Conners’ Kiddie Continuous Performance Test Version 5
C. Keith Conners, Ph.D.

An assessment of attention problems in preschool-age children

- Client-completed
- Ages 4–5
- 7.5 minute administration time
- Software
- B-level user qualification
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PURPOSE AND DEVELOPMENT

The Conners’ Kiddie Continuous Performance Test Version 5 (K-CPT™ V.5), an assessment of attention problems in preschool-age children, is built on the respected and reliable foundation of the Conners’ Continuous Performance Test II (CPT II™). Its task-oriented format is an ideal complement to clinical observation, self-report, and observer ratings. As an unlimited use software program, the K-CPT is a time- and cost-effective screening device for attention problems, and can also be administered before treatment to establish a baseline and at intervals during treatment to monitor progress.

Attempts to use the CPT II with four- and five-year-old children quickly revealed that a separate version tailored to their needs was required. Feedback from preliminary research trials with the CPT II, which uses letters as stimuli, indicated that many preschoolers had difficulty with letter recognition. The 14-minute administration time of the CPT II also proved too lengthy for young children.

The K-CPT draws on the features of the CPT II while making adjustments for young children. While retaining the basic premises of the Conners’ paradigm, this unique CPT recognizes that the early identification of attention difficulties in very young children requires special methods and considerations. Specifically, the main modifications included shortening the test and replacing the letter stimuli with common pictures. The K-CPT run time is set at 7.5 minutes. This is long enough to challenge the attention capacity of these very young respondents, but short enough that most respondents can finish the task.

The stimuli consist of a series of pictures that are familiar to children of a young age (e.g. boat, ball).

The K-CPT may be used in several ways. As part of the clinical assessment and diagnostic process, the K-CPT provides valuable information that may be used to complement:

a) information derived from clinical interviews with the respondent and his or her family members,

b) information from referral sources, teachers, and medical records, and

c) information derived from other assessment instruments such as the Conners 3rd Edition™ (Conners 3™).

The K-CPT is effective in helping to address the multi-modal assessment approach to attention disorders as emphasized in the DSM-IV™. Response patterns on the K-CPT provide information that enables the clinician to better understand the type of deficits that might be present.

In both clinical and nonclinical contexts, the K-CPT can be used as a quick screening device. “Hit rates” that show good overall accuracy are provided in the K-CPT Manual. In standard usage, the program may be set to optimize overall classification accuracy. In addition, if desired, the user can enable an option to “Minimize False Positives,” which means that the computations will focus on indicating potential attention problems only when there is strong evidence from the K-CPT in this regard. This scoring option can reduce unnecessary follow-up investigations. The option to “Minimize False Negatives” is also available for detecting as many potential attention problems as possible.

INSTRUMENT

The K-CPT uses two interstimulus intervals (ISIs) of 1.5 or 3 seconds to prevent the practice effects that can occur as respondents learn to predict and prepare for stimuli. Each K-CPT administration includes 5 blocks, each containing a 20-trial sub-block of 1.5-second ISIs and a 20-trial sub-block of 3-second ISIs.
The K–CPT uses an increased proportion of targets to attain a greater sampling of responses and varies the ISIs to maintain other valuable characteristics of the CPT II paradigm. Other small adjustments were made to help improve the appropriateness of the test for children of this age. For example, a stimuli display time of 250 milliseconds (ms) (as in the CPT II) is too fast for a young child, so the display time is set at a more appropriate 500 ms, and the 1-, 2-, and 4-second ISIs of the CPT II are also too fast for 4- and 5-year-olds, so the fastest ISI rate in the K–CPT is 1.5 seconds (there is also a 3-second ISI).

To facilitate the interpretation process, the K–CPT provides T-scores and percentiles based on normative data from both the general population and clinical samples. K–CPT reports present results for the following measures:

**Response Times/Errors**
- Overall Hit Reaction Time (HRT)
- Overall HRT Standard Error (SE)
- Omissions
- Commissions
- Variability

**Signal Detection Theory Statistics**
- Detectability (d prime)
- Response Style (Beta)

**Other Measures**
- Perseverations
- HRT by Interstimulus Interval
- HRT Standard Error by Interstimulus Interval
- HRT by Block
- HRT Standard Error by Block

T-scores and percentiles are available relative to two normative groups: the general population (nonclinical sample) and an Attention-Deficit/Hyperactivity Disorder (ADHD) clinical sample. Scoring can be done immediately and automatically after a K–CPT administration. The Single Administration report contains a Validity of Administration section, which indicates if another program running in the background may have caused timing problems or if inordinate numbers of omissions and/or perseverations were detected. The General Population report can include a profile graph showing T-scores for each measure relative to the general population and to ADHD norms; a graphical summary of the Confidence Index for ADHD assessment; tables of raw scores, T-scores, and percentiles relative to the general population norm (an Overall table contains all of the measures, while other tables contain measures that pertain specifically to inattention, impulsivity, or vigilance); and, textual interpretation of the scores.

**FORMATS**

The K–CPT is a software program that includes unlimited administration, scoring, and report generation. After an administration of the K–CPT, the administration can be immediately scored and detailed report generated.

The minimum system requirements for operating the K–CPT software program include:
- Microsoft Windows® 2000 Service Pack 4, Microsoft Windows® Server 2003 Service Pack 1, Microsoft® Windows® XP Service Pack 2, or Microsoft Windows® Vista™
- A Pentium processor or higher
- VGA color monitor (SVGA recommended)
- At least 192 MB RAM (512 recommended)
- At least 525 MB hard drive space available
- A USB port
- A CD-ROM drive
- Arial font family installed

**REPORTS**

The K–CPT software can generate two types of reports: Profile Reports and Progress Reports. Profile Reports summarize the results of a K–CPT administration graphically and numerically. They provide percentiles and T-scores for all K–CPT measures, detailed descriptions of each scale and interpretation suggestions. Reports can provide scores relative to general population norms or ADHD norms. Progress Reports allow you to compare the results of two to four K–CPT administrations for the same respondent, and are ideal for monitoring progress over time.

**USER QUALIFICATIONS**

Users of the K–CPT should have an understanding of the basic principles and limitations of psychological testing, particularly the interpretation of test results, and should have completed university-level courses in tests and measurement. Responsibility for the use, interpretation, and communication of results must be assumed by a qualified professional with advanced training in psychological assessment who adheres to relevant professional standards. These individuals should possess an advanced degree such as a Ph.D., Ed.D., M.D., or M.A. in the social, medical, or behavioral sciences. The test is classified as requiring a b-level qualification.

**NORMATIVE AND PSYCHOMETRIC DATA**

Development of the K–CPT was based on a sample of 454 four- and five-year-old children. Of these, 314 were classified as nonclinical, 100 were classified as clinical with ADHD, and another 40 were other clinical cases (not ADHD). The following tables summarize the nonclinical and clinical samples.

<table>
<thead>
<tr>
<th>Age</th>
<th>Nonclinical Male</th>
<th>Nonclinical Female</th>
<th>ADHD Male</th>
<th>ADHD Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>64</td>
<td>64</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>86</td>
<td>100</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>150</td>
<td>164</td>
<td>75</td>
<td>25</td>
</tr>
</tbody>
</table>

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The \textit{K–CPT V.5 Technical Manual} and \textit{Software Getting Started Guide} provides research results pertaining to the reliability and validity of the \textit{K–CPT V.5}. The results provide support for the psychometric soundness of the \textit{K–CPT V.5} for use as a screening tool.

\textbf{Split-half Reliability:} The \textit{K–CPT V.5} shows adequate consistency in terms of split-half reliability.

\textbf{Standard Error:} The standard error measurement values show that scores from the instrument are a reasonable match to the true performance levels of respondents.

\textbf{Validation:} Statistical validation is provided to demonstrate that \textit{K–CPT V.5} scores are significantly different for the general population and clinical groups. In addition, Hit rates are provided to evaluate the classification accuracy of the test. The \textit{K–CPT V.5} has satisfactory accuracy in terms of both false negatives and false positives. The results also suggest that the \textit{K–CPT V.5} can provide observational and descriptive support in clinical contexts.

\section*{ABOUT THE AUTHOR}

\textbf{C. Keith Conners, Ph.D.}

Dr. Conners is recognized worldwide as one of the leading contributors to the field of ADHD. He was a Rhodes Scholar at Queen’s College, Oxford, where he achieved highest honors in psychology, philosophy, and physiology. When Dr. Conners returned to the United States, he entered the Clinical Psychology Ph.D. program at Stanford, and later transferred to Harvard for a more diverse program combining anthropology, sociology, social psychology, and clinical psychology. Dr. Conners has taught at Johns Hopkins Hospital, Harvard University Medical School, George Washington University, University of Pittsburgh, and is currently Professor Emeritus of Medical Psychology at Duke University Medical School, where he founded the Duke Attention Deficit Program.

Dr. Conners has written several books on attention disorders and neuropsychology, and hundreds of journal articles and book chapters based on his research on the effects of food additives, nutrition, stimulant drugs, diagnosis, and dimensional syndromes. He recently received the NARSAD award for lifetime excellence in research in ADHD. Dr. Conners is now retired but continues to lecture, conduct workshops, and serve as a consultant on ADHD-related topics.

\section*{RELATED RESEARCH}


\section*{COMPLEMENTARY ASSESSMENTS FOR THE K–CPT}

- Conners 3rd Edition™ (Conners 3™)
- Conners Comprehensive Behavior Rating Scales™ (Conners CBRS™)
- Conners-March Developmental Questionnaire (CMDQ™)
- Diagnostic Interview for Children and Adolescents-IV (DICA–IV™)
- Multidimensional Anxiety Scale for Children (MASC™)
- Social Phobia and Anxiety Inventory for Children (SPAI–C™)
- State-Trait Anxiety Inventory for Children (STAIC™)
- Tower of London® 2nd Edition (TOI®, 2nd Ed.)

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