Children's Depression Inventory (CDI and CDI 2)

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Although depression in adults has been recognized and described since ancient times, it is only since the 1970s that clinicians and researchers have considered the possibility that children and adolescents also can experience clinical depression. Along with growing interest in understanding the course and outcome of depression in youngsters and ways to treat it, it became evident that the field lacked appropriate assessment tools. The absence of standardized and reproducible ways of identifying depressed children and adolescents was a major block to empirical and treatment-outcome research.

Traditionally, emotional and mental disorders have been identified through lengthy diagnostic interviews conducted by trained mental health clinicians. Such assessments cover the person's entire life and are designed to determine that a person's symptoms indeed represent a mental disorder (rather than some medical condition, for example). The other approach to identifying depressed individuals has been to use a questionnaire of depressive symptoms that a person can complete about him- or herself and then rely on a cut-off score, which identifies the level of clinically notable depression symptoms. Although the interview method is the only way to arrive at a valid psychiatric diagnosis, it is time consuming, requires a specially trained mental health professional, is not always practical to execute, and is also costly. Many of the drawbacks of a diagnostic interview are overcome by using questionnaires that are completed by the targeted individuals themselves: such tools are practical, easy to administer, relatively fast and inexpensive, and yield information that is easy to understand. The major drawback of self-rated questionnaires of emotional or mental symptoms is that they typically can only provide an index of the current or recent severity of the targeted symptoms and cannot yield a formal psychiatric diagnosis. However, in the area of depression, research has shown that, in general, elevated levels of depressive symptoms at a given time point tend to correlate with the presence of depressive disorders at the same time, and that elevated depressive symptoms at one point in time also tend to predict an increased probability of a depressive disorder later on. All in all, therefore, a self-rated depression questionnaire can convey important and useful information about the extent of a person's current level of depression symptoms.

Characteristics of the Original Children's Depression Inventory Toolkit

The Children's Depression Inventory (CDI) was designed to provide a valid way to assess the severity of depressive symptoms among children and adolescents aged from 7 to 17 years (Kovacs & MHS Staff, 2003). In light of the targeted age range, particular attention was paid to the content and presentation of the items. Consequently, the items were written as declarative statements and at a low reading-grade level. The items cover both the classic symptom expressions of depression (such as crying, sadness, hopelessness, reduced motivation, having trouble going to sleep, feeling worthless) as well as manifestations of depression in the contexts of school and family (such as not having friends, feeling like a burden to the family, doing worse in school). The CDI has the lowest reading-grade level among self-rated depression scales that have been designed for youngsters in the past few

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decades, and has been acclaimed by several reviews over the years as the most widely used self-report depression questionnaire for pediatric populations.

The original self-report CDI included 27 items; using statistical approaches, a shorter 10-item version also was derived. In both versions, each item consists of three options (scored on a scale from 0 = no symptom to 2 = definite symptom). The least to most severe options were presented in different orders as a way to discourage stereotypical responding. When completing the questionnaire, the youngster selects for each item the one option that best describes him or her for the past 2 weeks. The answers to the items are summed to obtain the total raw score, with higher scores indicating higher levels of depressive symptoms.

Using a school-based sample, standardized *t*-scores were derived. Importantly, because research has shown that girls tend to endorse higher levels of depression than do boys, and that older children tend to report more depression symptoms than do younger children, separate norms were developed for boys and girls, and for younger (aged 7–12) and older (aged 13–17) children. Psychometric work also yielded five separate CDI factors, which likewise were represented as *t*-scores and could be viewed in the form of a profile, as described in the *Manual* (Kovacs & MHS Staff, 2003).

The psychometric properties of the CDI (including various indices of reliability and validity) have been extensively documented and some of this work had been abstracted in the 2003 *Manual*. The CDI has been officially translated into 43 foreign languages (including regional dialects) and used in hundreds of studies over the past several decades, which included diverse samples in the community, in schools, and in various mental health treatment contexts. A sampling of these studies also has been listed in the 2003 CDI *Manual*.

To facilitate the multiperspective assessment of pediatric depression, selected items from the original inventory were used to construct a parent-rated version which includes 17 items, and a teacher-rated version that includes 12 items. The items in the parent- and teacher-rated scales reflect depressive symptoms that are observable (such as the youngster crying, looking sad, or verbalizing negative self-statements) as well as examples of the overt negative functional effects of depression (such as worsening school performance; Kovacs & MHS Staff, 2003). The availability of parent- and teacher-rated versions, along with the self-rated inventory, were believed to maximize the likelihood of the accurate detection of children with elevated depressive symptoms.

Over the past 35 years, the CDI has played an influential role in facilitating research on depression in the juvenile years in the United States and across the world, especially in projects that required large samples. It also has been widely used in randomized treatment trials of depressed children. It had served to produce some of the earliest estimates of the prevalence of pediatric depressive symptoms in the community, it played a key role in studies that sought to identify theoretical correlates of childhood depression, it was the primary outcome measure in the first generation of cognitive behavior therapy studies of depressed youngsters, and it has become a benchmark against which other questionnaires and scales of pediatric depression are being measured. The CDI has continued to be part of the assessment protocols of research focusing on intervention, epidemiology, as well as theory-driven or clinically focused investigations.

Characteristics of the CDI 2 Toolkit

As research on pediatric depression was moving from the twentieth to the twenty-first century, it was timely to update the CDI toolkit. The need for such an initiative was also indicated by the results of a comprehensive meta-analysis of the CDI, conducted by Twenge and Nolen-Hoeksema (2002). The analysis originally involved 310 data sets, which were collected by many different investigators over a period of 20 years, and represented more than 61,000 children. One key finding

was that socioeconomic status was not related to CDI scores. But, more importantly, the findings also revealed a birth-cohort effect: more recent pediatric birth cohorts were found to be endorsing lower levels of depression symptoms overall than did similarly aged children several decades ago. This finding suggested the need for a new, up-to-date normative sample of children in order to restandardize the questionnaire. As part of this procedure, the item content of the inventory also was reviewed. Three new items were added (on excessive sleep, excessive appetite, and difficulty with memory) to broaden the instrument's coverage of the array of symptoms that enter into the psychiatric diagnosis of a major depressive disorder or dysthymic disorder. These new items reflect changes in clinical perspectives as to the type of depression symptoms young children can have. Three other items were edited for increased clarity. Finally, to keep the questionnaire's length within acceptable limits, two items were eliminated that did not tap intrinsic features of depression.

The revised CDI has been labeled the CDI 2, along with the rest of the associated questionnaires (Kovacs & MHS Staff, 2011). The toolkit consists of four questionnaires, two of which were designed to be completed by the child or adolescent about him/herself (the full-length and short CDI 2s) and two were constructed to be completed by a parent (CDI 2:P) or a teacher (CDI 2:T), about a specific youngster. As before, the CDI 2 questionnaires are appropriate for children and adolescents, aged 7–17 years. For each questionnaire, the respondent is asked to keep in mind the "past two weeks" while answering the items. Responses are scored on a scale from 0 (no symptom) to 2 (definite symptom) and are summed; higher scores consistently reflect higher levels of depression symptoms.

The full-length, self-rated CDI 2 that youngsters complete contains 28 items and requires a 1.7 reading-grade level. The short CDI 2 (which was psychometrically derived from the full-length version) contains 12 items and requires a 1.5 reading-grade level. Administration times are 15 and 5 min, respectively. There has been no change in the coverage and content of the 17-item parent-rated and the 12-item teacher-rated CDI 2s. These forms also require low reading-grade levels (Grade 2 and Grade 2.2, respectively). Items on the parent- and teacher-rated forms are rated on a Likert-type scale (ranging from 0 = not at all to 3 = much of the time) and each form takes about 10 min to complete.

To conduct a multifaceted assessment of a given child, the recommended CDI 2 forms include the full-length child self-rated questionnaire, along with the parent- and teacher-rated forms. They should be completed approximately within the same 24- to 48-hr time interval, and ideally, both parents and one or two teachers should contribute information. Teacher ratings should be solicited only from teachers who actually know the child. The short, 12-item CDI 2 is recommended if a quick screening tool is needed, or if administration of the full-length questionnaire is not feasible.

The CDI 2 questionnaires can be administered in one of three ways: paper-and-pencil, PC, or online. Correspondingly, scoring can be done by hand (quick score template), via a software program, or online. The online administration and scoring options are provided by the test publisher, Multi-Health Systems Inc., using a protected and dedicated server. Scoring can yield total raw scores, sex- and age-normed *t*-scores, or percentile scores. Computer scoring allows the user to take advantage of three types of reports provided by the publisher: the assessment report, the progress report, and the comparative report. The assessment report presents the results of a single CDI 2 administration and calls attention to any score elevation; the progress report summarizes the results of up to four administrations of the same CDI 2 tool and notes if the scores have significantly changed across time; the comparative report gives an overview of the child's symptoms from multiple perspectives by combining the reports of up to five different respondents.

The standardization sample for the long and short versions of CDI 2 involved 1,100 children, aged 7–17 years, residing in 28 different states across the United States. The sample was assembled via a multistep selection procedure from a larger data set, which was collected through various sources representing normative populations (e.g., schools, pediatric offices). The goal of the selection procedure was to ensure equal numbers of boys and girls at the various ages, to match (within 5% of the census figures) the racial and ethnic distribution of the United States, and to represent the major geographic regions of the country. Whenever possible, parent- and teacher-rated CDI 2s also were gathered. Separately, a clinical sample of 319 youngsters (aged 7–17 years; 61% male; 60% White, 24% African American, 11% Hispanic, and 5% other ethnic groups) was also assembled using pediatric and mental health settings. In this clinical sample, major depressive disorder and attention deficit hyperactivity disorder were the most prevalent psychiatric diagnoses (34% and 28%, respectively).

State-of-the-art psychometric work on the full-length CDI 2 (e.g., using confirmatory factor analysis) revealed that the total score reflected two higher order problem domains (emotional problems and functional problems) and four second-order, more specific symptom dimensions (negative mood/physical symptoms and negative self-esteem that comprise the higher order emotional problems dimension, and interpersonal problems and ineffectiveness that comprise the higher order functional problems dimension). The same higher order problem domains also were identified in the parent-rated and teacher-rated questionnaires (CDI 2:P and CDI 2:T, respectively). Consequently, using the CDI 2 toolkit, the test administrator can compare a child's standing (using *t*-scores or percentiles) across the self-rated, parent-rated, and teacher-rated versions both with respect to the total scores and the higher order problem domain scores.

In further examinations, each of the CDI 2 questionnaires showed high internal reliability (e.g., Cronbach's alpha was .91 for the full-length total score, and .85 and .83 for the higher order emotional problems and functional problems scores, respectively). Based on a subset of 79 children from the standardization sample, the short-term (2–4 week) corrected test–retest reliability coefficient was .89 for the full-length CDI 2 total score. Statistical tests of construct validity on the full-length form (using confirmatory factor analyses) also showed very good fit. Tests of discriminative validity showed that the clinical subsample with major depression scored significantly higher on the CDI 2 than did matched normal control peers, or other clinical cases, and that both the total scores and the scores for the higher order factors were appropriately accurate in distinguishing the clinically depressed youngsters and nondepressed peers.

Based on the standardization sample, the CDI 2 *Manual* provides detailed tables of *t*-scores (with a mean of 50 and standard deviation of 10) and percentile rankings separately for boys and girls, and for younger (aged 7–12 years) and older youngsters (aged 13–17 years). Additionally, the *Manual* makes it easy for the test administrator to decide if any discrepancies between informants' scores (e.g., between a parent and a child report; between a parent and a teacher report), or differences in scores across multiple testing of the same respondent, are meaningful. Namely, it provides detailed tables of the magnitude of the score differences needed for a "reliable difference" across various pairs of respondents (e.g., parent vs. child, teacher vs. parent).

Because the CDI has been used for so many years, some clinicians and researchers have extensive data that were gathered via the original questionnaires. To help maintain continuity of information, the new *Manual* includes a conversion formula, which allows a tester or researcher to compute the equivalent scores across the CDI 2 and its original version (and vice versa). The CDI 2 *Manual* also includes extensive appendices that provide detailed information about a variety of topics concerning the scores.

It is worth noting that the multiperspective assessment of depression via the CDI 2 toolkit can yield useful information that goes beyond the extent and nature of the child's depression symptoms. For example, notable discrepancies between a child's own responses on the CDI and the responses of the parents about that child can be used clinically by a therapist to explore family and contextual issues that may underlie the differences in reports and could have contributed to a child's difficulties.

All in all, the CDI 2 tool kit has all the positive elements of the prior version. It continues to be the tool kit of choice when there is a need for a reliable and valid self-rated depression scale for school age children and adolescents and when a multidimensional assessment of depression is called for. The results of the CDI 2 assessments, however, should be integrated into a broader psychosocial assessment package that can help determine the full breath of a given child's difficulties and enable an appropriate decision about disposition.

SEE ALSO: Internalizing and Externalizing; Major Depressive Disorder; Self-Report Questionnaires

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