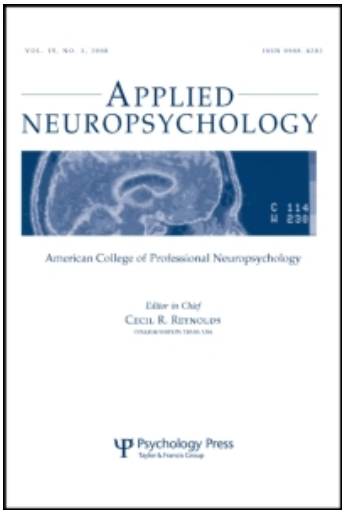

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Intersubtest Discrepancies on the RBANS: Results from the OKLAHOMA Study

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Intersubtest Discrepancies on the RBANS: Results from the OKLAHOMA Study

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The present study provides supplemental data for the Repeatable Battery for the Assessment of Neuropsychological Status (Randolph, 1998) by reporting base rate data on discrepancies between subtests of this measure. These discrepancies are organized by general level of ability and include both age and education corrections. The data come from the Oklahoma Longitudinal Assessment of Health Outcomes in Mature Adults study and include cognitive performances of 718 community-dwelling older adults. These findings offer the possibility of increased sensitivity at detecting clinically significant differences that might not be identified when relying on base rate data from a greater age range. Similarly, these data highlight the mediating effects of the global level of cognitive functioning on discrepancy scores.

Key words: *discrepancy scores, elderly, RBANS, subtests*

Discrepancy scores, calculated as the difference between two cognitive scores, can be useful in identifying an individual's strengths and weaknesses, as well as prototypical patterns that reflect discrete neuropsychological phenomena (Lezak, Howieson, & Loring, 2004). For example, Randolph, Tierney, Mohr, and Chase (1998) identified a discrepancy pattern on the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph, 1998), which differentiated between cortical and subcortical dementia profiles. Patients with Alzheimer's disease demonstrated significantly poorer performances on the Language and Delayed Memory indexes of the RBANS, whereas patients with Huntington's disease

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performed particularly poorly on the Attention and Visuospatial/Constructional indexes. Similar findings have been reported in dementia associated with Parkinson's disease (Beatty et al., 2003).

Discrepancy scores can also be useful for examining differences within a cognitive domain. Also using the RBANS, Beatty (2004) reported that patients with multiple sclerosis displayed significant discrepancies within the Language Index (Picture Naming > Semantic Fluency) and Delayed Memory Index (Story Recall > List Recall). These within-index discrepancy scores are consistent with the underlying pathology of this condition (Gambardella et al., 2003; Paulesu et al., 1996).

The use of discrepancy scores, however, is partially dependent on the availability of the base rates of these expected discrepancies within the normal population (Silverstein, 1981). The RBANS has published base rates of index discrepancies in its manual (Randolph, 1998), and supplemental base rates in older adults are also available (Patton et al., 2006). To our knowledge, however, there are no published base rates on interindex discrepancy scores. Therefore, the purpose of the present study was to expand on the existing literature for the RBANS by providing base rate data on interindex discrepancies that are organized by general level of ability and include both age and education corrections, as these factors have been shown to affect discrepancy scores (Hawkins & Tulsky, 2001; Iverson, Woodward, & Green, 2001; Ryan & Paolo, 1992).

METHOD

Participants

Data for the present study represent a subsample of the Oklahoma Longitudinal Assessment of Health Outcomes in Mature Adults (OKLAHOMA) study, which is further described in Duff et al. (2003). Briefly, participants were recruited from their primary care physicians, who judged them to be cognitively intact and suitable for participation in this longitudinal study. All participants completed a questionnaire asking about demographic information, medical conditions, physical symptoms, functional status, and measures of health-related quality of life. These questionnaires were reviewed with a research nurse, who also obtained informed consent, checked vital signs, hearing, vision, gait, balance, and peripheral sensation/reflexes, and administered Form A of the RBANS. Sensory deficits (e.g., macular degeneration) precluded some participants from completing some subtests.

Of the 824 participants who were evaluated in the OKLAHOMA study, 106 were eliminated from analyses due to a variety of self-reported medical conditions that would be likely to negatively affect cognitive functioning (stroke or transient ischemic attack = 52; head injury = 33; concussion = 19; seizures = 12; Parkinson's disease = 5; brain hemorrhage = 1; note that some of these participants reported more than one exclusionary condition). A final sample of 718 participants remained. Demographic and medical information for the participants included in the present study are displayed in Table 1.

TABLE 1
Demographic and Medical Information

Variable	
n	718
Age: mean (*SD*)	73.3 (5.8)
Gender (*n*)	
Males	300
Females	418
Education (*n*)	
Eighth grade or less	28
Some high school	72
Completed high school	188
Some college	230
Completed college	82
Some graduate school	44
Completed graduate school	74
Race (*n*)	
African American	64
Hispanic/Latino American	6
Native American	32
White, Non-Hispanic	616
Medical conditions (%)	
Arthritis	60%
Cancer	15%
Depression	15%
Diabetes	17%
Heart disease	25%
Hypertension	46%

Note. Values represent frequencies unless otherwise specified. Age is in years. Medical conditions = percentage of sample reporting that condition.

Measure

The RBANS (Randolph, 1998) is a brief, individually administered test designed to assess attention, language, visuospatial/constructional abilities, and immediate and delayed memory. It consists of 12 subtests, which yield five index scores (i.e., Attention, Language, Visuospatial/Constructional, Immediate Memory, and Delayed Memory) and a Total Scale score. The normative information provided in the manual is based on 540 healthy, primarily Caucasian adults who ranged in age from 20 to 89 years old. Duff et al. (2003) have provided expanded normative data ($n = 718$) that includes age and education corrections for use with older adults aged 65 to 94 years. This expanded normative data, which allows for individual subtests of the RBANS to be

standardized, were used in the present study. These standardized or scaled scores have a mean of 10 and a standard deviation of 3. All subtests were administered and scored as defined in the manual, with the exception of the Figure Copy and Figure Recall, which were scored with modified scoring criteria that were more liberal than the original scoring criteria presented in the manual. Additional details about these modified scoring criteria are presented in Duff et al. (2003) and can be obtained from the first author. In the present study, Form A of the RBANS was used.

Data Analysis

Discrepancies for the 14 pairwise combinations were calculated by subtracting one subtest's corrected scaled score from another subtest's corrected scaled score. Ten of these pairwise combinations were within-index comparisons (e.g., List Learning vs. Story Memory, as both subtests comprise the Immediate Memory Index). The remaining four combinations were based on intuitive clinical choices: (1) List Learning versus List Recall, (2) List Learning versus List Recognition, (3) Story Memory versus Story Recall, and (4) Figure Copy versus Figure Recall. Other possible combinations (e.g., List Learning vs. Line Orientation) are not presented here but can be obtained from the first author. Base rate data (i.e., cumulative frequencies) for each of these pairwise discrepancies were then computed. Specifically, discrepancy scores were identified that represented specified percentiles (<1st, 2nd, 5th, 10th, 20th, and 50th) for both score increases and score decreases.

Given that prior research has demonstrated that variability of discrepancy scores is mediated by level of cognitive functioning (e.g., Patton et al., 2006; Ryan & Paolo, 1992), base rates of subtest discrepancy scores were calculated and organized with respect to participants' OKLAHOMA age-corrected RBANS Total Scale score. Specifically, base rates were organized into three groups. The first, the "below average" group, was composed of participants ($n = 168$) who obtained an OKLAHOMA age-corrected RBANS Total Scale score of less than 90. The second, the "average" group ($n = 368$), scored from 90 to 109, and the "above average" group ($n = 182$) scored 110 or greater. The breakdown into these three groups was chosen due to a combination of the clinical appeal of this organization and compatibility with conventional classification schemes (e.g., as recommended by Wechsler, 1981), as well as the fact that it was statistically supported. Specifically, a multivariate analysis of variance was conducted to determine the effect of the three groups on subtest score discrepancies for the 14 pairwise comparisons. Significant differences were found among the three groups (age-corrected scores: Wilk's $\Lambda = .64$, $F[18, 1404] = 19.11$, $p < .001$; age and education-corrected scores: Wilk's $\Lambda = .73$, $F[18, 1352] = 12.62$, $p < .001$).

A split based on OKLAHOMA age *and* education-corrected Total Scale scores was also considered. While both models closely approximated normal distributions (i.e., absolute value of skewness and kurtosis <1), the age-corrected model had a better distribution of participants among the three groups as compared with the age and education-corrected model (i.e., the age and education-corrected model resulted in $n = 189$, $n = 427$, and $n = 102$, for the three groups, respectively). Therefore, the split based on the OKLAHOMA age-corrected Total Scale score was retained for the present analyses.

RESULTS

Descriptive information on RBANS performances for the entire sample is presented in Table 2. Base rate data for subtest discrepancies are presented in Tables 3 through 5, organized by OKLAHOMA age-corrected RBANS Total Scale score.

TABLE 2
Descriptive Statistics for RBANS OKLAHOMA Scores

Measure	*Age-Corrected Scores Mean* (SD)	*Age and Education-Corrected Index Scores Mean* (SD)
Immediate Memory	101.4 (14.8)	101.4 (14.8)
List Learning	10.3 (2.8)	10.5 (2.8)
Story Memory	10.4 (2.9)	10.6 (2.8)
Visuospatial/ Constructional	102.3 (15.8)	99.2 (12.6)
Figure Copy	10.1 (2.2)	10.3 (2.6)
Line Orientation	10.3 (2.7)	10.6 (2.8)
Language	102.3 (15.0)	90.8 (9.5)
Picture Naming	9.3 (1.4)	9.5 (1.7)
Semantic Fluency	10.3 (2.8)	10.5 (2.8)
Attention	101.6 (14.8)	101.6 (14.9)
Digit Span	10.5 (2.7)	10.5 (2.6)
Coding	10.2 (2.8)	10.7 (2.9)
Delayed Memory	100.9 (15.0)	97.8 (12.6)
List Recall	10.6 (2.7)	10.6 (2.7)
List Recognition	9.8 (1.8)	10.1 (2.2)
Story Recall	10.5 (2.8)	10.6 (2.8)
Figure Recall	10.4 (2.8)	10.5 (2.8)
Total Scale	100.4 (14.9)	96.3 (13.1)

Note. Index and subtest scores are age- or age and education-corrected scores based on the OKLAHOMA normative studies ($n = 718$). Data are from "Age- and education-corrected independent normative data for the RBANS in a community-dwelling elderly sample," by K. Duff, D. Patton, M. R. Schoenberg, J. Mold, J. G. Scott, & R. L. Adams, 2003, *The Clinical Psychologist*, *17*, pp. 351–366.

TABLE 3
Frequencies of RBANS Subtest Discrepancies Based on OKLAHOMA Age- and Age and Education-Corrected Index Scores: Age-Corrected Total Scale Score <90 ($n = 168$)

	Cumulative Percentages					
Discrepancy Scores	*≤1%*	*2%*	*5%*	*10%*	*20%*	*50%*
Age-Corrected						
List Learning – Story Memory	−7/+9	−6/+6	−5/+4	−4/+3	−3/+1	0
Figure Copy – Line Orientation	−9/+9	−7/+8	−6/+5	−5/+4	−3/+2	0
Picture Naming – Semantic Fluency	−9/+7	−8/+6	−6/+5	−5/+3	−3/+2	0
Digit Span – Coding	−8/+9	−7/+8	−6/+7	−4/+6	−3/+4	0
List Recall – List Recognition	−6/+4	−5/+3	−4/+3	−3/+2	−2/+1	−1
List Recall – Story Recall	−6/+5	−5/+4	−4/+3	−3/+3	−2/+2	0
List Recall – Figure Recall	−7/+5	−6/+4	−5/+3	−3/+3	−2/+2	0
List Recognition – Story Recall	−7/+6	−6/+5	−4/+4	−3/+3	−2/+2	0
List Recognition – Figure Recall	−7/+7	−6/+6	−5/+4	−3/+3	−2/+2	0
Story Recall – Figure Recall	−8/+6	−7/+5	−5/+4	−4/+3	−3/+1	0
List Learning – List Recall	−7/+5	−6/+4	−5/+3	−4/+2	−3/+1	−1
List Learning – List Recognition	−8/+7	−7/+6	−6/+3	−4/+2	−3/+1	−1
Story Memory – Story Recall	−5/+4	−4/+3	−4/+2	−3/+2	−2/+1	−1
Figure Copy – Figure Recall	−6/+8	−5/+7	−5/+6	−4/+5	−2/+3	0
Age and Education-Corrected						
List Learning – Story Memory	−7/+5	−6/+4	−5/+3	−4/+2	−3/+2	−1
Figure Copy – Line Orientation	−10/+9	−9/+7	−7/+5	−5/+4	−4/+2	−1
Picture Naming – Semantic Fluency	−8/+7	−7/+6	−5/+5	−4/+4	−3/+3	0
Digit Span – Coding	−8/+10	−7/+9	−6/+7	−5/+6	−4/+4	0
List Recall – List Recognition	−7/+5	−6/+4	−5/+3	−3/+3	−2/+2	0
List Recall – Story Recall	−7/+6	−5/+5	−4/+4	−3/+3	−2/+2	0
List Recall – Figure Recall	−7/+7	−7/+5	−6/+4	−4/+3	−2/+2	0
List Recognition – Story Recall	−7/+7	−5/+6	−4/+5	−3/+4	−2/+2	0
List Recognition – Figure Recall	−7/+8	−6/+7	−5/+5	−4/+4	−3/+3	0
Story Recall – Figure Recall	−5/+5	−5/+5	−6/+4	−4/+3	−3/+2	0
List Learning – List Recall	−7/+6	−6/+5	−5/+3	−4/+2	−3/+1	−1
List Learning – List Recognition	−7/+7	−6/+6	−6/+4	−5/+2	−3/+1	−1
Story Memory – Story Recall	−5/+5	−5/+4	−4/+3	−3/+2	−2/+1	0
Figure Copy – Figure Recall	−7/+9	−6/+8	−5/+7	−4/+5	−3/+3	0

Note. Subtest discrepancy scores are based on age- or age and education-corrected scores based on the OKLAHOMA normative studies (Duff et al., 2003). In determining which table to use, calculate the age-corrected Total Scale score based on Duff et al. (2003) normative data. For scores <90, use Table 3; for scores from 90 to 109, use Table 4; and for scores ≥110, use Table 5. OKLAHOMA normative studies data from "Age- and education-corrected independent normative data for the RBANS in a community-dwelling elderly sample," by K. Duff, D. Patton, M. R. Schoenberg, J. Mold, J. G. Scott, & R. L. Adams, 2003, *The Clinical Psychologist*, *17*, pp. 351–366.

DISCUSSION

Discrepancy scores can be used by practitioners to evaluate relative strengths and weaknesses and identify certain neuropsychological conditions. Their value, however, is tied to the availability of appropriate base rate information. The current results supplement the RBANS manual by providing base rate data on subtest discrepancy scores for community-dwelling older adults. These data are also organized by general cognitive level for age-corrected and age and education-corrected scores. To our knowledge, this information has not been previously published.

As noted with other cognitive measures (Hawkins & Tulsky, 2001; Iverson et al., 2001; Ryan & Paolo, 1992), RBANS discrepancy scores are affected by general cognitive level, age, and education. In a prior study with this same sample, Patton et al. (2006) found RBANS index discrepancy scores for high-average individuals were significantly different from those of their average and low-average counterparts. In the present study, a similar pattern was observed. For example, in the low-average group (RBANS Total <90), most subtest discrepancy scores at the 50th percentile were 0; in the average group (RBANS Total 90 to 110), most discrepancy scores at this same percentile were ±1; and in the high-average group (RBANS Total >110), most discrepancy scores were greater than ±1 at the 50th percentile. This pattern of discrepancy scores is also represented at the lower end of the distribution, with the mean age-corrected discrepancy scores at or below the 1st percentile to be −0.6, −1.1, and −1.7 for the low-average, average, and high-average groups, respectively. Similar, but slightly smaller, differences were also

TABLE 4
Frequencies of RBANS Subtest Discrepancies Based on OKLAHOMA Age- and Age and Education-Corrected Index Scores: Age-Corrected Total Scale Score = 90 to 109 ($n = 368$)

	Cumulative Percentages					
Discrepancy Scores	*≤1%*	*2%*	*5%*	*10%*	*20%*	*50%*
Age-Corrected						
List Learning – Story Memory	−7/+7	−6/+6	−5/+4	−4/+3	−3/+2	0
Figure Copy – Line Orientation	−8/+7	−7/+6	−5/+4	−4/+3	−3/+2	0
Picture Naming – Semantic Fluency	−8/+4	−7/+3	−6/+3	−5/+2	−4/+1	−1
Digit Span – Coding	−8/+7	−7/+6	−6/+5	−4/+4	−3/+2	0
List Recall – List Recognition	−5/+5	−4/+4	−4/+3	−3/+3	−2/+2	0
List Recall – Story Recall	−7/+6	−6/+5	−5/+4	−4/+3	−3/+1	0
List Recall – Figure Recall	−8/+6	−7/+5	−6/+4	−5/+3	−3/+2	−1
List Recognition – Story Recall	−8/+5	−7/+4	−6/+3	−5/+2	−3/+1	−1
List Recognition – Figure Recall	−8/+5	−7/+4	−6/+3	−5/+2	−3/+1	−1
Story Recall – Figure Recall	−8/+7	−7/+6	−6/+4	−5/+3	−3/+2	−1
List Learning – List Recall	−6/+7	−5/+6	−4/+4	−3/+2	−2/+1	−1
List Learning – List Recognition	−6/+8	−5/+6	−4/+4	−3/+3	−2/+1	0
Story Memory – Story Recall	−6/+4	−5/+3	−4/+3	−3/+2	−2/+1	−1
Figure Copy – Figure Recall	−7/+6	−6/+5	−5/+4	−4/+3	−3/+2	−1
Age and Education-Corrected						
List Learning – Story Memory	−7/+7	−6/+5	−5/+4	−4/+3	−3/+2	−1
Figure Copy – Line Orientation	−8/+7	−7/+6	−6/+4	−5/+3	−3/+2	−1
Picture Naming – Semantic Fluency	−8/+5	−7/+4	−6/+3	−5/+2	−4/+1	−1
Digit Span – Coding	−8/+8	−7/+7	−6/+5	−5/+4	−4/+2	−1
List Recall – List Recognition	−5/+5	−4/+4	−4/+3	−3/+2	−2/+1	−1
List Recall – Story Recall	−7/+6	−6/+5	−5/+4	−4/+3	−3/+1	−1
List Recall – Figure Recall	−8/+7	−7/+6	−6/+4	−4/+3	−3/+2	−1
List Recognition – Story Recall	−8/+6	−7/+5	−6/+4	−5/+3	−3/+2	0
List Recognition – Figure Recall	−8/+6	−7/+5	−6/+4	−5/+3	−3/+2	0
Story Recall – Figure Recall	−9/+7	−8/+6	−6/+4	−5/+3	−3/+2	0
List Learning – List Recall	−6/+7	−5/+6	−4/+4	−3/+2	−2/+1	−1
List Learning – List Recognition	−6/+7	−5/+6	−4/+4	−3/+3	−2/+2	−1
Story Memory – Story Recall	−5/+5	−4/+4	−4/+3	−3/+2	−2/+1	−1
Figure Copy – Figure Recall	−7/+6	−6/+5	−5/+4	−4/+3	−3/+2	−1

Note. Subtest discrepancy scores are based on age- or age and education-corrected scores based on the OKLAHOMA normative studies (Duff et al., 2003). In determining which table to use, calculate the age-corrected Total Scale score based on Duff et al. (2003) normative data. For scores <90, use Table 3; for scores from 90 to 109, use Table 4; and for scores ≥110, use Table 5. OKLAHOMA normative studies data from "Age- and education-corrected independent normative data for the RBANS in a community-dwelling elderly sample," by K. Duff, D. Patton, M. R. Schoenberg, J. Mold, J. G. Scott, & R. L. Adams, 2003, *The Clinical Psychologist*, *17*, pp. 351–366.

observed with age and education-corrected scores. If these discrepancy scores were not separated by overall cognitive level, then erroneous conclusions of strengths and weaknesses can occur, especially at the low-average and high-average levels.

These base rate tables of discrepancy scores provide some distinct advantages over a strictly psychometric approach. For example, using psychometric properties of standardized scores, a difference of 6 scaled score points ($SD = 3 \times 2$) would be needed before two subtests were different at the 2nd percentile (above or below the mean). No subtest discrepancy information is presented in the RBANS manual to compare to that difference value. The OKLAHOMA discrepancy scores improve on the psychometric approach. For example, differences of only −5 (or +3), −4 (or +4), and −3 (or +5) points are needed between age-corrected List Recall and List Recognition subtests to reach the 2nd percentile for low-average, average, and above-average individuals, respectively. As such, the current data might lend themselves to greater sensitivity in detecting clinically significant neurocognitive patterns in older adults than might occur if a clinician were to rely solely on psychometric values. This might prove particularly relevant in light of research findings that subtest scatter may actually decrease in the presence of pathological conditions such as Alzheimer's disease (Mitrushina et al., 1994). Nevertheless, the use of the data remains an empirical question to be addressed by comparing the relative accuracy of these data in detecting verified pathology.

A case example might illustrate the use of these data. In Table 6, several RBANS scores are presented for an

TABLE 5
Frequencies of RBANS Subtest Discrepancies Based on OKLAHOMA Age- and Age and Education-Corrected Index Scores: Age-Corrected Total Scale Score ≥110 ($n = 182$)

	Cumulative Percentages					
Discrepancy Scores	*≤1%*	*2%*	*5%*	*10%*	*20%*	*50%*
Age-Corrected						
List Learning – Story Memory	−8/+5	−7/+4	−5/+4	−4/+3	−3/+2	−1
Figure Copy – Line Orientation	−7/+4	−6/+3	−5/+2	−4/+2	−3/+1	−1
Picture Naming – Semantic Fluency	−9/+3	−8/+2	−7/+2	−6/+1	−5/+0	−3
Digit Span – Coding	−11/+7	−10/+6	−7/+4	−5/+3	−3/+2	−1
List Recall – List Recognition	−4/+6	−3/+5	−2/+5	−1/+4	0/+4	2
List Recall – Story Recall	−7/+6	−5/+5	−4/+4	−3/+3	−2/+1	0
List Recall – Figure Recall	−7/+7	−6/+6	−5/+5	−4/+4	−3/+3	0
List Recognition – Story Recall	−7/+3	−6/+2	−5/+1	−5/+0	−4/+1	−3
List Recognition – Figure Recall	−7/+4	−6/+3	−6/+2	−5/+1	−4/+0	−2
Story Recall – Figure Recall	−8/+7	−6/+6	−5/+5	−4/+4	−2/+3	0
List Learning – List Recall	−5/+5	−4/+4	−4/+3	−3/+2	−2/+1	−1
List Learning – List Recognition	−4/+7	−3/+6	−2/+5	−1/+4	0/+3	2
Story Memory – Story Recall	−6/+5	−5/+4	−5/+4	−4/+3	−3/+2	0
Figure Copy – Figure Recall	−7/+4	−6/+3	−5/+2	−5/+1	−4/+0	−2
Age and Education-Corrected						
List Learning – Story Memory	−7/+5	−6/+4	−5/+4	−4/+3	−3/+2	−1
Figure Copy – Line Orientation	−7/+5	−6/+4	−5/+3	−4/+2	−3/+2	−1
Picture Naming – Semantic Fluency	−10/+4	−9/+3	−8/+2	−6/+1	−5/+0	−3
Digit Span – Coding	−13/+8	−11/+7	−8/+4	−6/+3	−4/+2	−1
List Recall – List Recognition	−4/+5	−3/+5	−3/+4	−2/+4	0/+3	1
List Recall – Story Recall	−7/+6	−6/+5	−4/+4	−3/+3	−2/+2	−1
List Recall – Figure Recall	−7/+8	−6/+7	−5/+5	−4/+4	−3/+3	0
List Recognition – Story Recall	−7/+4	−6/+3	−5/+1	−5/+1	−4/+0	−2
List Recognition – Figure Recall	−8/+5	−7/+4	−6/+3	−5/+2	−4/+1	−2
Story Recall – Figure Recall	−7/+7	−6/+6	−5/+5	−4/+4	−3/+3	0
List Learning – List Recall	−6/+6	−4/+5	−3/+3	−3/+2	−2/+1	−1
List Learning – List Recognition	−4/+7	−3/+6	−3/+5	−2/+4	−1/+3	1
Story Memory – Story Recall	−6/+5	−5/+4	−4/+4	−3/+3	−2/+2	0
Figure Copy – Figure Recall	−7/+4	−6/+3	−5/+3	−5/+2	−4/+1	−2

Note. Subtest discrepancy scores are based on age- or age and education-corrected scores based on the OKLAHOMA normative studies (Duff et al., 2003). In determining which table to use, calculate the age-corrected Total Scale score based on Duff et al. (2003) normative data. For scores <90, use Table 3; for scores from 90 to 109, use Table 4; and for scores ≥110, use Table 5. OKLAHOMA normative studies data from "Age- and education-corrected independent normative data for the RBANS in a community-dwelling elderly sample," by K. Duff, D. Patton, M. R. Schoenberg, J. Mold, J. G. Scott, & R. L. Adams, 2003, *The Clinical Psychologist*, *17*, pp. 351–366.

individual of low-average functioning (i.e., Total Scale score = 88). Overall, the memory performance of this individual was also in the low-average range (i.e., Delayed Memory Index = 82). Comparison of subtests within this index, however, indicates differential performances across these verbal and visual memory tasks. For example, List Recall was in the average range (50th percentile) and List Recognition was in the low-average range (16th percentile), and a clinician might not make much of this 3-point scale score discrepancy between these two tasks. Using the data in Table 3, however, it is observed that this discrepancy occurred in approximately 2% to 5% of the OKLAHOMA sample. This relatively nonsignificant finding takes on additional meaning when base rate data are considered. Alternatively, the 4-point discrepancy between Story Recall and Figure Recall might receive less clinical attention when it is noted that approximately 10% of the sample achieved this discrepancy score on these subtests. It becomes clear that differences that appear unusual might not be statistically significant (i.e., <5%), and differences that appear statistically significant might not be that unusual.

Some limitations and cautions within the current findings should be noted. The OKLAHOMA data, from which these discrepancy scores were calculated, is composed of primary care patients, who self-reported a number of medical conditions. They range in age from 65 to 94 years and are predominantly rural dwelling, Caucasian, and relatively well educated. Caution should be exercised when using these discrepancy scores for patients who do not conform to this sample. Subtest discrepancies might prove to be less reliable than discrepancies between indexes of the RBANS (Patton

TABLE 6
Case Example of Discrepancy Scores

Measure	*Case Example*
Total Scale	88
Delayed Memory	82
List Recall	10
List Recognition	7
Story Recall	5
Figure Recall	9
List Recall – List Recognition	+3 (95–98%)
List Recall – Story Recall	+5 (≥99%)
List Recall – Figure Recall	+1 (50–80%)
List Recognition – Story Recall	+2 (80%)
List Recognition – Figure Recall	−2 (20%)
Story Recall – Figure Recall	−4 (10%)

Note. Index and subtest scores are age-corrected scores based on the OKLAHOMA normative studies (Duff et al., 2003). Discrepancy scores represent differences between age-corrected scale scores. Numbers in parentheses are relative standing of that discrepancy score in the cumulative distribution of individuals with that Total Scale score. OKLAHOMA normative studies data from "Age- and education-corrected independent normative data for the RBANS in a community-dwelling elderly sample," by K. Duff, D. Patton, M. R. Schoenberg, J. Mold, J. G. Scott, & R. L. Adams, 2003, *The Clinical Psychologist*, *17*, pp. 351–366.

et al., 2006), and these should also be considered in a clinical evaluation. We also caution clinicians to not use a strictly psychometric approach to evaluating patients as base rate data cannot account for the "broken leg problem" (Dawes, Faust, & Meehl, 1989), in which rare events that are specific to an individual patient might alter a clinician's use of base rate data (see McCaffrey, Palav, O'Bryant, & Labarge, 2003, for additional information about using base rate data in clinical evaluations). Only Form A of the RBANS was used in this study, and the generalizability of these discrepancy scores to Form B are not known. Finally, the RBANS is principally considered a screening instrument, and discrepancies between scores from a more comprehensive neuropsychological evaluation could lead to more informative decisions about a patient's neuropsychological status. Despite these limitations, the current discrepancy scores have the potential to assist neuropsychological practice by providing greater sensitivity when making the determination of clinically meaningful differences among cognitive domains.

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