The DRS-R-98, a 16-item clinician-rated scale with 13 severity items and 3 diagnostic items, was validated against the Cognitive Test for Delirium (CTD), Clinical Global Impression scale (CGI), and Delirium Rating Scale (DRS) among five diagnostic groups (N=68): delirium, dementia, depression, schizophrenia, and other. Mean and median DRS-R-98 scores significantly (P<0.001) distinguished delirium from each other group. DRS-R-98 total scores correlated highly with DRS, CTD, and CGI scores. Interrater reliability and internal consistency were very high. Cutoff scores for delirium are recommended based on ROC analyses (sensitivity and specificity ranges: total, 91%–100% and 85%–100%; severity, 86%–100% and 77%–93%, respectively, depending on the cutoffs or comparison groups chosen). The DRS-R-98 is a valid measure of delirium severity over a broad range of symptoms and is a useful diagnostic and assessment tool. The DRS-R-98 is ideal for longitudinal studies. 

DELIRIUM RATING SCALE-REVISED-98

symptoms, and physical etiology) and add to specificity, but are not easy to rate repeatedly during serial administrations within an episode of delirium. Some researchers have solved this problem by modifying the DRS into a 7- or 8-item scale after the initial administration. The DRS item for psychomotor behavior combines hypoactivity and hyperactivity, thereby limiting its usefulness in assessing motor subtypes of delirium. Various cognitive deficits are combined into one item because separate bedside cognitive tests were originally suggested as adjuncts to the DRS. However, not having a separate item for attentional deficits makes it difficult to study attention’s presumed cardinal role in delirium or what symptoms constitute “clouding of consciousness.” The lack of items for language impairment or thought process abnormalities limits study of what actually contributes to “confusion” other than cognitive deficits. Thus, the DRS has some limitations for use in phenomenologic and longitudinal treatment research.

Our revision of the DRS was intended to address these shortcomings of the original scale. The revision includes two sections: three diagnostic items for initial ratings and a 13-item severity scale that is used for repeated measurements. Severity items were revised to emphasize gradations of symptom intensity; specific characteristics can be noted on the score sheet. Items cover language, thought processes, two motoric presentations, and five components of cognition. Neither the DRS nor its revision is intended to assess stupor or coma.

The intent of this study was to 1) validate the Delirium Rating Scale- Revised-98 (DRS-R-98), 2) establish its reliability, as well as its sensitivity and specificity for distinguishing delirious from nondelirious psychiatric groups, and 3) assess its ability to function as a severity measure of delirium. It was compared with the DRS, the Cognitive Test for Delirium (CTD), and a global clinical impression scale.

METHODS

Subjects
Adult subjects were recruited from medical, surgical, psychiatric, rehabilitation, and nursing home care inpatient units of the University of Mississippi Medical Center affiliated hospitals over a 5-month period in 1999. We recruited delirious, demented, schizophrenic, depressed, and other psychiatric patients to form the five different comparison groups. Verbal assent to be interviewed was used to determine participation in this study as approved by the University of Mississippi Medical Center institutional review board. There were no exclusion criteria except an unwillingness to be psychiatrically assessed. Subjects were evaluated on the hospital unit cross-sectionally, except for a few delirious subjects who were retested after their delirium improved. Demographic data were obtained from the patient, chart, staff, and/or family and friends.

Procedures
Evaluations were done according to the availability of raters in a quasi-randomized fashion. The research team contacted the relevant service and requested a list of patients who could be approached for inclusion in the study. DRS and DRS-R-98 ratings were done blind to diagnosis by the study psychiatrists, who were trained to use these instruments. The research assistants screened cases for suitability. Ratings made use of information from all available sources, including discussions with caregivers or visitors to obtain information, as well as limited chart review under supervision of the research assistant or referring physician to maintain blindness to diagnosis. Delirium scale ratings covered a 24-hour period.

Psychiatric diagnoses were made by the referring service physician using DSM-IV criteria and all available clinical information to finalize the diagnosis. The referring physician also completed the Clinical Global Impression (CGI) scale for overall severity of illness, under instructions to compare the subjects with other patients having that same disorder. No particular training was done for completion of the CGI. CGI ratings were used to compare illness severity between groups and to correlate with delirium scale ratings within the delirium group.

Interrater reliability for the DRS-R-98 was established by using a subset of subjects representing various diagnostic groups. Research psychiatrists (P.T., D.M., R.T.) independently rated the same subjects following a single interview when they were blind to diagnosis, and comparisons were made between pairs of raters.

Construct validity was established mostly by comparing the DRS-R-98 with the DRS and to a lesser extent by comparing it with the CTD. Sensitivity and specificity of the DRS-R-98 were determined by comparing scores from delirious subjects with other diagnostic groups’ scores. This comparison also assisted with evaluating criterion validity.

Scale Descriptions
The DRS is a 10-item clinician-rated scale with a maximum possible score of 32 points. Items represent symptoms that are rated on a scale of 0 to 2, 3, or 4 points, with text descriptions for each point. The items are temporal onset of symptoms, perceptual disturbances, hallucination type, delusions, psychomotor behavior, cog-
nitive status during formal testing, physical disorder, sleep-wake cycle disturbance, lability of mood, and variability of symptoms. The DRS has good scale characteristics based on a number of studies of delirious populations. Its interrater reliability (intraclass correlation coefficients) ranges from 0.86 to 0.97 for psychiatric or geriatric physicians and 0.59 to 0.99 for nonphysicians; specificity ranges from 0.82 to 0.94, sensitivity from 0.82 to 0.94.5

The DRS-R-98 is a 16-item scale (see Appendix A) with a maximum total scale score of 46 points (includes the three diagnostic items) and a maximum severity score of 39 points. Whenever an item of the DRS-R-98 could not be rated—which was usually dependent on the degree of cooperation—it was so noted and later scored midway, that is, as 1.5 points; this occurred rarely. We used three words to assess short-term memory, months of the year backwards to help rate attention, copying intersecting pentagons and drawing a clockface to help assess visuoconstructional ability, and parts of a pen and/or watch to assess naming.

Each subject was administered the Cognitive Test for Delirium6 by a research assistant as a brief, broad measure of cognitive function. The CTD was designed specifically for delirious patients, especially those who cannot speak. It tests orientation, attention, visual memory, and conceptual reasoning and has been shown to correlate highly with the Mini-Mental State Examination (MMSE) in delirious patients. A suggested cutoff score for delirium is ≤19 points.

The CGI is scored as a single overall impression of illness severity on a Likert-type scale ranging from 1 to 7 points.7 It was used to grossly measure severity of illness within diagnostic groups. Unlike the other scales, the CGI was completed without prior training by a variety of treating physicians over a broad range of clinical sites.

Data Analysis

Data were analyzed by using SPSS-PC software. Age and rating scale data were expressed as means and standard deviations. Statistical significance was set at \( P \leq 0.05 \). DRS and DRS-R-98 scores from the primary rater were used for all analyses (except in calculating interrater reliability when pairs of raters were used). Age was correlated with total rating scale scores for each diagnostic group by Pearson correlation. Chi-square was used to compare race and sex among groups.

DRS-R-98 total scores were compared with both the DRS and the CTD in delirious subjects, using a Pearson correlation to assess construct validity and ability to assess severity over a range of impairment levels. Scores for each DRS-R-98 item were correlated with DRS-R-98 total scale scores, using Cronbach’s alpha coefficient to assess internal consistency of the scale as a measure of delirium. To assess empirical validity of the DRS-R-98 as a delirium scale, total and severity scores were compared among the five diagnostic groups by one-way analysis of variance (ANOVA), with post hoc pairwise comparisons to determine where the differences lie.

Boxplots were graphed to show medians and distributions of rating scale and CTD scores for each diagnostic group. The Kruskal-Wallis test was performed to assess for between-group difference.

DRS-R-98 scores were compared with “after usual treatment” scores by use of paired \( t \)-tests in a subset of delirious subjects to assess the DRS-R-98 as a severity scale over time. Total scores were correlated with CGI scores as another way to assess DRS-R-98 as a severity measure.

Cutoff scores for the DRS-R-98 were determined by using receiver-operator characteristic (ROC) analyses to determine acceptable levels of sensitivity and specificity when comparing the delirium group either with the demented group or with all nondelirious subjects.

CGI scores were compared between groups by using one-way ANOVA to assess whether illness severity was similar among diagnostic groups.

Interrater reliabilities for the DRS-R-98 and DRS total scores were measured by using an intraclass coefficient for pairs of independent raters.

RESULTS

Subjects

A total of 68 subjects were evaluated from five diagnostic groups: 24 delirious, 13 demented, 9 schizophrenic, 12 depressed, and 10 “other.” Twenty-seven were recruited from medical-surgical units, 17 from a medical-psychiatric unit, 15 from general psychiatric units, 4 from a nursing home unit, and 5 from a rehabilitation unit.

Table 1 describes demographic characteristics of subjects for each diagnostic group. There were no significant differences among groups for race, where 56% were white, 42% black, and 3% other (1 Hispanic and 1 Choctaw Native American). There were 51 males and 17 females (because of the inclusion of a Veterans Affairs Medical Center population) but no difference in gender or race ratios among groups. Mean age was significantly different between groups (\( F = 7.43, \text{ df} = 4.63, P<0.001 \)), as might be expected from the different age distributions of the illnesses studied. Schizophrenic subjects were significantly younger than delirious (\( P<0.01 \)) or demented subjects (\( P<0.001 \)), and “other” subjects were signifi-
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cantly younger than demented subjects \(P<0.01\). All groups had a broad range in age except the demented subjects, who were all over 60 years old.

Validity

Table 2 shows mean scores and standard deviations for each group for DRS, DRS-R-98 total, DRS-R-98 severity, CTD, and CGI. There was a highly significant difference among diagnostic groups for the CTD \((F = 19.3, \text{df} = 4.62, P < 0.001)\), DRS-R-98 total scale \((F = 47.9, \text{df} = 4.63, P < 0.001)\), DRS-R-98 severity scale \((F = 35.0, \text{df} = 4.63, P < 0.001)\) and DRS \((F = 44.2, \text{df} = 4.62, P < 0.001)\). The CGI also distinguished the groups \((F = 3.5, \text{df} = 4.63, P = 0.01)\). Delirium subjects had the highest mean scores on the delirium rating scales and the lowest scores on the CTD compared with any diagnostic group, indicating they had more delirium symptoms and cognitive impairment.

ANOVA pairwise comparisons showed that the mean DRS score was significantly higher in the delirium group compared with each of the other groups \((P < 0.001)\). The DRS did not differ among dementia, schizophrenia, depression, or “other” groups.

With pairwise comparisons, the mean DRS-R-98 total score was significantly higher in the delirium group compared with each of the other groups \((P < 0.001)\). The DRS-R-98 total score did not distinguish schizophrenia, depressed, or “other” groups from one another, nor did it distinguish dementia from the “other” group. However, it did distinguish dementia from schizophrenia and depressed groups \((P < 0.05)\).

Pairwise comparisons showed that the mean DRS-R-98 severity score was significantly higher in the delirium group compared with each of the other groups \((P < 0.001)\). It distinguished dementia from both depression and “other” groups \((P < 0.05)\), but not from schizophrenia. Like the DRS-R-98 total scale, it did not differ among “other,” schizophrenia, and depression groups.

Pairwise comparisons showed that mean CTD scores were significantly lower in the delirium group than in any other group at \(P < 0.001\), except for dementia at \(P < 0.05\). The CTD did not distinguish the schizophrenic group from any group except delirium, but it did distinguish dementia from the depressed and “other” groups \((P < 0.01)\).

Pairwise comparisons showed that mean CGI scores were not significantly different among any groups except between delirium and “other,” where the latter was less impaired than the delirium group \((P = 0.03)\). The mean CGI score was in the “moderately to markedly

### Table 1. Demographics for five diagnostic groups

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>(n)</th>
<th>Age Mean ± SD (range)</th>
<th>Sex Female</th>
<th>Male</th>
<th>Race White</th>
<th>Black</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delirium</td>
<td>24</td>
<td>64.0 ± 16.8 (18–89)</td>
<td>3</td>
<td>21</td>
<td>15</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Dementia(^a)</td>
<td>13</td>
<td>77.5 ± 8.6 (61–90)</td>
<td>4</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Schizophrenia(^b)</td>
<td>9</td>
<td>41.2 ± 15.2 (26–69)</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Depression(^c)</td>
<td>12</td>
<td>57.9 ± 18.6 (29–90)</td>
<td>4</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Other(^d)</td>
<td>10</td>
<td>49.6 ± 19.8 (16–74)</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^a\)Alzheimer’s, 2 vascular, 1 human immunodeficiency virus–type 1 infection with cryptococcus, 8 dementia not otherwise specified (NOS).

\(^b\)undifferentiated schizophrenia, 2 paranoid schizophrenia, 1 schizoaffective (manic type), 1 psychosis NOS.

\(^c\)major depression (4/9 with psychotic features), 1 depression NOS, 1 bipolar depressed.

\(^d\)alcohol dependence, 3 cognitive disorder NOS, 1 amnestic disorder, 2 opioid dependence, 1 adjustment disorder depressed, 1 delirium resolved.

### Table 2. Rating scale scores in five diagnostic groups, mean ± SD (range)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Delirium ((n = 24))</th>
<th>Dementia ((n = 13))</th>
<th>Schizophrenia ((n = 9))</th>
<th>Depression ((n = 12))</th>
<th>Other ((n = 10))</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRS*</td>
<td>18.4 ± 5.4 (7–26)</td>
<td>6.1 ± 2.5 (3–11)</td>
<td>3.9 ± 1.7 (2–7.5)</td>
<td>4.6 ± 1.7 (3–8)</td>
<td>6.9 ± 3.6 (3–13)</td>
</tr>
<tr>
<td>DRS-R-98 Total*</td>
<td>26.9 ± 6.7 (11–39)</td>
<td>13.9 ± 4.2 (9–22)</td>
<td>7.7 ± 4.3 (3–15.5)</td>
<td>7.0 ± 3.5 (3–13)</td>
<td>8.9 ± 3.6 (3.5–14.5)</td>
</tr>
<tr>
<td>DRS-R-98 Severity*</td>
<td>21.3 ± 6.3 (6–33)</td>
<td>12.4 ± 3.5 (8–20)</td>
<td>7.1 ± 4.0 (2–13.5)</td>
<td>5.9 ± 3.3 (1–11)</td>
<td>6.4 ± 2.2 (3–9.5)</td>
</tr>
<tr>
<td>CTD*</td>
<td>11.9 ± 6.4 (0–24)</td>
<td>17.9 ± 7.5 (5–30)</td>
<td>24.6 ± 6.9 (11–30)</td>
<td>26.4 ± 3.7 (19–30)</td>
<td>26.9 ± 1.7 (24–29)</td>
</tr>
<tr>
<td>CGI**</td>
<td>4.9 ± 0.9 (3–7)</td>
<td>4.8 ± 1.1 (3–6)</td>
<td>3.7 ± 1.7 (2–7)</td>
<td>4.7 ± 1.5 (2–6)</td>
<td>3.5 ± 1.1 (2–5)</td>
</tr>
</tbody>
</table>

\(^*\)One-way analysis of variance, \(P < 0.001\) among groups.

\(^\*\)One-way analysis of variance, \(P = 0.012\) among groups.
impaired” range for all groups except for “other” which was halfway between “mildly” and “moderately” impaired. This indicates that the major diagnostic groups were well matched for breadth of overall illness severity levels based on a clinical global impression.

In addition to comparing group means, we graphed boxplots (Figure 1) to show the distribution of scale scores in quartiles (middle 50% in the box) and median scores (in solid black lines). On Kruskal-Wallis comparisons, scores were significantly different among groups (P<0.001) for the DRS, DRS-R-98 total and severity, and CTD scales. Median scores and middle quartiles for delirious subjects did not overlap with those from any other group on any scale, except for the dementia group on the CTD, suggesting that the CTD is less discriminating. The DRS distribution shows very little overlap between delirium and any other group except between its lower quartile and the upper quartile of the dementia and “other” groups. One severely impaired schizophrenic outlier and one severely psychotic depressed outlier just reached the lowest distribution of the DRS range, as well as one “other” patient who had a recently resolved delirium.

The most overlap on boxplots for DRS-R-98 total or severity scores occurs between the lower quartile of the delirium group and the dementia group, with somewhat more overlap for the severity distribution, which includes a resolving delirium group outlier. CTD scores are lowest in the delirium group, but the boxes for delirium and dementia groups overlap, and 2 schizophrenic outliers (rated as severely and extremely severely impaired on the CGI) overlap with the delirium box.

Two subjects in the delirium group had been delirious for a while and were improving, and one subject in the “other” group had a brief nocturnal delirium that was mostly resolved by morning when he was rated. Because of their varying degrees of resolving status, these 3 subjects were analyzed separately against the other 22 subjects with delirium to see if their scores reflected their milder status. Compared with subjects having full-blown delirium, those with resolving delirium had significantly higher mean scores on the CTD (23.7 ± 2.5 vs. 10.9 ± 5.7; t = −3.7, df = 23, P = 0.001), and significantly lower on the DRS (10.3 ± 2.3 vs. 19.3 ± 4.8; t = 3.1, df = 23, P = 0.005), on the DRS-R-98 total (13.0 ± 2.0 vs. 28.2 ± 5.4; t = 4.8, df = 23, P < 0.001) and on the DRS-R-98 severity (7.3 ± 1.5 vs. 22.6 ± 4.9; t = 5.3, df = 23, P < 0.001). There was no difference in age between those with resolving and those with more full-blown delirium.

**DRS-R-98 Characteristics in Delirious Subjects**

Correlations were performed between rating scales in the delirium group to address validity of the DRS-R-98. Age did not correlate with any measure. The DRS correlated strongly with the DRS-R-98 total (r = 0.83, P < 0.001) and DRS-R-98 severity (r = 0.80, P < 0.001) suggesting the newer scale is a good measure of delirium. As would be expected, the DRS-R-98 total score correlates very strongly with the DRS-R-98 severity score (r = 0.99, P < 0.001). Both the DRS and the DRS-R-98 correlated somewhat less strongly with the CTD (r = −0.41, P < 0.05 for the DRS; r = −0.62, P = 0.001 for the DRS-R-98 total; and r = −0.63, P = 0.001 for DRS-R-98 severity), consistent with the delirium scales measuring symptoms more broadly than just cognition. Correlations with the CGI were strong but less so than between the two delirium rating scales with each other (r = 0.45, P < 0.05 for DRS; r = 0.62, P = 0.001 for DRS-R-98 total; and r = 0.61, P = 0.001 for DRS-R-98 severity), likely reflecting the CGI’s more nonspecific, global nature.

**DRS-R-98 Pre and Post Treatment**

Six of the delirious subjects were reassessed after treatment when they no longer met DSM-IV criteria for delirium. Their mean age was 55.3 ± 23.1 years (range 18–82). Their mean scores for CTD, DRS, DRS-R-98 severity, and CGI are listed in Table 3. There were significant improvements on all measures after treatment. In particular, the DRS-R-98 severity scale improved from a mean of 21.5 ± 5.6 points to 5.2 ± 3.5 (t = 7.13, df = 5, P < 0.001), indicating an ability to measure change in clinical status in parallel to global clinical, cognitive, and diagnostic assessments. The DRS also declined from a mean score of 18.3 ± 3.9, clearly in the delirious range, to 3.5 ± 2.1 (t = 10.6, df = 5, P < 0.001), clearly out of the delirious range. CGI improved significantly from “moderate/marked impairment” to “much/very much improved” (t = 6.3, df = 5, P = 0.001). Although the delirium rating scale raters were aware of the delirium diagnosis at the second rating, the CGI was rated independently by the primary treating physician and the CTD was administered and scored by a research assistant.

**Scale Reliability**

The Cronbach’s alpha coefficient in the delirium group was 0.90 for the DRS-R-98 total scale and 0.87 for the DRS-R-98 severity scale, supporting the reliability of the scale and its internal consistency. In addition, when the effect of each individual item was deleted from the scale, coefficients ranged from 0.88 to 0.90 for the DRS-R-98 total and from 0.84 to 0.87 for the DRS-R-98 severity scale, suggesting a high degree of internal consistency among items of the scale. Table 4 lists alpha coefficients for both the DRS-R-98 total and DRS-R-98 severity scales as each item is removed from the scale. The DRS also...
showed a high alpha coefficient (0.87), ranging from 0.83 to 0.87 when each item was removed, reflective of its high internal consistency.

**Interrater Reliability**

Three trained psychiatrist raters were used to calculate an intraclass correlation coefficient (ICC) for the DRS

**FIGURE 1.** Boxplots of DRS, DRS-R-98 Total, DRS-R-98 Severity, and CTD scores for each of the five diagnostic groups. Median scores are denoted by the solid line within the boxes. The boxes represent the middle 50% of the scores. Outliers are denoted by open circles. DRS = Delirium Rating Scale; CTD = Cognitive Test for Delirium.
and DRS-R-98. When the primary rater was compared with the secondary rater for the DRS (n = 25), ICC = 0.99; for the DRS-R-98 total (n = 26), ICC = 0.98; and for the DRS-R-98 severity (n = 26), ICC = 0.99. When each combination of pairs of raters was compared for each rating scale, the ICCs ranged from 0.98 to 0.99 (10 or 11 cases were used for each rater pair comparison).

Sensitivity and Specificity

Results of receiver operating curve (ROC) analyses are shown in Table 5.

ROC analyses were performed for DRS-R-98 scores comparing the delirium group versus all other diagnoses, as well as the delirium group versus only dementia (dementia being the more likely diagnostic confound). When delirium was compared with all other groups for the DRS-R-98 total scale, cutoff scores of 15.25 and 17.75 were chosen as the two best options, resulting in the same sensitivity (92%), but the higher cutoff had a higher specificity (95%). The best cutoff score for the DRS-R-98 severity scale was 15.25, resulting in 92% sensitivity and 93% specificity.

The delirium group was then compared only with the dementia group, and the best cutoff scores (17.75 for total and 15.25 for severity) resulted in 92% sensitivity for both of the DRS-R-98 scales but a higher specificity for the total scale (85%) than for the severity scale (77%). On the basis of clinical experience, diagnostic items are expected to have less overlap between delirium and dementia than other symptoms.

A separate ROC analysis was performed that excluded the two resolving delirium subjects because they had significantly lower DRS-R-98 scores (see above) than other delirium subjects and would be expected to affect discrimination between groups. At the cutoff of 17.75, the DRS-R-98 total scale sensitivity increased to 100%, and higher cutoffs (21.5 and 22.5) each resulted in a somewhat lower sensitivity (91%) but increased specificities (92% and 100%, respectively). On the DRS-R-98 severity scale with a cutoff score of 15.25, excluding these two subjects resulted in an increased sensitivity of 100% with the same specificity (77%), whereas raising the cutoff score to 17 reduced the sensitivity and increased the specificity.

**DISCUSSION**

We describe a new delirium symptom rating scale, the DRS-R-98, that was substantially revised from the original scale, the DRS. We present data to show that this new scale functions reliably and validly both as a severity scale for repeated measurements and as a total scale that includes diagnostic items, by studying it in comparison to four other diagnostic inpatient groups whose illness severity was comparable to that of the delirium group. The DRS-R-98 is designed to measure a breadth of delirium symptoms, using phenomenological items common to psychiatric practice without making assumptions about what comprises certain domains as cited elsewhere in the literature—for example, “clouding of consciousness,” “confusion,” “incoherence,” or “psychomotor behavior.” By assessing purer symptoms individually, researchers can more accurately describe delirium, how its symptoms evolve during an episode and respond to treatment, and which symptoms might represent core symptoms or cluster into syndrome subtypes. In addition, the 13-item severity scale is more easily repeated at shorter intervals for treatment studies or to elucidate what symptom

### TABLE 3. Pre/post treatment scores (mean ± SD) in a delirium subgroup

<table>
<thead>
<tr>
<th>Scale</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRS</td>
<td>18.3 ± 3.9</td>
<td>3.5 ± 2.1*</td>
</tr>
<tr>
<td>DRS-R-98</td>
<td>21.5 ± 5.6</td>
<td>5.2 ± 3.5*</td>
</tr>
<tr>
<td>CTD</td>
<td>8.0 ± 5.6</td>
<td>24.3 ± 4.3**</td>
</tr>
<tr>
<td>CGI</td>
<td>4.5 ± 1.1</td>
<td>1.8 ± 0.75*</td>
</tr>
</tbody>
</table>

*Paired t-tests, \( P \leq 0.001. 
**Paired t-test, \( P \leq 0.01. 

| Note: | DRS = Delirium Rating Scale; DRS-R-98 = Delirium Rating Scale-Revised-98; CTD = Cognitive Test for Delirium; CGI = Clinical Global Impression. |

### TABLE 4. Alpha coefficients for DRS-R-98 total and DRS-R-98 severity scales when each item is removed from the scale

<table>
<thead>
<tr>
<th>Item</th>
<th>DRS-R-98 Total</th>
<th>DRS-R-98 Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep-wake cycle disturbance</td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td>Perceptions and hallucinations</td>
<td>0.90</td>
<td>0.87</td>
</tr>
<tr>
<td>Delusions</td>
<td>0.90</td>
<td>0.87</td>
</tr>
<tr>
<td>Lability of affect</td>
<td>0.90</td>
<td>0.86</td>
</tr>
<tr>
<td>Language</td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td>Thought process abnormalities</td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td>Motor agitation</td>
<td>0.89</td>
<td>0.86</td>
</tr>
<tr>
<td>Motor retardation</td>
<td>0.90</td>
<td>0.87</td>
</tr>
<tr>
<td>Orientation</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>Attention</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>Short-term memory</td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td>Long-term memory</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>Visuospatial ability</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>Temporal onset of symptoms</td>
<td>0.88</td>
<td>N/A</td>
</tr>
<tr>
<td>Fluctuation of symptom severity</td>
<td>0.88</td>
<td>N/A</td>
</tr>
<tr>
<td>Physical disorder</td>
<td>0.89</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: DRS-R-98 = Delirium Rating Scale-Revised-98; N/A = not applicable.
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Changes constitute the characteristic waxing and waning of delirium during a 24-hour period.

The DRS-R-98 appears to be a valid measure of delirium. We analyzed its characteristics for both the total scale and the severity scale. The DRS-R-98 correlated highly with scores on the DRS and the CTD in delirious subjects. Its mean and median scores were significantly higher in delirium subjects than in any of its comparison groups: dementia, depression, schizophrenia, or “other.” These patient groups were well matched for illness severity; such matching is especially important when comparing dementia and delirium groups. There was little overlap in the boxplot distribution of DRS-R-98 scores in the delirium group compared with other diagnostic groups, although the DRS-R-98 total scale had less overlap with other diagnostic groups than did the severity scale, as would be expected.

Cronbach’s alpha coefficient was high (0.90), indicating high internal consistency among its 16 items; this level of consistency was largely maintained for the severity scale alone (0.87). Each item also individually contributed strongly to the scale. Interrater reliability was excellent among pairs of three psychiatrist raters doing independent ratings during a single clinical interview.

The DRS-R-98 was compared with the CTD instead of the MMSE because the CTD was designed for delirium and can be administered to nonverbal or intubated patients. Also, the CTD has the advantage of assessing some executive and more nonverbal cognitive functions of the nondominant hemisphere, which complements the verbal modalities we used during administration of the DRS-R-98. Despite this difference, the two scales correlated highly. In addition, two recent studies8,9 that relied on cognitive tests to assess delirium found high discriminating ability of the items measuring functions of the nondominant hemisphere, in keeping with the neuroanatomical hypothesis that the right-sided neural pathways, often under-studied, are integral to delirium pathophysiology.10,11

Subjects with resolving delirium were included in the delirium group for all analyses, but these subjects had less impairment on scale measurements, and their data affected the cutoff when delirium was compared with dementia. In clinical practice when such cases will be assessed, the differential from dementia will depend in part on taking a careful history. Focusing on just the DRS-R-98 diagnostic items may assist in this process. A different study using the DRS to compare delirious and delirious-demented elderly subjects found that delirium symptoms largely overshadowed dementia symptoms, although there were still some differences.5 Longitudinal testing of the DRS-R-98 in delirious-demented patients whose delirium resolves will be needed to determine which items best distinguish these groups.

In our study the CTD was less robust in distinguishing dementia from delirium, and many in our dementia group scored lower than the cutoff score of 19 points recommended in Hart and colleagues’ original report.5 Our dementia group had a CTD mean score of about 18 and showed more overlap with the delirium group on boxplots than did the DRS or DRS-R-98. This is likely because the CTD measures only one dimension of delirium phenomenology, unlike these broader symptom scales.

Two delirium severity rating instruments have been published in recent years. The Confusional State Evaluation (CSE)12 is a three-part, 22-item scale from Sweden that was tested only in delirium patients (N ranged from 28 to 51 patients). Thus, no comparison was made with dementia patients, nor were sensitivity and specificity values obtainable. In addition, patients with comorbid dementia were included in the delirium group, which significantly confounds phenomenologic validity of the scale as a delirium assessment tool. Dementia patients have different symptom severity even for some overlapping symptoms.13,14 O’Keefe’s Delirium Assessment Scale (DAS)15 used operationalized DSM-III criteria to compare delirious, delirious-demented, demented, and not cognitively impaired groups (N=48). Sensitivity

### TABLE 5. Sensitivity and specificity based on ROC analysis

<table>
<thead>
<tr>
<th>Comparison Groups</th>
<th>Cutoff Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Cutoff Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
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<tr>
<td>DRS-R-98 Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Delirium vs. dementia</td>
<td>17.75</td>
<td>92</td>
<td>85</td>
<td>15.25</td>
<td>92</td>
<td>77</td>
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<tr>
<td>Delirium vs. dementia*</td>
<td>17.75</td>
<td>100</td>
<td>85</td>
<td>15.25</td>
<td>100</td>
<td>77</td>
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<tr>
<td></td>
<td>21.50</td>
<td>91</td>
<td>92</td>
<td>17.00</td>
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<tr>
<td></td>
<td>22.50</td>
<td>91</td>
<td>100</td>
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<td></td>
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</tr>
<tr>
<td>Delirium vs. all other groups</td>
<td>15.25</td>
<td>92</td>
<td>86</td>
<td>15.25</td>
<td>92</td>
<td>93</td>
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<tr>
<td></td>
<td>17.75</td>
<td>92</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*When two cases of “delirium resolving” were removed from the “delirium” group.

Note: ROC = receiver-operator characteristic; DRS-R-98 = Delirium Rating Scale-Revised-98.
ranged from 83% to 88% and specificity from 79% to 88% for delirium diagnosis, and intrarater reliability ranged from 0.66 to 0.99. Onset of symptoms was not specifically rated, but was arbitrarily scored as acute.

Three recent delirium studies have used only cognitive tests to assess delirium. Hart et al.9 used a stepwise discriminant analysis of CTD item scores to determine that an abbreviated version using 2 of 9 items—visual attention span and recognition memory for pictures—discriminated 19 delirium patients in the intensive care unit from other diagnostic groups with high reliability (alpha = 0.79). Bettin et al.15 found correlations of about 0.50 between cognitive tests (forward digit span and similarities) and expert serial ratings using DSM-III-R in 22 delirious and 15 control elderly subjects. These investigators felt that backward digit span had a floor effect but recommended forward digit span for monitoring symptom severity in delirium. However, O’Keefe and Grosney16 found that forward digit span did not distinguish delirium from dementia patients, suggesting that this test would be inadequate in clinical situations. Further, they found that a global rating of attentiveness, digit span backwards, and a cancellation test distinguished delirium from dementia, but that the MMSE and a vigilance test did not. However, they excluded anyone with an MMSE score ≤10, which may have biased the results away from more severe delirium cases. Also, 4 of 18 delirium subjects had comorbid dementia. Although the use of such tests is clinically expedient, it is unlikely that cognitive tests alone can adequately capture the breadth of symptoms needed to assess delirium severity and distinguish delirium from dementia.

In summary, the DRS-R-98 is a valid and reliable symptom severity scale for delirium that has advantages over the original DRS for flexibility and breadth of symptom coverage. It is the only validated delirium rating instrument with sufficient breadth and detail for use in phenomenology and in longitudinal studies of delirium patients, including serial measurements in treatment research. Moreover, unlike most other delirium instruments, it was validated against a dementia group and other psychiatric diagnostic groups. It is currently being translated into other languages. Further research using the DRS-R-98 is needed to extend and replicate its utility, including longitudinal comparisons of conditions that can occur comorbidly with delirium.

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References

APPENDIX A. The Delirium Rating Scale-Revised-98

GENERAL INSTRUCTIONS FOR USE OF THE DRS-R-98

The Delirium Rating Scale-Revised-98 (DRS-R-98) is a 16-item clinician-rated scale with two sections and a score sheet. The 13-item severity section can be scored separately from the 3-item diagnostic section; their sum constitutes the total scale score. The severity section functions as a separate scale for repeated measures at short intervals within an episode of delirium. The total scale can be scored initially to enhance differential diagnosis by capturing characteristic features of delirium, such as acute onset and fluctuation of symptom severity. Concomitant use of diagnostic criteria such as from the International Classification of Disease (ICD)-10 Research Manual or versions of the Diagnostic and Statistical Manual (DSM) will enhance its ability to measure delirium when demented patients are involved because the DRS-R-98 is mostly a severity scale.

All items are anchored by text descriptions as guides for rating along a continuum from normal to severely impaired. Severity items are rated from 0 to 3 points and diagnostic items from 0 to either 2 or 3 points. The scoresheet offers space to circle item ratings and to optionally note characteristics of symptoms (e.g., type of hallucination) or the condition of patients during the ratings (e.g., restrained).

Though designed to be rated by psychiatrists, other physicians, nurses, and psychologists can use it if they have had appropriate clinical training in evaluating psychiatric phenomenology in medically ill patients. It can be used in research or comprehensive clinical evaluations. It does require enough clinical expertise to distinguish, for example, language problems from thought process abnormalities or delusions from confabulation. Even with sufficient clinical expertise, at times it may be difficult to make certain distinctions and more than one item may need to be rated to reflect that presentation (e.g., Wernicke’s aphasia and severe loose associations).

The DRS-R-98 can be used in conjunction with the Delirium Rating Scale (DRS) for certain research purposes because they differ substantially in descriptions of items. For example, the DRS may be more helpful for patients emerging from stupor.

The DRS-R-98 measures symptoms without regard to cause. Thus, preexisting conditions may add points; for example, dysphasia will affect the language item. However, longitudinal ratings will clarify effects of preexisting conditions after the delirium has cleared. The inclusion of mentally retarded and Cognitive Disorder Not Otherwise Specified subjects during the validation study suggests that delirium can still be reliably assessed in the presence of such confounds.

All sources of available information are used to rate the patient—family, visitors, hospital staff, doctors, medical chart, and so on. Even a hospital roommate can contribute information. During interviews for such collateral information, ensure that terms used are mutually understood before accepting others’ interpretation of symptoms.

Any time frame can be chosen for the DRS-R-98. Time frames greater than 24 hours are probably not necessary as this coincides with circadian rhythms and their possible disruptions. Shorter periods (e.g., 4 to 12 hours) may be helpful for intervention assessment—either for clinical or research purposes—though the fluctuating nature of symptom severity may need to be considered when interpreting the scores. Choosing periods less than 2 hours risks not adequately capturing some items (e.g., hallucinations, sleep-wake cycle disturbance) that occur intermittently. In such circumstances, a researcher may wish to use a smaller subset of items to monitor the patient, though such a subscale has not been validated.

Some items are rated based on examination and history, while others incorporate formal testing (e.g., cognitive and language items). It may be useful for a given clinician to standardize the questions used routinely in his/her practice, for example, asking months of the year backwards for attention, clockface or puzzle pieces for visuospatial ability, and particular items for confrontational naming. Adjunctive use of the Cognitive Test for Delirium (CTD) or some of its items offers the advantage of not needing the patient to write or speak. Evaluation of general information included in the long-term memory item should be geared appropriately to the educational and cultural background of the patient.

When both interview behavior and formally elicited responses are used, the relative contribution of each needs to be weighed by the clinician and a scoring judgment needs to be made. For example, on the attention item a patient has difficulty with reciting months of the year backwards but attends fairly well during the interview, or on long-term memory a patient recalls personal remote information accurately, but cannot recall well on formal testing of three words after 15 minutes.

Despite text descriptions for each item rating, the rater may need to exercise judgment in scoring. At times an intermediate rating with a 0.5 point interval may be needed (e.g., 2.5 points) if the rater cannot decide between two choices. Also, the time frame chosen may affect how to weigh the presence of certain symptoms. For example, a patient who has periods of intense hyperactivity and hypoactivity in a 24-hour period would be rated as “3” on both items #7 and 8. If this same patient is rated for a shorter interval that only involved hyperactivity, then item #7 would be rated as “3” and item #8 would be “0”.

In cases where an item cannot be rated at all, the rater should make a notation on the score sheet and decide later how to handle that item’s scoring. If used for research, a statistical consultant may have to advise. If used clinically, altering the denominator of the maximum possible score may be acceptable.

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This is a revision of the Delirium Rating Scale (Trzepacz et al. 1988). It is used for initial assessment and repeated measurements of delirium symptom severity. The sum of the 13 item scores provides a severity score. All available sources of information are used to rate the items (nurses, family, chart) in addition to examination of the patient. For serial repeated ratings of delirium severity, reasonable time frames should be chosen between ratings to document meaningful changes because delirium symptom severity can fluctuate without interventions.

### DRS-R-98 SEVERITY SCALE

#### 1. Sleep-wake cycle disturbance
Rate sleep-wake pattern using all sources of information, including from family, caregivers, nurses’ reports, and patient. Try to distinguish sleep from resting with eyes closed.

- 0. Not present
- 1. Mild sleep continuity disturbance at night or occasional drowsiness during the day
- 2. Moderate disorganization of sleep-wake cycle (e.g., falling asleep during conversations, napping during the day or several brief awakenings during the night with confusion/behavioral changes or very little nighttime sleep)
- 3. Severe disruption of sleep-wake cycle (e.g., day-night reversal of sleep-wake cycle or severe circadian fragmentation with multiple periods of sleep and wakefulness or severe sleeplessness.)

#### 2. Perceptual disturbances and hallucinations
Illusions and hallucinations can be of any sensory modality. Misperceptions are “simple” if they are uncomplicated, such as a sound, noise, color, spot, or flashes and “complex” if they are multidimensional, such as voices, music, people, animals, or scenes. Rate if reported by patient or caregiver, or inferred by observation.

- 0. Not present
- 1. Illusions present
- 2. Hallucinations present

#### 3. Delusions
Delusions can be of any type, but are most often persecutory. Rate if reported by patient, family or caregiver. Rate as delusional if ideas are unlikely to be true yet are believed by the patient who cannot be dissuaded by logic. Delusional ideas cannot be explained otherwise by the patient’s usual cultural or religious background.

- 0. Not present
- 1. Unusual or overvalued ideation that does not reach delusional proportions or could be plausible
- 2. Delusional

#### 4. Lability of affect
Rate the patient’s affect as the outward presentation of emotions and not as a description of what the patient feels.

- 0. Not present
- 1. Affect somewhat altered or incongruent to situation; changes over the course of hours; emotions are mostly under self-control
- 2. Affect is often inappropriate to the situation and intermittently changes over the course of minutes; emotions are not consistently under self-control, though they respond to redirection by others
- 3. Severe and consistent disinhibition of emotions; affect changes rapidly, is inappropriate to context, and does not respond to redirection by others

#### 5. Language
Rate abnormalities of spoken, written or sign language that cannot be otherwise attributed to dialect or stuttering. Assess fluency, grammar, comprehension, semantic content and naming. Test comprehension and naming nonverbally if necessary by having patient follow commands or point.

- 0. Normal language
- 1. Mild impairment including word-finding difficulty or problems with naming or fluency
- 2. Moderate impairment including comprehension difficulties or deficits in meaningful communication (semantic content)
- 3. Severe impairment including nonsensical semantic content, word salad, muteness, or severely reduced comprehension
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6. Thought process abnormalities
Rate abnormalities of thinking processes based on verbal or written output. If a patient does not speak or write, do not rate this item.

0. Normal thought processes
1. Tangential or circumstantial
2. Associations loosely connected occasionally, but largely comprehensible
3. Associations loosely connected most of the time

7. Motor agitation
Rate by observation, including from other sources of observation such as by visitors, family and clinical staff. Do not include dyskinesia, tics, or chorea.

0. No restlessness or agitation
1. Mild restlessness of gross motor movements or mild fidgetiness
2. Moderate motor agitation including dramatic movements of the extremities, pacing, fidgeting, removing intravenous lines, etc.
3. Severe motor agitation, such as combativeness or a need for restraints or seclusion

8. Motor retardation
Rate movements by direct observation or from other sources of observation such as family, visitors, or clinical staff. Do not rate components of retardation that are caused by parkinsonian symptoms. Do not rate drowsiness or sleep.

0. No slowness of voluntary movements
1. Mildly reduced frequency, spontaneity or speed of motor movements, to the degree that may interfere somewhat with the assessment.
2. Moderately reduced frequency, spontaneity or speed of motor movements to the degree that it interferes with participation in activities or self-care
3. Severe motor retardation with few spontaneous movements

9. Orientation
Patients who cannot speak can be given a visual or auditory presentation of multiple choice answers. Allow patient to be wrong by up to 7 days instead of 2 days for patients hospitalized more than 3 weeks. Disorientation to person means not recognizing familiar persons and may be intact even if the person has naming difficulty but recognizes the person. Disorientation to person is most severe when one doesn’t know one’s own identity and is rare. Disorientation to person usually occurs after disorientation to time and/or place.

0. Oriented to person, place and time
1. Disoriented to time (e.g., by more than 2 days or wrong month or wrong year) or to place (e.g., name of building, city, state), but not both
2. Disoriented to time and place
3. Disoriented to person

10. Attention
Patients with sensory deficits or who are intubated or whose hand movements are constrained should be tested using an alternate modality besides writing. Attention can be assessed during the interview (e.g., verbal perseverations, distractibility, and difficulty with set shifting) and/or through use of specific tests, e.g., digit span.

0. Alert and attentive
1. Mildly distractible or mild difficulty sustaining attention, but able to refocus with cueing. On formal testing makes only minor errors and is not significantly slow in responses
2. Moderate inattention with difficulty focusing and sustaining attention. On formal testing, makes numerous errors and either requires prodding to focus or finish the task
3. Severe difficulty focusing and/or sustaining attention, with many incorrect or incomplete responses or inability to follow instructions. Distractible by other noises or events in the environment

11. Short-term memory
Defined as recall of information (e.g., 3 items presented either verbally or visually) after a delay of about 2 to 3 minutes. When formally tested, information must be registered adequately before recall is tested. The number of trials to register as well as effect of cueing can be noted on scoresheet. Patient should not be allowed to rehearse during the delay period and should be distracted during that time. Patient may speak or nonverbally communicate to the examiner the identity of the correct items. Short-term deficits noticed during the course of the interview can be used also.

0. Short-term memory intact
1. Recalls 2/3 items; may be able to recall third item after category cueing
2. Recalls 1/3 items; may be able to recall other items after category cueing
3. Recalls 0/3 items
12. **Long-term memory**
   Can be assessed formally or through interviewing for recall of past personal (e.g., past medical history or information or experiences that can be corroborated from another source) or general information that is culturally relevant. When formally tested, use a verbal and/or visual modality for 3 items that are adequately registered and recalled after at least 5 minutes. The patient should not be allowed to rehearse during the delay period during formal testing. Make allowances for patients with less than 8 years of education or who are mentally retarded regarding general information questions. Rating of the severity of deficits may involve a judgment about all the ways long-term memory is assessed, including recent and/or remote long-term memory ability informally tested during the interview as well as any formal testing of recent long-term memory using 3 items.

   0. No significant long-term memory deficits
   1. Recalls 2/3 items and/or has minor difficulty recalling details of other long-term information
   2. Recalls 1/3 items and/or has moderate difficulty recalling other long-term information
   3. Recalls 0/3 items and/or has severe difficulty recalling other long-term information

13. **Visuospatial ability**
   Assess informally and formally. Consider patient’s difficulty navigating one’s way around living areas or environment (e.g., getting lost). Test formally by drawing or copying a design, by arranging puzzle pieces, or by drawing a map and identifying major cities, etc. Take into account any visual impairments that may affect performance.

   0. No impairment
   1. Mild impairment such that overall design and most details or pieces are correct; and/or little difficulty navigating in his/her surroundings
   2. Moderate impairment with distorted appreciation of overall design and/or several errors of details or pieces; and/or needing repeated redirection to keep from getting lost in a newer environment despite, trouble locating familiar objects in immediate environment
   3. Severe impairment on formal testing; and/or repeated wandering or getting lost in environment

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**DRS-R-98 OPTIONAL DIAGNOSTIC ITEMS**

These three items can be used to assist in the differentiation of delirium from other disorders for diagnostic and research purposes. They are added to the severity score for the total scale score, but are NOT included in the severity score.

14. **Temporal onset of symptoms**
   Rate the acuteness of onset of the initial symptoms of the disorder or episode being currently assessed, not their total duration. Distinguish the onset of symptoms attributable to delirium when it occurs concurrently with a different preexisting psychiatric disorder. For example, if a patient with major depression is rated during a delirium episode due to an overdose, then rate the onset of the delirium symptoms.

   0. No significant change from usual or longstanding baseline behavior
   1. Gradual onset of symptoms, occurring over a period of several weeks to a month
   2. Acute change in behavior or personality occurring over days to a week
   3. Abrupt change in behavior occurring over a period of several hours to a day

15. **Fluctuation of symptom severity**
   Rate the waxing and waning of an individual or cluster of symptom(s) over the time frame being rated. Usually applies to cognition, affect, intensity of hallucinations, thought disorder, language disturbance. Take into consideration that perceptual disturbances usually occur intermittently, but might cluster in period of greater intensity when other symptoms fluctuate in severity.

   0. No symptom fluctuation
   1. Symptom intensity fluctuates in severity over hours
   2. Symptom intensity fluctuates in severity over minutes

16. **Physical disorder**
   Rate the degree to which a physiological, medical or pharmacological problem can be specifically attributed to have caused the symptoms being assessed. Many patients have such problems but they may or may not have causal relationship to the symptoms being rated.

   0. None present or active
   1. Presence of any physical disorder that might affect mental state
   2. Drug, infection, metabolic disorder, CNS lesion or other medical problem that specifically can be implicated in causing the altered behavior or mental state

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## DRS-R-98 SCORESHEET

<table>
<thead>
<tr>
<th>Severity Item</th>
<th>Item Score</th>
<th>Optional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep-wake cycle</td>
<td>0 1 2 3</td>
<td>Naps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nocturnal disturbance only</td>
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<td>Day-night reversal</td>
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<td>Perceptual disturbances</td>
<td>0 1 2 3</td>
<td>Sensory type of illusion or hallucination:</td>
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<tr>
<td></td>
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<td>auditory, visual, olfactory, tactile</td>
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<td>Format of illusion or hallucination:</td>
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<td></td>
<td>simple, complex</td>
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<tr>
<td>Delusions</td>
<td>0 1 2 3</td>
<td>Type of delusion:</td>
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<tr>
<td></td>
<td></td>
<td>Nature: poorly formed, systematized</td>
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<tr>
<td>Lability of affect</td>
<td>0 1 2 3</td>
<td>Type: angry, anxious, dysphoric, elated</td>
</tr>
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<td></td>
<td></td>
<td>irritable</td>
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<td>0 1 2 3</td>
<td>Check here if intubated, mute, etc.</td>
</tr>
<tr>
<td>Thought process</td>
<td>0 1 2 3</td>
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<td>Check here if restrained</td>
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<tr>
<td>Motor retardation</td>
<td>0 1 2 3</td>
<td>Check here if restrained</td>
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<td>Orientation</td>
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<td></td>
<td>Place:</td>
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<td>Person:</td>
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<tr>
<td>Attention</td>
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<td>0 1 2 3</td>
<td>Record # of trials for registration of items:</td>
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<tr>
<td></td>
<td></td>
<td>Check here if category cueing helped</td>
</tr>
<tr>
<td>Long-term memory</td>
<td>0 1 2 3</td>
<td>Check here if category cueing helped</td>
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<tr>
<td>Visuospatial ability</td>
<td>0 1 2 3</td>
<td>Check here if unable to use hands</td>
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### Diagnostic Item

<table>
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<tr>
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<tbody>
<tr>
<td>Temporal onset of symptoms</td>
<td>Check here if symptoms appeared on a background of other psychopathology</td>
</tr>
<tr>
<td>Fluctuation of symptom severity</td>
<td>Check here if symptoms only appear during the night</td>
</tr>
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