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# The CES-D: Four or five factors?

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The Center for Epidemiologic Studies Depression Scale (CES-D) generally has four subscales, based on original factor analytic studies. Our use of the CES-D with a random sample of 400 adults reveals a five-factor solution when data is subjected to a principal components factor analysis with a varimax rotation. This accounts for several items that did not load on previous factor analyses and may indicate the appropriateness of a fifth subscale.

In recent years, the Center for Epidemiologic Studies Depression Scale (CES-D) has emerged as one of the standard instruments for screening populations for overall depression. Devised by Radloff in 1977, the 20 items of the CES-D are meant to represent six major components of depression found in clinical studies and in factor analytic studies of other existing measures: depressed mood, guilt and worthlessness, helplessness, physical slowing, sleep disturbances, and loss of appetite. The scale has been used successfully in both young (Radloff, 1991) and older populations (Fuhrer, Antonucci, Gagnon, & Dartigues, 1992; Wallace & O'Hara, 1992) and is clearly able to differentiate acutely depressed individuals (Husaini, 1980).

In factor analyses with three different samples, the six conceptual areas identified with depressive symptoms merged into three factors (depressed affect, somatic disturbances, and interpersonal problems) in addition to a fourth factor of positive affect that emerged as an artifact of several items that had been included to reduce response set bias (Radloff, 1977). In subsequent work, Radloff and Teri (1986) treated the four factors of the CES-D as subscales, although these subscales are made up of only 17 of the original 20 items (presumably, 3 did not load at an acceptable level in the original factor analyses: 9. "I thought my life had been a failure," 10. "I felt fearful," and 13. "I talked less than usual.")

Although a three-factor solution was found in a study using the CES-D with a population of Mexican American and Puerto Rican women (Stroup-Benham, Lawrence, & Trevino, 1992), most studies that have factor analyzed the scale have found a similar four-factor solution. Zich, Attkisson, and Greenfield (1990), for example, compared the CES-D and the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and found them of equal utility as screening devices for depression in large populations. Zich and her colleagues did a principal components factor analysis on data from 190 CES-D instruments completed by primary care patients and found that 15 of the 20 items loaded at a level of .40 or greater: (1) depressed affect—blues, depressed, lonely, crying spells, and sad; (2) positive affect—felt good, hopeful, happy, and enjoyed life; (3) somatic—appetite, restlessness, and sleep; and (4) interpersonal—people unfriendly, and felt disliked by other people. At least one additional study among healthy and ill subjects found that the four-factor solution for the CES-D fit well (Devins, Orme, Costello, & Binik-Yitzchak, 1988).

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## METHOD AND RESULTS

We administered the CES-D by telephone to a random sample of 400 adults in Omaha, Nebraska, as a part of a larger study. The sample contained 201 women and 199 men and ranged in age from 18 to 86 years (mean = 42.5 yrs., *SD* = 17.0). The subjects were called from a randomly generated list of available telephone numbers and were interviewed by operators trained in opinion polling; all interviews were anonymous in the analysis of data. Because Omaha is a microcosm of the United States demographically, it is frequently used as a test-market city. Total sample CES-D scores ranged from 0 to 45, with a mean of 6.78 and a standard deviation of 7.68, which was slightly lower than the mean of 8.97 (*SD* = 8.50) that Radloff (1991) reported for a sample of 2,440 younger adults.

Data were entered into a principal components factor analysis with a varimax rotation; results appear in Table 1. As can be seen, 19 of the 20 scale items loaded at a level of .40 or higher (the first item, "I was bothered by things that usually don't bother me," did not load at this level). Two of the items loaded on more than one factor.

A five-factor solution emerged: (1) depressed affect—blues, restless, depressed, crying spells, and feeling sad; (2) somatic—appetite, restless, exhausted, sleep disturbance, talked less, and low energy level; (3) interpersonal—talked less, lonely, people unfriendly, and people dislike; (4) positive affect—hopeful, happy, and enjoyed life; and (5) self worth—good as others, feelings of failure, and fearful.

Thus, the fifth factor in our analysis captured feelings of worthlessness that Radloff (1977) had designed in her original construction of the scale, two items of which ("I

**Table 1**
**Varimax Rotated Factor Matrix:**
**Center for Epidemiologic Studies Depression Scale ($N$ = 400)**

| Item | Factor I | II | III | IV | V |
|---|---|---|---|---|---|
| During the past week: | | | | | |
| 1. I was bothered by things that usually don't bother me. | | | | | |
| 2. I did not feel like eating; my appetite was poor. | | .58 | | | |
| 3. I felt that I could not shake off the blues even with help from my family or friends. | .63 | | | | |
| 4. I felt that I was just as good as other people. | | | | | .60 |
| 5. I had trouble keeping my mind on what I was doing. | .60 | .42 | | | |
| 6. I felt depressed. | .51 | | | | |
| 7. I felt that everything I did was an effort. | | .49 | | | |
| 8. I felt hopeful about the future. | | | | .65 | |
| 9. I thought my life had been a failure. | | | | | .56 |
| 10. I felt fearful. | | | | | .64 |
| 11. My sleep was restless. | | .75 | | | |
| 12. I was happy. | | | | .73 | |
| 13. I talked less than usual. | | .53 | .55 | | |
| 14. I felt lonely. | | | .49 | | |
| 15. People were unfriendly. | | | .68 | | |
| 16. I enjoyed life. | | | | .79 | |
| 17. I had crying spells. | .68 | | | | |
| 18. I felt sad. | .68 | | | | |
| 19. I felt that people dislike me. | | | .71 | | |
| 20. I could not get "going." | | .51 | | | |
| Eigenvalue | 5.55 | 1.61 | 1.27 | 1.13 | 1.05 |
| Percentage of variance | 27.8 | 8.1 | 6.3 | 5.6 | 5.2 |

thought my life had been a failure" and "I felt fearful") had not been included in her original selection of items for subscales. This provides some evidence that the CES-D might be used in studies as a scale with five, rather than four, subscales.

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