Predictors of Everyday Functioning Among Older Mexican Americans vs. Anglo-Americans With Schizophrenia

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Objective: We assessed clinical, demographic, and cognitive predictors of everyday functioning in Mexican American and Anglo-American outpatients with schizophrenia.

Method: Three groups of participants aged 40 years and over with a DSM-IV diagnosis of schizophrenia or schizoaffective disorder were compared: 79 Anglo-Americans, 24 Mexican American patients who chose to be tested in English, and 33 Mexican American patients who preferred Spanish. The study was conducted from October 2001 to July 2004.

Results: On demographic, clinical, cognitive, and functional measures, Anglo-American participants were generally similar to Mexican American participants who opted for being tested in English. Mexican American participants who preferred Spanish were significantly different from the other 2 groups on several measures, including everyday functioning performance. To determine the predictors of everyday functioning, separate regression analyses were conducted for each of the 3 groups. Cognitive ability consistently accounted for the greatest proportion of variance in performance regardless of ethnicity, language preference, or education. Among the Mexican American participants, level of acculturation was the second strongest predictor of everyday functioning when the group was examined as a whole; however, acculturation was not a significant predictor when controlling for language preference.

Conclusion: Cognitive performance and language preference (a proxy for acculturation) may play a particularly important role in predicting ability to perform everyday tasks. Further studies to better understand the potential impact of ethnicity, culture, education, and language on everyday functioning may help develop more specific and culture-sensitive intervention strategies for different ethnic groups.

(J Clin Psychiatry 2005;66:1304–1311)

Received Jan. 18, 2005; accepted March 30, 2005. From Trinity College of Arts and Sciences, Duke University, Durham, N.C. (Ms. Jeste); the Department of Psychiatry, University of California, San Diego (Drs. Moore, Bucardo, Davila-Fraga, Golshan, Jeste, and Patterson and Ms. Goldman); and the VA San Diego Healthcare System, San Diego, Calif. (Drs. Moore and Jeste).

This work was supported in part by grants MH66248, MH62554, MH19946, and MH19934 from the National Institute of Mental Health, Bethesda, Md., and by the U.S. Department of Veterans Affairs, Washington, D.C.

Portions of this manuscript were previously presented as a poster presentation for the START-MH workshop in San Diego, Calif., in August 2004 (1R25MH071544).

The authors report no additional financial or other relationships relevant to the subject of this article.

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Latinos constitute the fastest-growing minority population in the United States, and persons of Mexican descent make up the largest Latino subgroup in this country. According to the U.S. Census Bureau, 67% of Latinos in the United States[1] and 83% of Latinos in San Diego County[2] are of Mexican origin. Prevalence rates of schizophrenia are comparable (ranging from 0.4% to 0.8%) between Latinos and whites, but the literature is inconsistent with regard to differences in the manifestations of schizophrenia in Latino versus Anglo-American patients.[3–10] Cultural factors, such as language barriers, family support, and religion, may shape the course of schizophrenia and its manifestations in Latino patients.[11–13]

Several studies have found that Latino patients are more symptomatic and exhibit greater psychopathology than Anglo-American patients.[3–7] A group of predominantly monolingual Latino patients with schizophrenia was found to have a significantly higher prevalence of psychotic symptoms compared with Anglo-American patients.[4] Mexican American patients have been reported to exhibit more social withdrawal and greater impairment on the cognition factor of the Negative Symptom Assessment.[3,5] In one investigation, Mexican Americans with schizophrenia had more severe physical symptoms but a lower frequency of certain psychiatric symptoms such as persecutory delusions, nervous tension, and blunted affect than their Anglo-American peers.[6] Some researchers have sug-

gested that Latino schizophrenia patients have a more debilitating presentation of mental illness[7]; in contrast, a comparison of white, Latino, and African American patients with schizophrenia showed that the white patients were more symptomatic than the 2 minority groups.[8] Other research suggests that the presentation of Latinos with schizophrenia is similar to that of Anglo-American patients. A triethnic comparison of symptom expression on the Positive and Negative Syndrome Scale (PANSS) in patients with schizophrenia found no significant differences in either positive or negative symptom summary scale scores between Latino and white samples,[9] although there were differences at the item level of analysis (e.g., the Latino subjects scored higher on somatic concerns). A comparison of the relationship between cognitive functioning using the Allen Cognitive Levels (ACL) Assessment with scores on the Functional Needs Assessment among patients with schizophrenia showed that correlations were equally strong in non-Latino whites and Mexican Americans.[10] No relationship was found between ACL scores and level of acculturation.

Some of the inconsistencies in group differences in the above studies may be related to level of acculturation. Analyses conducted with highly acculturated Latinos may find similarities between Latinos and whites, whereas studies of less acculturated Latinos may find differences between the 2 groups. The level of acculturation was, however, not directly assessed in any of the above reports.[4–10] A simple screen of language preference can often be used as a proxy for level of acculturation and may be useful to help answer these questions.[14–16]

Although these previous studies have examined differences in psychopathology and treatment interventions between Latino and Anglo-American patients, no published study, to our knowledge, has examined everyday functioning and its correlates in Mexican American and Anglo-American patients with schizophrenia. The National Institute of Mental Health has stressed that understanding everyday functioning capabilities is critical to our ability to both understand and treat schizophrenia.[17] In fact, the relationship of cognitive ability to functional outcome is one of the essential criteria for test selection for a consensus cognitive battery in the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) project.[18] Despite the importance of everyday functioning, there are no universally accepted tools for measurement of everyday functioning capacity. Our group has tried to address this gap by developing several performance-based measures that were designed to specifically target the everyday functioning capacity of schizophrenia patients: the University of California, San Diego (UCSD) Performance-Based Skills Assessment (UPSA)[19]; the Medication Management Ability Assessment (MMAA)[20]; and the Social Skills Performance Assessment (SSPA).[21]

The present report was designed to determine predictors of everyday functioning in Mexican American and Anglo-American patients with schizophrenia or schizoaffective disorder, aged 40 years and older. We chose to study middle-aged and older schizophrenia patients because older patients tend to have greater functional and cognitive impairment, and yet a lower likelihood of an important confound, i.e., less illicit substance abuse.[22] We had English and Spanish versions available of all of the instruments used.

We hypothesized that, among the patients studied, (1) the Mexican American participants who opted to be tested in Spanish would be significantly more impaired on demographic, clinical, cognitive, and functional measures than the Anglo-American participants and the Mexican American participants who preferred English; (2) cognitive impairment would be the most significant predictor of performance on everyday functioning measures independent of the patients' ethnic group membership; and (3) among Mexican American patients, level of acculturation would be the second strongest predictor of functional capacity.

METHOD

Participants

We assessed 136 participants aged 40 years and over with a DSM-IV diagnosis of schizophrenia or schizoaffective disorder.[23] All of the participants in the present study were originally recruited for either a Functional Adaptation Skills Training (FAST) program or a Spanish version of this program entitled PEDAL (Programa de Entrenamiento para el Desarrollo de Aptitudes para Latinos or Program for the Training and Development of Skills in Latinos). In addition to the criteria listed above, all participants were required to be living in a board-and-care facility, single room occupancy unit, or family residence in San Diego or Imperial County. Participants were excluded for the presence of diagnosed dementia (e.g., Alzheimer's disease), active suicidal ideation, inability to provide consent, and/or being identified as currently in "remission." Using this sample allowed us to examine a sample with a broad array of functional abilities. Our initial sample included 65 Mexican Americans and 103 Anglo-Americans. Given that our focus was on everyday functioning, we excluded those individuals (8 Mexican Americans, 17 Anglo-Americans) who did not have data for the 3 performance-based measures of everyday functioning (UPSA, SSPA, and MMAA) and health-related quality of well-being (Quality of Well-Being [QWB] scale[24]). To make the 2 groups as comparable on age and education as possible, we excluded 4 Anglo-Americans with greater than 17 years of education (the highest level of education obtained among Mexican American subjects) and 3 Anglo-Americans who were over the age

of 75 years (the age of the oldest Mexican American in our sample). All participants were enrolled in the UCSD Advanced Center for Interventions and Services Research focusing on schizophrenia in older persons. Participants were recruited from the San Diego County Adult Mental Health Services, the UCSD Medical Center, the Department of Veterans Affairs San Diego Healthcare System, and the San Diego community.

Procedures

A trained bicultural/bilingual research assistant conducted all assessments. Participants were presented with the choice of language in which to be tested. Fifty-eight percent of the Mexican American patients opted to be tested in Spanish. The total study sample of 136 study participants included the following 3 groups: 79 Anglo-Americans and 24 Mexican Americans whose language preference was English and 33 Mexican Americans who preferred Spanish (no Anglo-American opted for Spanish).

We ensured that all of the measures used in the current study were available in English and Spanish versions. The translation process occurred over the course of 6 months and involved the following steps to make the materials acceptable and understandable: (1) all materials were translated into Spanish and then back-translated by 2 coauthors of Mexican origin (W.D.-F. and J.B.); (2) all problematic texts, words, and test items were reviewed by a 4-person committee that met on a monthly basis; (3) resulting Spanish measures were compared to the original English materials by bilingual staff; and (4) all translated measures were then reviewed independently for cultural congruence and refinement by 3 mental health professionals of Mexican origin (1 Ph.D., 2 master's level).

Study protocols were reviewed and approved by the local Institutional Review Board. All of the participants were clinically stable outpatients at the time of study participation. After the details of the study were fully disclosed, each participant provided a written informed consent for enrollment into the present study. The study was conducted from October 2001 to July 2004. Some of the subjects tested in English had contributed data to previously published studies (e.g., Jeste et al.[25]).

Measures

Everyday functioning abilities were evaluated with measures that have been specifically designed for use with older community-dwelling persons with schizophrenia: the UPSA, the MMAA, and the SSPA. The UPSA is a role-playing, performance-based instrument that assesses skills in 5 areas: household chores, communication, finance, transportation, and planning recreational activities. The MMAA is also a role-play task and evaluates ability to accurately manage a prescribed medication regimen that was designed to be similar to those regimens typically encountered by older patients with psychotic disorders. The SSPA measures social functioning and consists of 2 standardized role-plays, 1 requiring introduction to a stranger and another requiring assertive behavior with the subject's landlord. For the UPSA and SSPA, higher scores indicate more intact abilities, whereas higher scores on the MMAA are indicative of the number of errors and represent poorer performance.

To obtain an overall evaluation of the participants' health-related quality of life, we used the QWB scale.[24,26] The QWB is widely used, and higher scores on this instrument reflect a better self-reported quality of life.

Cognitive functioning was assessed with the Mattis Dementia Rating Scale (DRS).[27] Scores on this instrument range from 0 to 144, with higher scores indicating more intact cognition. The DRS includes 5 cognitive subscales including attention, construction, initiation/perseveration, conceptualization, and memory.

We measured the severity of psychopathology with the PANSS[28] and the 17-item version of the Hamilton Rating Scale for Depression (HAM-D).[29] Higher scores reflect greater severity of symptoms on both of these measures. Daily neuroleptic dose was reported in terms of mg chlorpromazine equivalent.[30,31]

Finally, we evaluated acculturation using the Acculturation Rating Scale for Mexican Americans (ARSMA).[32] A higher score on this measure indicates greater acculturation to the predominant culture. This instrument is specifically designed for Mexican Americans and thus was administered only to the Mexican American participants.

Statistical Analyses

Data were examined for normality of distribution and homogeneity of variance. Education was positively skewed, and transformations of the data were not successful in eliminating this skew. Total score on the DRS and daily neuroleptic dose were also positively skewed but could be transformed using a natural log transformation. HAM-D scores, too, were positively skewed and were corrected with a square root transformation. All of the means and standard deviations presented in the tables represent the nontransformed data, whereas the statistical analyses were conducted using the appropriately transformed variables.

To determine differences among the 3 groups, we used analyses of variance followed by post hoc tests for 2-group comparisons (the Tukey honestly significant differences) for continuous variables. Overall group differences for categorical variables were determined using χ^2 analyses. Correlations were computed using the Pearson correlation coefficient.

Variables that were significantly correlated with the outcome measures of interest (UPSA total score, number of MMAA errors, SSPA total score, and QWB total score) were used as predictors in a stepwise regression analysis.

Table 1. Comparison of the 3 Patient Groups on Demographic, Clinical, Cognitive, and Everyday Functioning Measures (N = 136)[a]

Characteristic	Anglo-American Patients (AA) (N = 79)	Mexican American Patients Tested in English (MA-E) (N = 24)	Mexican American Patients Tested in Spanish (MA-S) (N = 33)	F (df)	χ^2 (df)	p Value	Significant Post Hoc Differences
Demographic							
Age, mean (SD), y	49.1 (7.1)	47.3 (7.0)	49.7 (8.9)	0.7 (2,133)		.493	NA
Education, mean (SD), y	12.4 (2.0)	11.8 (1.9)	8.7 (3.2)	30.0 (2,133)		< .001	MA-S < AA = MA-E
Gender, male, N (%)	47 (60)	17 (71)	16 (49)		2.9 (2)	.235	NA
Marital status, N (%)					8.9 (2)[b]	.012	NA
Single	44 (56)	12 (50)	15 (46)				
Divorced/widowed	31 (39)	8 (33)	10 (30)				
Married/cohabiting	4 (5)	4 (17)	8 (24)				AA < MA-S
Living situation, N (%)					71.3 (4)[c]	< .001	NA
Alone	5 (6)	2 (8)	4 (12)				
With someone	5 (6)	8 (33)	27 (82)				
Assisted living	69 (87)	14 (58)	2 (6)				MA-S < MA-E < AA
Clinical							
Diagnosis, N (%)					12.0 (2)	.003	NA
Schizophrenia	68 (86)	22 (92)	20 (61)				MA-S < AA = MA-E
Schizoaffective disorder	11 (14)	2 (8)	13 (39)				
Duration of illness, mean (SD), y	26.0 (10.2)	20.7 (10.9)	17.4 (10.4)	8.6 (2,132)		< .001	MA-S < AA
Daily neuroleptic dose, mg CPZe, mean (SD)	424.7 (524.0)	478.4 (498.7)	263.0 (288.6)	2.5 (2,122)		.089	NA
PANSS positive symptom subscale score, mean (SD)	13.3 (5.4)	14.6 (4.0)	17.7 (5.7)	7.7 (2,129)		.001	AA < MA-S
PANSS negative symptom subscale score, mean (SD)	14.0 (4.8)	14.5 (4.6)	15.3 (3.8)	1.2 (2,129)		.320	NA
HAM-D total score, mean (SD)	8.2 (5.9)	9.7 (7.6)	13.1 (9.7)	3.6 (2,129)		.029	MA-S < AA = MA-E
ARSMA total score, mean (SD)	NA	56.4 (13.0)	34.9 (11.2)	40.5 (1,51)		< .001	MA-S < MA-E
Cognitive							
DRS total score, mean (SD)	127.3 (13.6)	123.1 (11.3)	119.1 (12.6)	5.9 (2,128)		.003	AA < MA-S
Everyday functioning, mean (SD)							
UPSA total score	66.3 (19.6)	60.9 (21.1)	47.2 (19.8)	10.4 (2,120)		< .001	MA-S < MA-E = AA
MMAA total errors	13.8 (9.6)	14.1 (6.8)	18.7 (9.5)	3.3 (2,127)		.04	AA < MA-S
SSPA total score	26.4 (6.6)	25.5 (6.3)	25.2 (7.7)	0.3 (2,119)		.70	NA
QWB total score	0.6 (0.1)	0.5 (0.1)	0.5 (0.1)	0.5 (2,121)		.62	NA

[a]The values for continuous variables represent means (with standard deviations). Mean values represent nontransformed variables; however, for statistical analyses, due to positive skew, DRS total score and daily neuroleptic dose were transformed using a natural log transformation. HAM-D total score was transformed with a square root transformation.
[b]Married versus others.
[c]Assisted living versus others.
Abbreviations: ARSMA = Acculturation Rating Scale for Mexican Americans; CPZe = chlorpromazine equivalent; DRS = Dementia Rating Scale; HAM-D = 17-item Hamilton Rating Scale for Depression; MMAA = Medication Management Ability Assessment; NA = not applicable; PANSS = Positive and Negative Syndrome Scale; QWB = Quality of Well-Being scale; SSPA = Social Skills Performance Assessment; UCSD = University of California, San Diego; UPSA = UCSD Performance-Based Skills Assessment.

Potential predictor variables included age, education, severity of positive and negative symptoms, severity of depressive symptoms, duration of illness, daily neuroleptic dose,[30,31] cognitive performance (DRS), and level of acculturation (available only for the Mexican American group). Statistical significance was defined as $p < .05$ (2-tailed, where applicable). All statistical analyses were conducted using SPSS statistical software (version 10.0, SPSS Inc., Chicago, Ill.).

RESULTS

The 3 groups (Anglo-Americans, Mexican Americans tested in English, and Mexican Americans tested in Spanish) were compared on demographic, clinical, cognitive, and everyday functioning variables (Table 1). Significant differences were found in terms of level of education, marital status, living situation, diagnosis, duration of illness, PANSS positive symptom subscale score, HAM-D total score, level of acculturation (ARSMA total score), and DRS total score. Mexican American patients tested in Spanish had fewer years of formal education, were more likely to have a diagnosis of schizoaffective disorder, and were rated as having more severe depressive symptoms than both the Anglo-American and Mexican American patients tested in English. Mexican American patients tested in Spanish were more likely to be married and had a shorter duration of illness, more severe positive symptoms, and a worse score on a cognitive test (DRS) than Anglo-American patients. Anglo-American patients were the most likely to be living in an assisted living facility, whereas Mexican American patients who preferred Span-

Table 2. Significant Predictors of Everyday Functioning Among All Participants (N = 136)[a]

Measure	Possible Predictors Included in the Model	Significant Predictors	β	ΔR^2	ΔF	df	p
UPSA	Age, DRS score, education level, PANSS negative symptom subscale score, PANSS positive symptom subscale score						
Step 1		DRS total score	–0.70	0.61	186.67	1,121	< .001
Step 2		Education level	0.14	0.01	4.05	1,120	.05
MMAA	DRS score, education level						
Step 1		DRS total score	0.33	0.22	35.18	1,127	< .001
Step 2		Education level	–0.25	0.04	7.45	1,126	.007
SSPA	DRS score, education level, PANSS negative symptom subscale score, PANSS positive symptom subscale score						
Step 1		DRS total score	–0.43	0.18	26.56	1,120	< .001
QWB	DRS score, duration of illness, education level, HAM-D score, PANSS negative symptom subscale score, PANSS positive symptom subscale score						
Step 1		DRS total score	–0.25	0.09	12.52	1,121	.001
Step 2		HAM-D score	–0.23	0.04	5.76	1,120	.02
Step 3		Duration of illness	–0.20	0.04	5.75	1,119	.02

[a]Possible predictors are those variables that were significantly correlated with the everyday functioning measure being tested. Standardized βs are reported for the model that utilizes all significant predictor variables.
Abbreviations: DRS = Dementia Rating Scale; HAM-D = 17-item Hamilton Rating Scale for Depression; MMAA = Medication Management Ability Assessment; PANSS = Positive and Negative Syndrome Scale; QWB = Quality of Well-Being scale; SSPA = Social Skills Performance Assessment; UCSD = University of California, San Diego; UPSA = UCSD Performance-Based Skills Assessment.

ish were least likely to be doing so. Finally, Mexican American patients who chose to be tested in English had higher acculturation scores than those who preferred Spanish.

The Mexican American patients tested in English were not significantly different from the Anglo-Americans on any of the everyday functioning measures (Table 1). On the other hand, the Anglo-American participants performed better than Mexican American patients tested in Spanish on the UPSA and MMAA. No significant group differences were found in terms of social functioning (SSPA) or health-related quality of life (QWB).

A stepwise regression analysis using the entire sample revealed that DRS score was the most significant predictor for each of the daily functioning measures (Table 2). The secondary predictors differed depending on the ability being assessed, but DRS score accounted for a majority of the variance. To further investigate the potential predictors of the group differences in everyday functioning measures, separate regression analyses were conducted for each of the 3 groups. DRS score accounted for the greatest proportion of variance in UPSA performance for each of the 3 groups when assessed separately (Table 3). DRS score was a significant predictor of MMAA performance among the Anglo-Americans whereas level of education was the only significant predictor of MMAA among Mexican Americans tested in Spanish. No significant predictors were found for MMAA performance among the Mexican Americans tested in English. A similar pattern was found for the prediction of SSPA scores, whereas a less consistent pattern of predictors was seen with self-rated quality of well-being.

When all of the Mexican American participants were analyzed as a single group, DRS score continued to be the most significant predictor of UPSA performance ($\Delta R^2 = 0.58$, $\Delta F = 67.40$, df = 1,48; $p < .001$), with level of acculturation being the second strongest predictor ($\Delta R^2 = .05$, $\Delta F = 7.02$, df = 1,47; $p = .01$). Level of acculturation was, however, not a significant predictor of MMAA, SSPA, or QWB scores in this combined Mexican American group.

DISCUSSION

As hypothesized, our findings show that significant demographic, clinical, and cognitive differences were seen among patients with schizophrenia from different ethnic groups with varied language preferences (Anglo-Americans, Mexican Americans tested in English, and Mexican Americans tested in Spanish). Significant differences among the groups were also found on a measure of functional capacity (UPSA) and a test of medication management ability (MMAA); however, most of these differences were accounted for by differences in cognitive performance.

Our results are similar to those of some[4,7] but not other[9,10] studies, in that we found that Latino patients with schizophrenia had a somewhat different clinical presentation than Anglo-American patients. However, our findings suggest that language preference is a key indicator of the extent to which Mexican American schizophrenia patients differ from Anglo-American patients. Anglo-Americans and Mexican Americans who identified English as their preferred language were similar on most clinical, cognitive, and everyday functioning measures.

Table 3. Significant Predictors of Everyday Functioning Performance by Group[a]

Measure	Possible Predictors Included in the Model	Significant Predictors	β	ΔR^2	ΔF	df	p
Anglo-Americans (N = 79)							
UPSA	Age, DRS score, duration of illness, education level						
Step 1		DRS total score	–0.75	0.56	876.43	1,69	< .001
MMAA	DRS score, education level						
Step 1		DRS total score	0.43	0.18	16.51	1,74	< .001
SSPA	DRS score, PANSS positive symptom subscale score						
Step 1		PANSS positive symptom subscale score	–0.32	0.18	14.80	1,68	< .001
Step 2		DRS total score	–0.31	0.08	7.68	1,67	.007
QWB	Education level, HAM-D score						
Step 1		HAM-D score	–0.42	0.18	14.86	1,70	< .001
Mexican Americans tested in English (N = 24)							
UPSA	DRS score						
Step 1		DRS total score	–0.84	0.70	44.59	1,19	< .001
MMAA	None						
SSPA	None						
QWB	DRS score, duration of illness						
Step 1		Duration of illness	–0.53	0.38	11.47	1,19	.003
Step 2		DRS total score	–0.41	0.16	6.39	1,18	.02
Mexican Americans tested in Spanish (N = 33)							
UPSA	ARSMA score, DRS score, education level, PANSS negative symptom subscale score						
Step 1		DRS total score	–0.79	0.62	47.22	1,29	< .001
MMAA	ARSMA score, DRS score, education level						
Step 1		Education level	–0.54	0.29	11.62	1,29	.002
SSPA	ARSMA score, DRS score, education level, PANSS negative symptom subscale score						
Step 1		DRS total score	–0.66	0.43	21.58	1,29	< .001
QWB	DRS score, PANSS negative symptom subscale score, HAM-D score						
Step 1		PANSS negative symptom subscale score	–0.47	0.22	7.95	1,29	.009

[a]Possible predictors are those variables that were significantly correlated with the everyday functioning measure being tested. Standardized βs are reported for the model that utilizes all significant predictor variables.

Abbreviations: ARSMA = Acculturation Rating Scale for Mexican Americans; DRS = Dementia Rating Scale; HAM-D = 17-item Hamilton Rating Scale for Depression; MMAA = Medication Management Ability Assessment; PANSS = Positive and Negative Syndrome Scale; QWB = Quality of Well-Being scale; SSPA = Social Skills Performance Assessment; UCSD = University of California, San Diego; UPSA = UCSD Performance-Based Skills Assessment.

On the other hand, less acculturated Mexican American patients, who chose to be tested in Spanish, were, by and large, different from the other 2 groups. As compared with the Anglo-Americans, Mexican Americans who preferred Spanish had fewer years of education, were more likely to have a diagnosis of schizoaffective disorder and more severe positive and depressive symptoms, and performed more poorly on a cognitive test as well as on the UPSA and MMAA. Nevertheless, Mexican American patients tested in Spanish had several strengths as compared with the other 2 groups. They were more likely to be married and less likely to be living in an assisted living facility and had a shorter duration of illness. The level of social functioning and health-related quality of well-being were similar across the groups.

When demographic, clinical, and cognitive factors were examined as potential predictors of everyday functioning ability, only cognitive performance was consistently a significant predictor of everyday functioning regardless of group membership. Severity of negative symptoms was not an additional predictor of functional capacity as has been previously reported among (predominantly Anglo-American) patients with schizophrenia.[33] When all Mexican American patients were examined as 1 group, level of acculturation was a significant predictor of UPSA performance. However, level of acculturation was not a significant predictor once the Mexican American participants were separated according to the language in which they preferred to be tested. As has been previously suggested,[14,16] language fluency or preference may serve as a proxy for level of acculturation, and linguistic differences have been shown to be significantly linked to performance on cognitive tests among Mexican Americans.[34]

Although cognitive performance was consistently found to be a predictor of everyday functioning performance, an argument could be made that education, not cognitive ability, is the most critical variable. Previous studies have shown that DRS performance among Anglo-Americans is significantly correlated with education.[35] Given the lack of appropriate normative data for Mexican American patients on everyday functioning measures

and the DRS, it is difficult to draw definitive conclusions regarding our findings. It may be that worse DRS performance in the Mexican American group tested in Spanish was simply a result of differences in educational emphasis or a lack of cultural relevance of the DRS for Spanish-speaking Mexican Americans.[36] Alternatively, formal testing or assessment may be unfamiliar to less-acculturated Mexican American patients regardless of the instrument that is used. Nonetheless, efforts have been made by investigators in recent years to develop neuropsychological tests that are equivalent for older English and Spanish speakers.[37] Tests with appropriate education, language, age, gender, and ethnicity corrections should be used in future studies of older psychiatric patients.

Our study has several limitations. As we mentioned above, cognitive test performance is strongly associated with educational attainment, and the educational differences between the groups may account for the observed cognitive test performance differences. This limitation points to the critical need for appropriate normative data for individuals of different levels of education, language preferences, and ethnic groups. The findings are restricted to community-dwelling, middle-aged and older patients and may not generalize to institutionalized or younger patients. The Latino group was composed of Mexican Americans. There is rich diversity among Latinos, pointing to a need for future studies to examine other ethnic groups (e.g., Puerto Rican, South American). Another potential limitation of the current study is that our assessment instruments may not be culturally appropriate for the less educated, Spanish-speaking, Mexican American group. Despite painstaking efforts to accurately translate and back-translate assessment instruments, we acknowledge that our instruments were initially designed for individuals acculturated to the United States. Although we allowed the participants in our study to self-select into a preferred language, it may be helpful for investigators of future studies to administer a brief screen of language fluency (e.g., Wide Range Achievement Test–Reading Recognition,[38] Controlled Oral Word Association Test[39]) prior to conducting cognitive and functional assessments. The findings of the current study could also be criticized for not having a measure of socioeconomic status; however, education can be thought of as a critical component of socioeconomic status.[40,41] Another limitation is the relatively small sample size of the 2 Latino groups. Finally, it is possible that our findings are a result of type I error; however, we feel that the consistency of the findings across patient groups decreases the likelihood that our results were spurious.

Superficial dichotomization of ethnic groups without a thorough examination of the potential impact of language, acculturation, cognitive ability, and level of educational attainment may lead investigators to draw inaccurate conclusions regarding the functional capacity of schizophrenia patients from different ethnic and cultural groups. Specifically, we are not suggesting that Mexican American Spanish speakers with schizophrenia are actually more impaired than the Mexican American English speakers or Anglo-American patients, but rather that failure to account for factors such as language proficiency may lead to erroneous conclusions that this impairment exists when the observed difference is most likely being driven by factors such as language fluency, educational attainment, and acculturation. Regardless of group membership, findings from our study suggest that cognitive performance and language preference (a proxy for acculturation) may play a particularly important role in predicting ability to perform everyday tasks such as using public transportation and managing medications. Further studies to better understand the potential impact of ethnicity, culture, education, and language on everyday functioning may help develop more specific and culture-sensitive intervention strategies for different ethnic groups of patients with severe mental illnesses.

Drug name: chlorpromazine (Thorazine, Sonazine, and others).

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