# Center for Epidemiological Studies Depression Scale (CES-D)

## Purpose
The CES-D is a brief self-report measure that assesses symptoms of depression in the general population.

## Link to Instrument

### Instrument Details

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Area of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES-D</td>
<td>Depression</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Administration Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Reported Outcomes</td>
<td>Paper &amp; Pencil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>Cost Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Free</td>
<td>Available in:</td>
</tr>
</tbody>
</table>

## Diagnosis/Conditions
- Arthritis + Joint Conditions
- Brain Injury Recovery
- Cancer Rehabilitation
- Spinal Cord Injury
- Stroke Recovery
POPLATIONS

Stroke  Spinal Injuries  Orthopedic Surgery  Older Adults and Geriatric Care
Non-Specific Patient Population  Cancer

KEY DESCRIPtIONS

- A 20-item, self-report measure designed to be used in the general population that assess current symptoms of depression (i.e. this week).
- Items are based on symptoms associated with depression used in previously validated measures of depression.

NUMBER OF ITEMS

20

EQUIPMENT REQUIRED

- Pencil
- Paper

TIME TO ADMINISTER

20 minutes
10-20 MINUTES

REQUIRED TRAINING

No Training

AGE RANGES

<table>
<thead>
<tr>
<th>Adult</th>
<th>Elderly Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 64</td>
<td>65 +</td>
</tr>
</tbody>
</table>

ICF DOMAIN

Activity

MEASUREMENT DOMAIN

Emotion
**CONSIDERATIONS**

- 10 Item version of the CES-D is available
- The CES-D has been translated into a number of languages
- The CES-D requires a 6th grade reading level
- A children's version is also available

**Chronic Stroke:** (Agrell & Dehlin, 1989)

Some items contained in the CES-D did not significantly correlate with the sum of the measures score, these include:

- I felt fearful
- People were unfriendly
- I felt that people disliked me

Do you see an error or have a suggestion for this instrument summary? Please e-mail us!

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**Non-Specific Patient Population**

**STANDARD ERROR OF MEASUREMENT (SEM)**

**Hepatitis C population:** (Clark et al, 2002; n = 116; median age = 46 (range = 27–63) years)

**CES-D scores pre and post-treatment:**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Mean</th>
<th>SEM*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treatment</td>
<td>13.974</td>
<td>0.907</td>
<td>12.177–15.771</td>
</tr>
<tr>
<td>4 weeks post</td>
<td>19.543</td>
<td>0.977</td>
<td>17.607–21.479</td>
</tr>
<tr>
<td>24 weeks post</td>
<td>19.966</td>
<td>1.053</td>
<td>17.880–22.051</td>
</tr>
</tbody>
</table>

*SEM = Standard Error of the Mean

**CUT-OFF SCORES**

**Original Validation Study:** (Radloff 1977; General population)
The standard cut-off score suggesting depression > 16 (Sensitivity = 0.95, Specificity = 0.29)

**General Population:** (Wada et al 2006, n = 2219; age 21–68 years; used to assess depression in the workplace; Japanese sample)

- Cut-off suggested for Japanese general population > 19 points (Sensitivity = 92.7%, Specificity = 91.8%)

**TEST/RETEST RELIABILITY**

**Original Validation Study:** (Radloff, 1977):

Original Test-Retest by Time and Mode of Administration Indicating Depression:

By mail (Completed by participant):

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>n</th>
<th>Strength</th>
<th>r (between administrations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Week</td>
<td>139</td>
<td>Adequate</td>
<td>0.51</td>
</tr>
<tr>
<td>4 Weeks</td>
<td>105</td>
<td>Adequate</td>
<td>0.67</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>97</td>
<td>Adequate</td>
<td>0.59</td>
</tr>
<tr>
<td>8 Weeks</td>
<td>78</td>
<td>Adequate</td>
<td>0.59</td>
</tr>
<tr>
<td>Total</td>
<td>419</td>
<td>Adequate</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Reinterview:

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>n</th>
<th>Strength</th>
<th>r (between administrations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Months</td>
<td>378</td>
<td>Adequate</td>
<td>0.48</td>
</tr>
<tr>
<td>6 Months</td>
<td>349</td>
<td>Adequate</td>
<td>0.54</td>
</tr>
<tr>
<td>12 Months</td>
<td>472</td>
<td>Adequate</td>
<td>0.49</td>
</tr>
</tbody>
</table>

**Psychiatric Patients:** (Roberts et al, 1989; n = 562, study designed to assess possible language and/or cultural differences between groups when assessed with the CES-D)

**CES-D Test Re-test Reliabilities for the CES-D Scale by Ethnic/Language Group and Time Interval between Interviews**
<table>
<thead>
<tr>
<th>Group</th>
<th>Strength</th>
<th>Reliability</th>
<th>n</th>
<th>Strength</th>
<th>Reliability</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglo</td>
<td>Adequate</td>
<td>.741</td>
<td>51</td>
<td>Adequate</td>
<td>.781</td>
<td>28</td>
</tr>
<tr>
<td>Hispanic English / English</td>
<td>Adequate</td>
<td>.764</td>
<td>13</td>
<td>Poor</td>
<td>.627</td>
<td>9</td>
</tr>
<tr>
<td>Hispanic Spanish / Spanish</td>
<td>Poor</td>
<td>.497</td>
<td>19</td>
<td>Adequate</td>
<td>.797</td>
<td>7</td>
</tr>
<tr>
<td>Hispanic English / Spanish</td>
<td>Adequate</td>
<td>.711</td>
<td>27</td>
<td>Poor</td>
<td>.432</td>
<td>21</td>
</tr>
<tr>
<td>Hispanic Spanish / English</td>
<td>Poor</td>
<td>.608</td>
<td>24</td>
<td>Excellent</td>
<td>.835</td>
<td>15</td>
</tr>
</tbody>
</table>

**CONSTRUCT VALIDITY**

**Hepatitis C Population: (Clark et al, 2002)** Four factors were found, they include:

- Negative affect
- Positive affect
- Somatic
- Depressed affect/somatic

**CONTENT VALIDITY**

**Original Validation Study: (Radloff, 1977):** Symptoms of depression were identified from both clinical literature and factor analytic studies. Components of the measure include:

- Depressed mood
- Feelings of guilt and worthlessness
- Feelings of helplessness and hopelessness
- Psychomotor retardation
- Loss of appetite
- Sleep disturbance

**Meta-analysis of Depression Scales: (Shafe, 2006; n = 91 studies with 51,210 participants)**
Common Factors Across Measures of Depression:

<table>
<thead>
<tr>
<th></th>
<th>CES-D</th>
<th>BDI</th>
<th>HRSD</th>
<th>Zung</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Depression</strong></td>
<td>Depressed affect</td>
<td>Negative attitude toward self</td>
<td>Depression</td>
<td>Negative symptoms</td>
</tr>
<tr>
<td><strong>Somatic Symptoms</strong></td>
<td>Somatic</td>
<td>Somatic</td>
<td>Somatic</td>
<td>Somatic</td>
</tr>
<tr>
<td><strong>Positive Symptoms</strong></td>
<td>Positive affect</td>
<td></td>
<td></td>
<td>Positive symptoms</td>
</tr>
</tbody>
</table>

CES-D = Center for Epidemiological Studies Depression Scale  
BDI = Beck Depression Inventory  
HRSD = Hamilton Rating Scale for Depression  
Zung = Zung Self-Rating Depression Scale

Two items were more likely to be endorsed by African American than white Participants

- People are unfriendly
- People dislike me

One item was more likely to be endorsed by Female than male participants

- Crying spells

**FACE VALIDITY**

Not statistically assessed

**RESPONSIVENESS**

**Rhinitis** (Chen, 2005; n = 109; mean age = 40 (8.2) years; assessed at baseline and 24 months.

- Baseline CES-D mean (SD) = 10.5 (10)
- 24 month follow-up CESD 11.5 (9.9)
- Observed change* = 1.0 (1.3)
- Standardized Response Mean (SRM)** = 0.09 (Moderate)

*(score at followup) - (score at baseline)  
**(score at follow-up) - (score at baseline)/(SD of observed change)
**Stroke**

**CUT-OFF SCORES**

*Chronic Stroke*: (Agrell & Dehlin, 1989)

CES-D Cut-off Scores, Sensitivity & Specificity; A Comparison Across Measures Indicating Depression

<table>
<thead>
<tr>
<th>Measure</th>
<th>Recommended cut-score</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES-D</td>
<td>20</td>
<td>56</td>
<td>91</td>
</tr>
<tr>
<td>GDS</td>
<td>10</td>
<td>88</td>
<td>64</td>
</tr>
<tr>
<td>Zung</td>
<td>45</td>
<td>76</td>
<td>96</td>
</tr>
</tbody>
</table>

CES-D = Center for Epidemiologic Studies Depression Scale
GDS = Geriatric Depression Scale

**INTERNAL CONSISTENCY**

*Chronic Stroke*: (Agrell & Dehlin, 1989; n = 39; mean age = 80 (range 61-93) years; mean time since stroke onset = 14 months)

—Poor internal consistency; (Cronbach’s alpha = 0.64)

**CRITERION VALIDITY (PREDICTIVE/CONCURRENT)**

*Chronic Stroke*: (Agrell & Dehlin, 1989)

- Excellent: CES-D and the Zung ($r = 0.81$)
- Excellent: CES-D and the Geriatric Depression Scale ($r = 0.82$)

**CONSTRUCT VALIDITY**

*Acute Stroke*: (Shinar et al, 1986; n = 27; median age = 56 (range = 28 to 73) years, all participants non-aphasic; first assessed 7 to 10 days post stroke)

CES-D Administered by a Nurse and Psychiatric Research Assistant

<table>
<thead>
<tr>
<th>Measure:</th>
<th>Strength</th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
</table>
Psychiatric diagnosis, DSM-III  Excellent  0.77*  $p < .0001$
Zung depression scale  Excellent  0.65  $p < .002$
Hamilton depression test  Adequate  0.57  $p < .002$
Present state exam  Excellent  0.74  $p < .0001$
*Spearman’s rho

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**Cancer**

**TEST/RETEST RELIABILITY**

**Cancer Patients**: (Hann et al, 1999; $n = 117$; mean age = 53.7 (12.4) years; healthy comparison $n = 62$, mean age = 53.5 (11.3) years)

**CES-D test re-test scores of Cancer patients and healthy comparisons**

<table>
<thead>
<tr>
<th>Interval</th>
<th>Patient Group*</th>
<th>Healthy Comparison*</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>10.9 (8.9)</td>
<td>8.1 (7.0)</td>
<td>$p &lt; 0.05$</td>
</tr>
<tr>
<td>Time 2 (2–3 weeks later)</td>
<td>12.8 (10.2)</td>
<td>7.8 (7.5)</td>
<td>$p &lt; 0.001$</td>
</tr>
</tbody>
</table>

*Mean (SD)

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**Older Adults and Geriatric Care**

**INTRARATER/INTRARATER RELIABILITY**

**Community Dwelling Elderly Women**: (Bassett et al, 1990; $n = 532$; mean age = 75 years)

- **Adequate** Inter-rater reliability ($r = .597$, $p < .001$)

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**CONTENT VALIDITY**
**Orthopedic Surgery**

**NOMATIVE DATA**

Orthopaedic & Neurological Patients: (Caracciolo & Giaquinto, 2002; n = 101 orthopaedic and 50 neurological patients)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Orthopaedic Patients</th>
<th>Neurological Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CES-D</strong></td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td><strong>MMSE</strong></td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td><strong>CIRS-SI</strong></td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>FIM</strong></td>
<td>72</td>
<td>103</td>
</tr>
<tr>
<td><strong>Ham-D</strong></td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>61</td>
<td>77</td>
</tr>
</tbody>
</table>

1st Q = first quartile  
3rd Q = third quartile

CES-D = Center for Epidemiological Studies-Depression scale  
MMSE = Mini Mental State Examination  
CIRS-SI = Cumulative Illness Rating Scale  
FIM = Functional Independence Measure  
Ham-D = Hamilton rating scale for Depression
CRITERION VALIDITY (PREDICTIVE/CONCURRENT)

Orthopaedic & Neurological Patients: (Caracciolo & Giaquinto, 2002)

- Excellent correlation between CES-D and Ham-D suggesting concurrent validity ($r > 0.60$)

Spinal Injuries

NORMATIVE DATA

Chronic SCI: (Miller et al, 2008; $n = 55$; mean age = 40.6 (12.6) years; ASIA A = 62%, ASIA B = 38%; mean time since injury = 15.2 (11.7) years)

- Mean CES-D scores = 15.2 (range 0–42)
  - 30% scored over 19 points
  - 39% scored over 15 points

TEST/RETEST RELIABILITY

Chronic SCI: (Miller et al, 2008, 2 weeks between assessments)

- Excellent total score test–retest reliability (ICC = 0.87; 95% C.I. 0.79–0.93)

INTERNAL CONSISTENCY

Chronic SCI: (Miller et al, 2008)

- Excellent internal consistency (Cronbach’s alpha = 0.91)

CONSTRUCT VALIDITY

Chronic SCI: (Miller et al, 2008)

<table>
<thead>
<tr>
<th>CES-D, VAS-F and SF-36 Correlations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure</td>
</tr>
<tr>
<td>VAS-F</td>
</tr>
<tr>
<td>SF-36 mental health</td>
</tr>
</tbody>
</table>
SF-36 emotional role function  Adequate  0.55*
SF-36 vitality  Adequate  0.54*
SF-36 pain  Poor  0.27*
SF-36 social role function  Adequate  0.37*
SF-36 physical function  Adequate  0.34*
SF-36 physical role function  Adequate  0.40*
SF-36 general health  Adequate  0.57*

VAS-F = visual analogue scale of fatigue.
*P < 0.05

**Chronic SCI:** (Anton et al, 2008; n = 48 (ASIA A = 30, ASIA B = 18); mean time since injury = 14.9 years)

**Correlation Between the FSS, CES-D, VAS-F and SF-36:**

<table>
<thead>
<tr>
<th>Variable</th>
<th>FSS</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES-D</td>
<td>0.58</td>
<td>.001</td>
</tr>
<tr>
<td>VAS-F</td>
<td>0.67</td>
<td>.000</td>
</tr>
<tr>
<td>SF-36 vitality score</td>
<td>- 0.48</td>
<td>.010</td>
</tr>
</tbody>
</table>

FSS = Fatigue Severity Scale  
VAS-F = Visual Analog Scale for Fatigue  
SF-36 = Medical Outcomes Study 36-Item Short-Form Health Survey

**Floor/Ceiling Effects**

**Chronic SCI:** (Miller et al, 2008)

—Less than 15% of participants scored at one extreme or the another suggesting minimal to no floor or ceiling effect


