame.” She worried about “catching” her mother’s “bimari” or illness, yet there was no evidence of any history of psychosis for Mrs. Rama. She had decreased interest in doing things, was sleeping a lot, felt fatigued, and had trouble concentrating due to her thoughts and worries.

**Preliminary Formulation**

At the end of the interview, it was clear to me that Mrs. Rama was clinically depressed and anxious but did not recognize or want to acknowledge it. In addition to personal and historical family of origin-related contributions, acculturation and immigration-related stressors were clearly at play.
Mrs. Rama had experienced culture shock after losing familiar cues, breakdown of interpersonal communication, and an identity crisis. Her physical and social isolation reflected a *separation* stage of acculturation where she deeply valued her own cultural identity but was unable to develop a satisfying relationship with her new home. Additional barriers included racist experiences, problems with communication, and lack of access to knowledge about majority culture.

While the referral question involved evaluation for memory loss, psychological and cultural factors were much more salient. However, I did not want to make premature conclusions. She had been referred to a neuropsychologist, had increased cardiovascular and stroke risks (diabetes, obesity, family history, sleep and mood disturbance, unhealthy lifestyle with lack of exercise and poor diet), and was seeking physical explanations for her attention/“forgetfulness” and language comprehension type complaints. While it was unlikely that Mrs. Rama had a stroke, the possibility of early metabolic or vascular-related cognitive dysfunction was worth exploring given increased burden in the Asian Indian population.

Throughout my work with Mrs. Rama, I tried to remain aware of my soft spots for her as an Indian woman and also reflected on hot spots related to the injustices she experienced. I then proceeded to select and administer a brief neuropsychological test battery that could assess her cognitive functioning in a culturally fair manner to rule out possible brain dysfunction and establish a baseline for the future.

### Test and Norm Selection

There are limited tests available in Hindi, and unfortunately no comprehensive demographically corrected normative data for Indians immigrants living in the United States at the time I saw her. While Mrs. Rama lived in the United States, based on her acculturation and language proficiency in Hindi, Indian norms were a better fit. I used a neuropsychological test battery adapted to the Indian context with available age and education adjusted normative data from healthy Hindi-speaking individuals in northern India. This population was a good match for Mrs. Rama’s background. This test battery has been modified as described below:

1. **Hopkins Verbal Learning Test-Revised** with adaptations involving items representing gemstones opal and ruby which are unfamiliar in the northern Indian context, and replaced with Hindi gemstone names (e.g., moonga and pukhraj).
2. **Brief Visuospatial Memory Test-Revised**.
3. Digit Symbol-Coding and Symbol Search subtests from *Wechsler Adult Intelligence Scale-III*.
4. **Grooved Pegboard Test**.
5. Color Trails Test 1 and 2.
6. Spatial Span subtest from *Wechsler Memory Scale III*.
8. **Category Fluency Test**.
9. **Stroop Color and Word Test**.
10. **Wisconsin Card Sort Test**.

For emotional functioning, I complemented my clinical interview with brief depression (Patient Health Questionnaire-9) and generalized anxiety disorder (GAD-7) screeners that have been translated into Hindi.
Farzin Irani

Test Results and Impressions

After adjusting for age and education, Mrs. Rama performed in the average range across all cognitive tests administered. She slowed down slightly on one processing speed measure (symbol search, $z = -0.75$, 21st percentile), but this was not consistent with average range speed demonstrated on other measures. She had a deliberate approach during this task that accounted for her slowing. Learning and memory showed subtle initial dips in encoding of new verbal and visual information during the first trial, but her total learning and recall of previously learned information was intact, and there were no problems with delayed recall. Language and problem-solving skills were adequate. Overall, her neurocognitive profile was intact.

Emotionally, she endorsed moderate levels of depression ($\text{PHQ-9} = 13$) with daily loss of interest/pleasure, feeling down/hopeless, feelings of failure, excessive sleeping, fatigue, poor appetite, and trouble concentrating. These symptoms made it difficult for her to take care of things at home and get along with others. Mrs. Rama also reported moderate levels of anxiety ($\text{GAD-7} = 12$) with daily worries, trouble relaxing, and feeling afraid about something awful happening. She reported several days when she feels nervous, has trouble relaxing, and feels irritable.

Overall, Mrs. Rama was diagnosed with a major depressive disorder, single episode, moderate, with anxious distress ($F32.1$). I also acknowledged problems related to her social environment including acculturation difficulties ($Z60.3$) and exclusion and isolation ($Z60.4$).

Feedback Session and Follow-Up

For her feedback session, Mrs. Rama brought her husband to the appointment. Her first direct question was whether she had a stroke. I shared my impression that she had not had a stroke based on her neuropsychological test data and the normal neuroimaging results subsequently received. I provided education about stroke signs and symptoms, and we discussed her fears about having a stroke like her father and friend. I also helped her understand her cognitive struggles from an attentional and motivational framework rather than one involving brain damage from stroke. She became visibly relieved.

I then gently proceeded to engage her and her husband in a discussion that validated her feelings and historical conflicts with her family of origin. I normalized her immigration-, acculturation-, and racism-related stress, and we spoke about her worries about losing her cultural identity. We discussed her social isolation and psychosocial influences on her mood. She expressed an interest in finding a balance between her relational and individual needs.

When I shared my impressions regarding depression and anxiety, she acknowledged it but noted that she was secretly hoping I would tell her that she had a stroke. She cried and shared that a mental health diagnosis was stigmatizing given her mother’s history, and she didn’t want to be considered “pagal.” It would be much easier for her to accept that she had a medical problem. I was glad that she asserted her thoughts and did not just agree with me, given my position as an authority figure for her. I expressed understanding of the influence of her beliefs and her struggle with her diagnosis. I provided education about psychotic disorders and reassured her regarding the absence of evidence for psychosis. I then explained the neurobiology of depression and anxiety so that she could view them as common medical conditions that many people struggle with.

To improve her mood and health behaviors, we discussed behavioral activation by returning to attend the Hindu temple regularly, calling her friends in India, taking daily walks with her husband, exploring local hobbies (e.g., floral arrangement, cooking or yoga classes) or reaching out to a neighbor by taking over home-made food. We spoke about using Uber/Lyft for transportation so that she could have access to community resources without relying on her husband. We also
discussed additional prevention strategies for brain health (e.g., regular health care, diet for brain/heart health, mindfulness, cognitive engagement).

We then discussed options of seeing a psychiatrist for medication management and a psychologist/counselor for talk therapy. She preferred to start with a bilingual, Hindi-speaking psychiatrist to get medications to help her feel better. Based on her acculturation (separation) and traditional loyalties, it was not surprising that she selected this concrete and time-limited medical option with someone who shared her cultural background.

She needed psychotherapeutic support too. Her husband had integrated more into majority culture and was eager to hear how to support his wife. I presented the option of couples’ therapy. To allay their concerns about the unknown, I explained what therapy can involve and how they could communicate about current and past stressors. They agreed, and Mrs. Rama was particularly pleased about the prospect of having a weekly hour with her husband’s full attention. I referred them to a culturally sensitive couples’ therapist who was likely to validate their experiences without pathologizing their cultural experiences. I asked Mrs. Rama to reach out to me again if she needed referrals in the future for a culturally aware individual therapist. She left smiling.

Upon her request and with her written permission, I reached out to her new psychiatrist and couples’ therapist to share my impressions and suggestions for her treatment plan. After more than a year, I received a call from Mrs. Rama inquiring about individual therapist referrals. She shared that she was doing well, her mood had lifted, and she was more socially engaged and healthier. The couple had been discharged from counseling, and Mrs. Rama was now planning to enter the workforce! Her couple’s therapist suggested that she gain individual support through this new endeavor in her life. When Mrs. Rama asked for referrals this time she was open to working with a non-Indian therapist. Her new help-seeking behavior suggested more positive attitudes toward mental health and greater integration.

Overall, I was glad that Mrs. Rama’s neuropsychological evaluation helped provide a bridge to the psychological supports she needed to treat her emotional symptoms and put her on a path of improved well-being.

Section III: Lessons Learned

• India is rich in historical, linguistic, educational, socio-economic, religious, and cultural heterogeneity.

• Knowledge about deeper aspects of Indian culture (e.g., communication preferences, values/customs) can help establish trust and rapport in a community that is guarded about seeking psychological/neuropsychological services. This can support gathering accurate biopsychosociocultural histories, ensuring test fairness, making accurate clinical impressions, and delivering effective feedback that is likely to be implemented.

• Orientation to the assessment process, brain and body-based explanations, and clearly setting expectations about the clinical interview and confidentiality can help ease patients into an unfamiliar experience.

• Consideration of the psychology of immigration and systemic barriers faced by Asian Indians can reveal acculturation-, racism-, casteism-, sexism-, classism-, or heterosexism-related stress masked as cognitive or physical complaints.

• Linguistic, educational, and literacy-based diversity in India deserves inquiry into the nature and quality of these experiences to ensure that evaluations assess cognitive ability and not English language proficiency, test wiseness, or different ways of communicating in oral or written materials.

• Multilingualism is the norm and providers/interpreters need to consider language interference from borrowed/language-mixed words when interpreting responses.
Farzin Irani

- Despite being the largest transnational community in the world, having a long immigration history in the United States and increasing census representation, the Asian Indian population has been invisible in the Western neuropsychology literature. More attention is needed to uncover cognitive sequelae of health disparities in Asian Indians.

- In the absence of comprehensive neuropsychological tools adapted to the Asian Indian immigrant context, a one size fits all approach cannot be used. Each case needs consideration for appropriateness of using existing measures developed in Western contexts or available tools from India.

- Neuropsychologists can serve as a bridge between the medical and psychological worlds by engaging Indian patients in discussions and treatment plans that address emotional and social concerns along with neurological concerns.

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Glossary

Berry’s (1992) acculturation model. This model categorizes adaptation strategies along two dimensions of retention or rejection of one’s native culture and host culture:

<table>
<thead>
<tr>
<th>Is it considered of value to maintain identity of culture of origin?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it considered of value to develop relationships with the host culture?</td>
<td>Integration</td>
<td>Segregation</td>
</tr>
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Caste. A system of religiously sanctioned social division in India by which people are ranked in a hierarchy based on birth, with position within the hierarchy determining social and economic outcomes (www.equalitylabs.org).

Dalits. Formerly known as “untouchables,” this group was excluded from traditional Hindu caste hierarchy due to being considered spiritually and physically polluting to caste-ed Hindus. The community has been subjected to extreme violence and discrimination (www.equalitylabs.org).

Hindu. A person who follows the religion of Hinduism. It is not the same as Hindi, which is a language.

Raj. A term used to indicate British reign of the Indian subcontinent from 1858 to 1947.

References
