Psychometric evaluation of a self-report scale to measure adolescent depression: The CESDR-10 in two national adolescent samples in the United States

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A B S T R A C T

Background: There is a need for brief instruments to screen for depression in adolescents that are valid, reliable and freely available. The aim of this study was to investigate the psychometric properties of a 10-item version of the CESD-R (CESDR-10) in two national adolescent samples.

Methods: Sample 1 consisted of N=3777 youths (mean age 15.7) and Sample 2 contained N=1150 adolescents (mean age 14.5). We performed confirmatory factor analysis, evaluated construct validity, examined differential item functioning, and assessed internal consistency reliability (α).

Results: The results suggest generally strong psychometric properties for the CESDR-10. The CFA 1-factor model showed good model fit. Construct validity was partially supported in Sample 1 and mostly supported for Sample 2 based upon the characteristics examined. The CESDR-10 showed configural and metric invariance across both samples and full measurement invariance across sex. There were no notable differences in discrimination parameters or clinically significant differential item functioning between samples or sexes.

Limitations: Criterion related validity was not assessed in this study. Further studies should evaluate the scale in comparison to a psychiatric diagnosis. In addition, this study utilized a web-based format of administration which may influence participants’ answers. In future studies, the CESDR-10 should be administered in other settings to more thoroughly establish its generalizability.

Conclusion: In clinical and non-clinical settings alike, time pressures make the availability of brief but valid screening measures critical. Findings support future use of the CESDR-10.

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1. Introduction

With a 12-month prevalence rate of 4–5% (Jane Costello and Erkanli, 2006; Thapar et al., 2012), depression is relatively common in adolescence (Lopez et al., 2006; Kilpatrick et al., 2003). Depression is a risk factor for adolescent suicide, and leads to increased risk of substance use, obesity, social difficulties, and educational problems (Thapar et al., 2012; Keenan-Miller et al., 2007; Fletcher, 2010). While many scales exist for the measurement of adult depressive symptomatology (Beck et al., 1961; Derogatis et al., 1974; Hamilton, 1960; Kroenke et al., 2001; Radloff, 1977), fewer well-validated scales exist that measure depressive symptoms specifically with adolescents. Age-appropriate screeners are needed because the symptom list varies slightly for adolescents and includes an additional symptom, irritability (American Psychiatric Association, 2000; Stringaris et al., 2012).

Brief measures such as the two-item patient health questionnaire (PHQ-2) (Kroenke et al., 2003) and the Strengths and Difficulties Questionnaire (Goodman, 1997), have been shown to be adequate screening tools for adolescents, yet these scales do not reflect current diagnostic criteria. There are several longer scales that are well validated, such as the Reynolds Adolescent Depression Scale (30-items) (Reynolds, 2010), the Short Mood and Feelings Questionnaire (Messer et al., 1995) (13-items) and the Children’s Depression Inventory-2 (25-items) (Kovacs, 2005) but these often require lengthy administration, making them difficult to use in time constrained settings such as schools, health clinics, and in survey research. Both the RADS and the CDI exist in 10-item versions, but the shorter versions may lack specificity (Allgaier et al., 2012; Milfont et al., 2008) and are not freely available. Moreover, the symptom of irritability is often not included in standard depression questionnaires, but is an important symptom.
to evaluate in adolescents (Pickles et al., 2010). Certainly too, scales that are not freely available (Kovacs, 2005; Reynolds, 2010) are not as feasible to use in non-research settings. There continues to be a need for instruments that reflect the range of depressive symptoms adolescents experience; that are valid, reliable and freely available; and that can be used in a variety of epidemiological and clinical settings.

1.1. Background

The CES-D was developed in the 1970s to assess depression symptoms in community-based samples and epidemiological surveys (Radloff, 1977). The CES-D has been widely used and translated into several different languages. It also has been used and tested with adolescents (Radloff, 1991). In 2004, Eaton et al. revised the original CES-D to reflect the criteria in the DSM-IV-TR (American Psychiatric Association, 2000). The revision resulted in a 20-item instrument (CESD-R) that demonstrated strong psychometric properties (Eaton et al., 2004).

The CESD-R has now been independently evaluated (Van Dam and Earleywine, 2011) and is freely available online (Eaton et al., 2012). While others have shortened the original CES-D to various 10-item (or less) versions (Andersen et al., 1994; Cole et al., 2004; Irwin et al., 1999; Kohout et al., 1993; Santor and Coyne 1997) including a 10-item version with adolescents (Cartier et al., 2011), the original CES-D was not developed based on DSM (American Psychiatric Association, 2000) criteria. In fact, all of the shorter versions mentioned above only include between 2 and 5 of the 9 DSM-IV symptoms for a major depressive episode (5 DSM-IV symptoms (Kohout et al., 1993); 4 DSM-IV symptoms (Andersen et al., 1994; Cheng et al., 2006; Cole et al., 2004; Irwin et al., 1999; Santor and Coyne 1997; Kohout et al., 1993); 2 DSM-IV symptoms (Burnam et al., 1988)). As such, these brief scales may reflect outdated and under-realized conceptualizations of depressive disorder. Revising the CESD-R to a shorter scale that accurately and comprehensively reflects the presentation of adolescent depression has the potential to enhance screening by better capturing symptoms of adolescent depression. To date, a brief adolescent version based upon the CESD-R is lacking.

1.2. Current study

The aim of this study was to evaluate a 10-item version of the CESD-R, which would have the advantage of brevity, the possibility of linking directly to the CESD-R (in nine of its items), and which would include the symptom of irritability making it advantageous for use with adolescents. Results from this investigation may support the use of this scale to assess adult as well as adolescent depression symptoms in community settings in the United States.

2. Methods

2.1. Participants

Study samples were drawn from two national surveys involving adolescents: the Teen Health and Technology study (THT; Sample 1) and the Growing Up with Media project (GwM; Sample 2). The THT study was a cross-sectional study of N=5680, 13–18 year old male, female and transgendered youth. Participants were recruited nationally either: randomly through the Harris Poll Online (HPOL), or through targeted outreach efforts by the Gay Lesbian Straight Education Network. To be eligible, youth had to read English, be U.S. residents ages 13–18 and be in the 5th grade or above. Because the aim of the current paper was to validate the measure in the general population, only the randomly recruited HPOL sample was included (n=3777). Each participant was weighted based on sex, race/ethnicity, parents’ level of education, school location and geographical region. All participants provided complete informed consent to participate and surveys were completed online.

Similarly, the GwM study recruited parent–child pairs nationally through the HPOL. Households were randomly identified and recruited through adult HPOL members. To be eligible for the GwM study, adults had to be a parent/guardian of a 10–15 year old child who lived in their household at least 50% of the time and be familiar with the child’s daily activities. The GwM survey was conducted yearly over a three-year period. Depression items were added at Wave 3. As such, the current analyses focuses on data from n=1150 youths who responded at this wave. The final GwM data were weighted based on age, biological sex, race/ethnicity, region, education, and household income. Additional weights were included that accounted for one’s propensity to be online, join online panels, and to participate in this survey after Wave 1. Caregivers provided informed consent and permission for their child’s participation. Youth provided informed assent to participate. All consent and surveys were completed online.

2.2. Measures

Measures consisted of the scale under investigation, the CESDR-10, and additional scales used to assess construct validity.

2.2.1. Center for Epidemiologic Studies Depression Scale-revised 10-item version for adolescents (CESDR-10)

Adolescent depressive symptoms in both samples were assessed using an adapted version of the CES-D (Eaton et al., 2004). Items for this 10-item adolescent-specific version were selected based on the highest factor loadings form each of the 9 symptom domains in the CES-D (Eaton et al., 2004). Each item is scored on a 5-point ordinal scale for frequency (0=not at all or less than 1 day in the last week; 1=1–2 days in the last week; 2=3–4 days in the last week; 3=5–7 days in the last week; 4=nearly every day for 2 weeks). The THT study used a 0–4 response range, while the GwM study used a 1–5 response range.

Eaton et al. (2012) have proposed a scoring algorithm for the CESD-R to determine possible depressive symptom categories. For the CESD-R, this algorithm was revised to fit DSM criteria for depressive disorders. For scoring purposes in terms of the subthreshold depression and no clinical significance categories, the response categories were revised to match the scale of the CESD-R. This meant collapsing the categories 5–7 days and nearly every day for 2 weeks into one category. For the other scoring categories the 5-point scales was retained.

Compared to the CESD-R (20-items), CESDR-10 scoring was based on endorsement of each item. Criteria for Major depressive episode was defined as (1) the presence of anhedonia, dysphoria, or irritability nearly every day for the past two weeks, or 5–7 days in the past week and (2) at least 4 additional symptoms endorsed as occurring nearly every day for the past two weeks, or 5–7 days in the past week. Probable major depressive episode was defined as (1) the presence of anhedonia, dysphoria or irritability nearly every day for the past two weeks, or 5–7 days in the past week and (2) an additional 3 symptoms endorsed as occurring nearly every day for the past two weeks, or 5–7 days in the past week. Possible major depressive episode was defined as (1) the presence of anhedonia, dysphoria or irritability nearly every day for the past two weeks, or 5–7 days in the past week and (2) an additional 2 symptoms endorsed as occurring nearly every day for the past two weeks, or 5–7 days in the past week. Finally subthreshold depression symptoms were defined as those who had a score of at least 8, but do not meet above criteria; and no clinical significance
was defined as people who had a total score of less than 8. Scoring of the CESDR-10 was performed in order to give estimates of the epidemiology of depression in the two study samples.

In addition, we evaluated the relation between the CESDR-10 and scales for self-esteem (Rosenberg, 1965), social support (Zimet et al., 1988), parent–child relationships (Finkelhor et al., 2000), substance use (Brener et al., 1995), and aggressive behavior (Dahlberg et al., 2005; Bachman et al., 2001; Udry, 1996). Research shows that both self-esteem and social support are negatively correlated with depression symptoms (Orth et al., 2008; Lin et al., 2008; Ellis et al., 2009). Depression and substance use are thought to be highly comorbid and positively correlated (Keenan-Miller et al., 2007). Aggressive behavior can also be related to depression in adolescents (Price et al., 2013; Garber et al., 1991). Details about these measures are available upon request.

2.3. Statistical analysis

First, scoring was performed to determine the number of participants in each survey who met criteria for a possible depressive symptom category. Next, analyses were performed to examine the scale’s reliability and validity. Tests consisted of evaluation of internal consistency reliability (α), confirmatory factor analysis (CFA), assessments of construct validity, an exploration of differential item functioning. All statistical analyses were performed using STATA 11 (Statacorp, 2009) and Mplus 7.1 (Muthén and Muthén, 2012).

2.3.1. Internal consistency reliability

Internal consistency reliability provides a measure of the degree of homogeneity of the items on the scale as items on the scale should be correlated with each other and the entire score. Cronbach’s alpha (α) was assessed for the CESDR-10 in both samples.

2.3.2. Confirmatory factor analysis

A confirmatory factor analysis (CFA) specifying one latent factor, ‘depression’, was performed on the CESDR-10 in both samples independently and combined. Model fit was evaluated by examining the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker–Lewis Index (TLI) and the Weighted Root Mean Square Residual (WRMR). RMSEA values lower than 0.05, TLI/CFI values above 0.90, and WRMR values less than 0.90 all are indicative of good model fit (Yu et al., 2002).

2.3.3. Construct validity

Construct validity was assessed using three methods: (1) evaluation of the relationship of the CESDR-10 to substance use, self-esteem, aggressive behavior and social support scales, using Pearson’s correlations (r) with sample weights; (2) examination of average CESDR-10 scores by sex and age, with the notion that there should be a divergence in average scores of depression as adolescents get older supporting a developmental emergence of differences in depression rates between sexes; and (3) examination of construct validity across studies (GuwM and THT) and sexes utilizing measurement invariance models (Park et al., 2012; Steinmetz et al., 2009), testing configural, metric and scalar invariance. Configural invariance tests if the same set of factors are present in each group. Metric invariance tests if factor loadings are the same across groups. Scalar invariance tests if item intercepts are the same, which indicates whether there are systematic differences in group responses. To compare models, we used chi-squared difference tests (Δχ²). Non-significant (p < 0.05) Δχ² difference tests indicate that there is no difference between the models and the more constrained model may be accepted.

2.3.4. Item response and differential item functioning analysis

We utilized a Samejima’s graded response model (Samejima, 1997) to examine item discrimination parameters across studies and sexes. This involved using weighted least-squares estimation to examine discrimination parameters within each sample and by sex. We then utilized a Multiple Indicators, Multiple Causes Model (MIMIC) using full maximum likelihood estimation on the observed frequencies to determine whether any differential item functioning (DIF) by sample or sex was present. MIMIC models have been used to detect DIF in various academic and psychological testing situations (Gallo et al., 1994; Nuevo et al., 2009; Finch, 2005). DIF is present when individuals from two different groups, but with the same underlying level of the latent trait, have different probabilities of endorsing an item based on their group membership.

3. Results

3.1. Sample characteristics

Sample 1: the THT sample included N=3777 youths with a mean age of 15.7 years (SD=1.7). Overall, there were 1639 males and 2138 females. The sample was predominantly white (75%, n=2841). Most participants were in high school at the time of the survey (72%) (Table 1).

Sample 2: the GuwM sample consisted of N=1150 youths with an average age of 14.5 years (SD=1.8). There were 582 males and 568 females. As with the THT sample, GuwM participants were mostly white (74%, n=854) and the majority were currently in high school at the time of the survey (62.7%) (Table 1).

3.2. Scoring of CESDR-10

In the THT sample, n=121 (3.2%) met criteria for current major depressive episode, among whom n=81 were female and n=40 were male. For probable major depressive episode, an additional n=81 (2.1%) adolescents (n=58 females; n=23 males) met criteria; and for possible major depressive episode, an additional n=38 (1.0%) adolescents (n=24 females; n=14 males) met criteria. A total of n=750 (19.9%) adolescents (n=507 females;
n = 243 males) were determined to have subclinical depressive symptoms currently (i.e., a total of 8 or above on the CESDR-10) and n = 2787 (73.8%), n = 1470 females; n = 1322 males, were classified as not having symptoms of clinical significance.

Table 2
Standardized CFA factor loadings of CESDR-10 items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Combined sample</th>
<th>THT (α)</th>
<th>GuwM (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My appetite was poor</td>
<td>0.75</td>
<td>0.77</td>
<td>0.68</td>
</tr>
<tr>
<td>My sleep was restless</td>
<td>0.75</td>
<td>0.76</td>
<td>0.72</td>
</tr>
<tr>
<td>I felt sad</td>
<td>0.83</td>
<td>0.84</td>
<td>0.79</td>
</tr>
<tr>
<td>I felt like a bad person</td>
<td>0.83</td>
<td>0.83</td>
<td>0.79</td>
</tr>
<tr>
<td>I lost interest in my usual activities</td>
<td>0.85</td>
<td>0.87</td>
<td>0.81</td>
</tr>
<tr>
<td>I felt like I was moving too slowly</td>
<td>0.80</td>
<td>0.81</td>
<td>0.77</td>
</tr>
<tr>
<td>I wished I were dead</td>
<td>0.86</td>
<td>0.87</td>
<td>0.82</td>
</tr>
<tr>
<td>I was tired all the time</td>
<td>0.78</td>
<td>0.79</td>
<td>0.77</td>
</tr>
<tr>
<td>I could not focus on the important things</td>
<td>0.82</td>
<td>0.82</td>
<td>0.82</td>
</tr>
<tr>
<td>I felt irritable</td>
<td>0.79</td>
<td>0.79</td>
<td>0.80</td>
</tr>
<tr>
<td>Internal consistency reliability</td>
<td>α</td>
<td>α</td>
<td>0.91</td>
</tr>
</tbody>
</table>

In the GuwM sample, n = 21 (1.8%) met criteria for current major depressive episode, which included n = 16 females and n = 5 males. An additional n = 23 (2.0%) met criteria for probable major depressive episode (n = 13 females; n = 10 males), and n = 11 (0.9%) (n = 8 females; n = 2 males) more adolescents met criteria for possible major depressive episode. A total of n = 190 (16.5%) (n = 112 females; n = 78 males) of adolescents had subclinical depressive symptoms and n = 905 (78.7%) (n = 423 females; n = 489 males) were classified as not having clinically significant symptoms.

3.3. Internal consistency reliability

Cronbach’s alpha (α) was high in both samples; α = 0.91 for the THT sample and α = 0.90 for the GuwM sample. Individual level item analysis of the 10 items on the CESDR-10 in both samples indicated that removal of any of the items would have reduced the overall alphas slightly.

3.4. Confirmatory factor analysis

The CFA for the THT sample indicated that the one factor model showed good model fit (RMSEA = 0.06; TLI = 0.99; CFI = 0.99; WRMR = 1.5; see Table 2). Model fit indices were not as strong for the GuwM sample (RMSEA = 0.08; TLI = 0.96; CFI = 0.97; WRMR = 1.3). For the combined samples, model fit indices were adequate (RMSEA = 0.06; TLI = 0.98; CFI = 0.99; WRMR = 1.9).

3.5. Construct validity

In the THT study, final scores on the CESDR-10 were positively correlated with total scores on the substance use scale (r = 0.09). Correlations of specific types of substances ranged from r = 0.10 with cigarettes to r = 0.13 for marijuana. Total CESDR-10 scores were negatively correlated with total scores for the self-esteem measure (r = 0.19). The correlation between total depression and total social support scale was r = 0.08. For in-person social support specifically, it was r = 0.15 and for online social support it was r = 0.14. CESDR-10 scores were positively correlated with negative parent–child relationships (r = 0.35).

For the GuwM study, total scores on the CESDR-10 were positively correlated with scores on the substance use questionnaire (r = 0.19). Correlations of specific types of substances ranged between r = 0.19 for marijuana to r = 0.21 for cigarettes use. Total CESDR-10 scores were positively correlated with aggressive behaviors (r = 0.44) and negatively correlated with total social support (r = -0.06). Similar correlations were observed when the ‘friend’ (r = -0.06) and ‘special person’ (r = -0.07) subscales were assessed separately. The CESDR-10 was positively associated with negative parent–child relationships (r = 0.42).

Table 3
Average depression scores by age and sex.

<table>
<thead>
<tr>
<th></th>
<th>THT</th>
<th>GuwM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td></td>
<td>Mean (S.D.)</td>
<td>range</td>
</tr>
<tr>
<td>11–12 Year olds a</td>
<td>14.2 (5.3)</td>
<td>15.1 (6.2)</td>
</tr>
<tr>
<td>13–14 Year olds b</td>
<td>5.2 (7.4)</td>
<td>9.4 (10.6)</td>
</tr>
<tr>
<td>15–17 Year olds c</td>
<td>7.9 (8.8)</td>
<td>10.4 (9.7)</td>
</tr>
<tr>
<td>18 Year olds d</td>
<td>7.7 (9.0)</td>
<td>9.7 (9.4)</td>
</tr>
</tbody>
</table>

a THT: n = 0 males, n = 0 females; GuwM: n = 95 males, n = 99 females.

b THT: n = 585 males; n = 785 females; GuwM: n = 201 males, n = 191 females.

c THT: n = 856 males, n = 1096 females; GuwM: n = 192 males; n = 172 females.

d THT: n = 954 males n = 1404 females; GuwM: n = 94 males; n = 106 females.

Table 4
Measurement invariance by study sample and sex.

<table>
<thead>
<tr>
<th>Model</th>
<th>Reference model</th>
<th>Difference testing</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Configural</td>
<td>718.2</td>
<td>0.00</td>
<td>-</td>
<td>0.061</td>
<td>0.99</td>
<td>0.98</td>
</tr>
<tr>
<td>2. Metric</td>
<td>734.7</td>
<td>0.00</td>
<td>16.5</td>
<td>0.058</td>
<td>0.99</td>
<td>0.99</td>
</tr>
<tr>
<td>3. Scalar</td>
<td>614.7</td>
<td>0.00</td>
<td>120.1</td>
<td>0.044</td>
<td>0.99</td>
<td>0.99</td>
</tr>
</tbody>
</table>

| Sex            |                 |                    |       |     |     |      |
| 1. Configural  | 700.6           | 0.00               | -     | 0.060 | 0.99 | 0.98 | 1.975 |
| 2. Metric      | 817.9           | 0.00               | 117.3 | 0.062 | 0.99 | 0.98 | 2.197 |
| 3. Scalar      | 733.0           | 0.00               | 84.9  | 0.048 | 0.99 | 0.99 | 2.354 |
Across all ages in both samples, female adolescents had higher average scores on the CESDR-10 than their male counterparts. In the GuwM sample, differences between sexes begin to emerge for the 13–14 year-old age group: male adolescents scored an average of 13.6 and females 16.8. Similar differences were observed for this age group (13–14) in the THT sample as well (Table 3).

When examining measurement invariance by samples and by sexes, model fit statistics supported configural, and metric invariance across studies and configural, metric, and scalar invariance across sex (Table 4). This indicates that in both the THT and GuwM samples, each of the 10 CESDR-10 items contributed in the same way to the 1-factor structure. It also suggests that respondents in these two samples may have systematically different average scores across items, depending on which sample they were a part of. Across sex, it appears that full invariance of the CESDR-10 was supported, indicating that the scale performs equally well in males and females.

### 3.6. Item response and differential item functioning analysis

Table 5 displays the item discrimination parameters (factor loadings) for all CESDR-10 items by sample and sex separately. Overall, notable differences were not observed between discrimination parameters on any of the items. Results from the MIMIC models indicated statistically significant associations between sample membership and sex on certain items, but the magnitude of the effect was quite small. The largest effect was observed between sex and item 3 (“I felt sad”), for which girls had 0.2 times the odds of endorsing the item compared to boys. These results suggest that the items on the CESDR-10 showed no clinically significant DIF based on sample membership or sex.

### 4. Discussion

Data from two national studies of US adolescents suggest generally strong psychometric properties for the CESDR-10. CFA results indicated good model fit of a 1-factor model in the THT and combined samples, and marginal model fit in the GuwM sample. As indicated by examination of measurement correlation and measurement invariance, construct validity was mostly supported in Sample 2 and partially supported in Sample 1. Results indicated that the CESDR-10 is invariant across sex. The IRT and DIF analyses showed no major differences in item discrimination parameters and no clinically significant DIF by sample membership or sex.

Based on an adapted method for scoring (Eaton et al., 2012), 6.4% of the adolescents in the THT sample and 4.8% of adolescents in the GuwM sample met criteria for possible, probable or actual current major depressive episode. Overall, 19.9% of the THT sample and 16.5% of the GuwM sample showed current clinical and subclinical depressive symptoms. In both study samples, prevalence rates for female adolescents were higher for possible, probable or actual current major depressive episode. These estimates of current depressive and subclinical symptomatology, and rates across biological sexes, are consistent with the epidemiological literature on 1-year prevalence rates of adolescent depression (Thapar et al., 2012).

Of particular note, the CESDR-10 includes the item “I felt irritable,” which is not included in other revised versions of the CES-D. The factor analysis results suggest a high factor loading of this item on the underlying factor. This represents the strength of the CESDR-10 compared to other 10-item versions of the CES-D because it parallels current criteria for depression in adolescents. Sex and age differences further suggest that the scale could be used for adult populations, with the exclusion of the irritability item.

The measure of social support in the THT study revealed intriguing differences between online and offline support: social support from in-person friends was weakly and negatively correlated with higher scores on the CESR-10, whereas social support from online friends was more strongly and positively correlated with total CESDR-10 scores. This is consistent with previous research that noted youth with depressive symptomatology were more likely than their non-depressed peers to use the Internet to communicate with others — including those known in-person as well as those known only online (Ybarra et al., 2005). It may be that youth who are depressed use the Internet as a way to replace social support that they would otherwise have in person. The Internet may provide opportunities to continue to engage with people at a pace and intensity that is more approachable for depressed youth than in person interactions.

### 4.1. Limitations

This psychometric evaluation had several limitations. First, there is no way to assess criterion related validity. Further studies of the psychometric properties of the CESDR-10 could include the assessment of the scale compared to a psychiatric diagnosis. Another potential limitation of this study was the web-based format of administration. Study setting and administration method may influence participants’ answers. To address this limitation the CESDR-10 should be administered in other settings as well, to more thoroughly establish its generalizability.

### 5. Conclusions

In clinical and non-clinical settings alike, time pressures make the availability of brief but valid screening measures critical. The CESDR-10 is a psychometrically sound self-report depression scale.
that should be considered for use in adult as well as adolescent populations in the United States. The use of two different national samples enhances the generalizability of these findings and support the use of this scale in future studies.

Conflict of interest
None declared.

Role of funding source
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No conflict of interest


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