

# PADDS Information Handout

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At Targeted Testing, we are developing and researching a new line of computer administered and evidence-based assessments systems that are used in the screening of psychological disorders.

Our primary developmental approach consists of two main areas of focus. The first relates to integrating an updated construct of the disorders and the specific criteria, while the second addresses the question of how to enhance diagnostic accuracy in an efficient manner.

The strengths of our approach lie in our methods of merging multiple, proven measures with high Psychometric utility, and our actuarial approach to incremental validity using Bayesian reasoning and likelihood ratios. In this manner, every aspect of the assessment's non-redundant information can contribute to the quantitative probability either for or against a diagnosis in such a way to improve outcomes.

Our current product line includes:

**TTEF, the Target Tests of Executive Functioning**

|                         |                          |
|-------------------------|--------------------------|
| Target Recognition      | Sequenced Set Shifting   |
| Target Sequencing 1 & 2 | Auditory Sequencing      |
| Target Tracking 1 & 2   | Auditory Target Tracking |

These measures in their research form are currently being used in fMRI studies and are being investigated in other areas such as baseline development for med titration and treatment efficacy.

**PADDS, the Pediatric Attention Disorders Diagnostic Screener**

An innovative ADHD Screener that incorporates the SNAP-IV, the TTEF, and the Actuarial Scoring Module.

The PADDS executive functioning tasks were designed to tap the underlying processes of executive functioning, which will correlate much more strongly with reported classroom performance and ADHD diagnosis.

The combination of these very effective measures into our concise report paradigm helps give clinicians a quick, consolidated view from these multiple sources of evidence. Thus, it is easy for the clinician to understand the cumulative effects, whether positive or negative, and then applied along with clinical judgment, results in strengthening an evidenced-based approach that better supports diagnostic decisions.

**Target Tests of Executive Functioning - OV (currently under development).**

This is the adolescent and adult version of the PADDS, there are greater demands placed on areas of executive functioning as would be expected in cognitive abilities of older children and adults. Efforts to detect malingering or deliberate non-compliance are also part of this version.

**TTI Actuarial Scoring Modules**

Our unique scoring and reporting paradigm is based on applying "Bayesian Reasoning" to use standard test metrics in the development of likelihood ratios. By generating accurate likelihood ratios, multiple measures can be combined into an overall predictive index in such a way as to allow every aspect of the assessment's non-redundant information to contribute to a quantitative probability either for or against a diagnosis.

This is an important and powerful development in Evidence-Based Assessment.

## The Pediatric Attention Disorders Diagnostic Screener (PADDS)

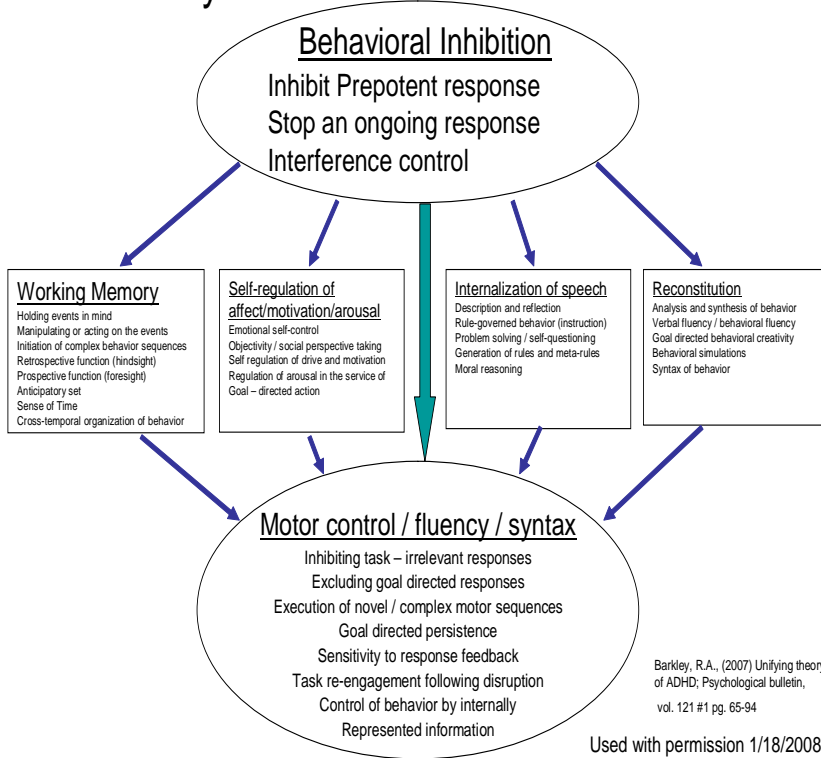
PADDS is a computer-based assessment system to screen for attention and executive function disorders in children ages 6 through 12. The PADDS integrates three important sources of information into a convenient format that is essential when making an Evidence-Based Assessment.

- 1: The CADI, or Computer Administered Diagnostic Interview, which is a comprehensive screening for patient history and to help identify possible co-morbid conditions.
- 2: The SNAP-IV parent and teacher rating scales, which are used to establish the DSM-IV criteria for identifying ADHD. The SNAP-IV was chosen based on its high effect size and sensitivity/specificity of greater than 90%.
- 3: Three newly developed cognitive measures, called the Target Tests of Executive Functioning (TTEF), which are a set of computer administered objective assessments of attention, and executive functioning.

The data collected from these components result in computer-generated reports, including a narrative and nomographic display for strengthening the predictive power in determining the probability of an ADHD diagnosis.

It is Barkley's model of behavioral inhibition which emphasizes the abilities to inhibit prepotent responses to

### Barkley's Model of Behavioral Inhibition



stop a response and to mitigate interference combined with Miller and Cohen's view of cognitive control as hinging on selective bias and neural recruitment that has served as the basis for the selection of stimuli and task demands employed by the Target Tests of Executive Functioning subtests. The unifying theme used from both models is the ability to select/detect important information while inhibiting non-relevant or competing material in the service of the employment of the executive processes. Each of the three Target Subtests were designed to force these controls while placing demands on various executive functions.

Consideration was placed on practical issues regarding the need to develop tasks that were primarily not language based, that lend themselves to cross-cultural uses and that remained as simple or parsimonious as possible. In selecting stimuli, the following list of typical classroom demands were also considered.

#### Basic Demands of the Classroom

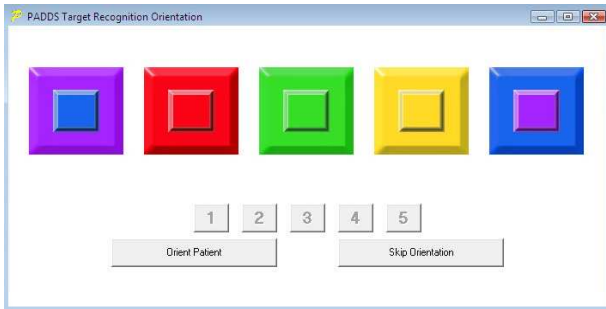
- Attending to instruction
- Assimilating information
- Accommodating information
- Organizing, sequencing, manipulating information
- Monitoring emotional activity
- Formulating a plan of action
- Implementing the plan

#### Other Factors

- Time pressure
- Distractions
- Preparedness

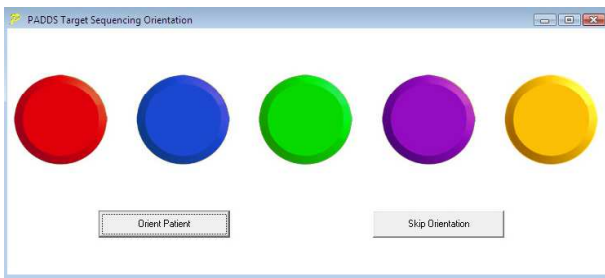
## Target Tests of Executive Functioning

The Target Tests of Executive Functioning are challenging and stimulating while requiring skills similar to those vital to success in the academic setting. By using Barkley's model of behavioral inhibition, the PADDs executive functioning tasks were designed to tap the underlying process of executive functioning, which attempts correlate more strongly with and even predict reported classroom performance and ADHD diagnosis.



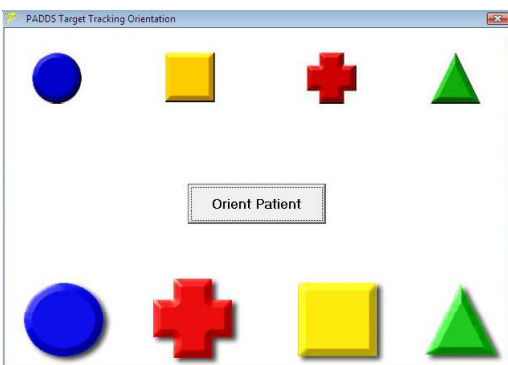
**Target Recognition** requires attention to detail, formulation of a response to changes in stimuli, modulation of emotions and persistence, and suppression of information. Target Recognition presents five large colored squares with smaller squares inside them. Below the squares are five small boxes labeled 1 thru 5. The colored squares simultaneously blink on and off the screen at 1 ½ second intervals for a total of 153 presentations. The subject is taught a strategy to read from left to right and to count the number of large squares with

small squares inside them of the same color and then to click on the corresponding number. It requires roughly 9-11 minutes to complete.



**Target Sequencing** requires the ability to avoid distraction, attention to detail, organization and sequencing during input of information, planning and organization of a response, modulation of emotion and sustained effort. Across 39 trials, five large colored circles are presented. A small square moves through them starting in the middle or at either of the end circles. The subject is taught to attend only to circles

when the square matches it in color and to say the name of the color to him or her self while at the same time disregarding the circles that have squares with different color. Once the squares have moved through all five circles the patient clicks on each of the circles that had matching colors in the order that they stated to him/herself. First match first, second match second and last match last. This task has 39 items with an average completion time of 8-10 minutes.

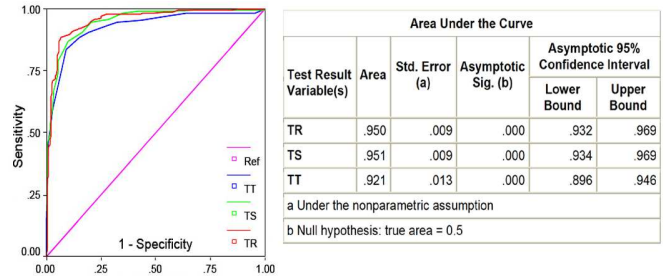


**Target Tracking** requires the ability to organize two and three step instructions, and to recreate these instructions in the order presented while modulating emotions and sustaining effort across all trials. This subtest presents four colored Shapes at the top and bottom of the screen. The shapes will move one at a time from the top row to another shape in the bottom row and then reset. The computer creates two and three step moves that the subject must repeat/recreate in the same order seen. First move first, second move second and last move last. Target Tracking has 20 items and may take up to 7 or 8 minutes.

During each of the tasks, the clinician must complete behavioral observations of the subject. The Structured Assessment of Testing Behaviors form provides a framework to measure the occurrence of three types of behaviors: re-direction/re-instruction, fidgeting, and emotional reaction. The clinician uses stick marks to indicate each time any one of these three behaviors is exhibited and a total frequency for each task and any Medication Status is entered at the completion of the tests.

## Explanation of Likelihood Ratios

A diagnostic test for a particular condition should classify patients into two groups: those with the condition and those without. A test is assessed by its ability to diagnose the condition correctly, whether this is positive or negative. The sensitivity of a diagnostic test is the proportion of patients who have ADHD and are correctly identified by the test. The specificity is the proportion of patients who do not have ADHD and are correctly identified by the test. When the cut-off value for a continuous diagnostic variable is increased (assuming that larger values indicate an increased probability), the proportion of both true and false positives decreases. These proportions are the sensitivity and 1 – specificity, respectively. A graph of sensitivity against 1 – specificity is called a receiver operating characteristic (ROC) curve. A perfect test would have sensitivity and specificity both equal to 1. Realistically, good tests should be somewhere close to this ideal.



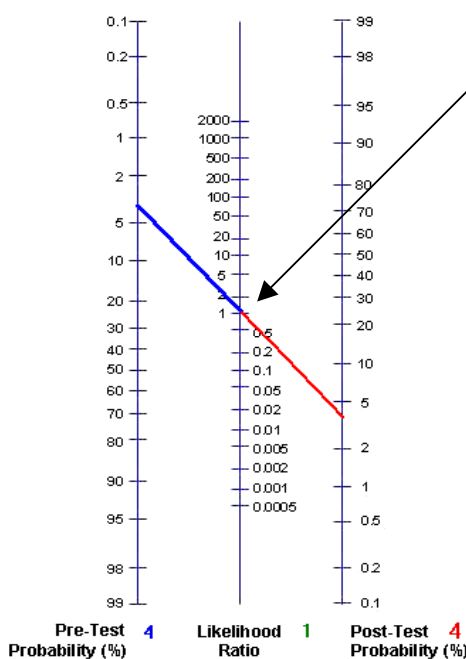
The ROC graph shown here illustrates the actual performance of the PADDs' three Target Tests of Executive Functioning.

Sensitivity and specificity are most useful when combined in likelihood ratios. The likelihood ratio of a positive test result (LR+) is the ratio of the probability of a positive test result if the outcome is positive (true positive) to the probability of a positive test result if the outcome is negative (false positive). It can be expressed as follows:

$$LR+ = \text{Sensitivity}/(1-\text{Specificity})$$

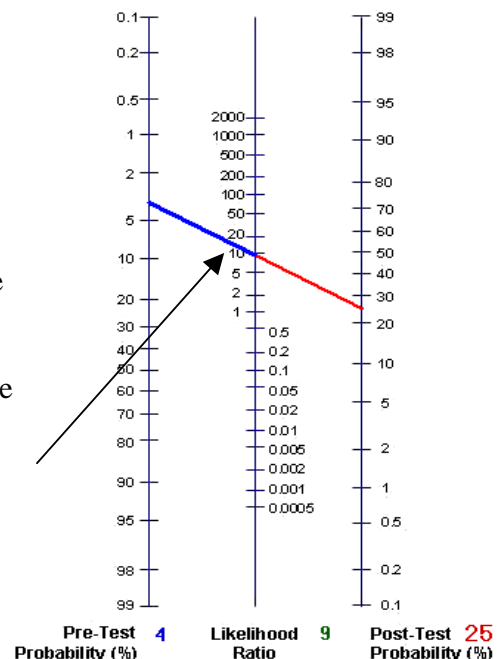
Collecting diagnostic information from multiple sources is a hallmark of modern evidence based assessment practices. However, combining the results for the purpose of interpreting, illustrating, and describing the overall perspective can be difficult. In addition to using likelihood ratios as a more useful way to express the sensitivity and specificity of each test result, we can also efficiently combine the results from multiple measures, using the likelihood ratios and incrementally graphing each effect on a nomogram, into an overall cumulative probability.

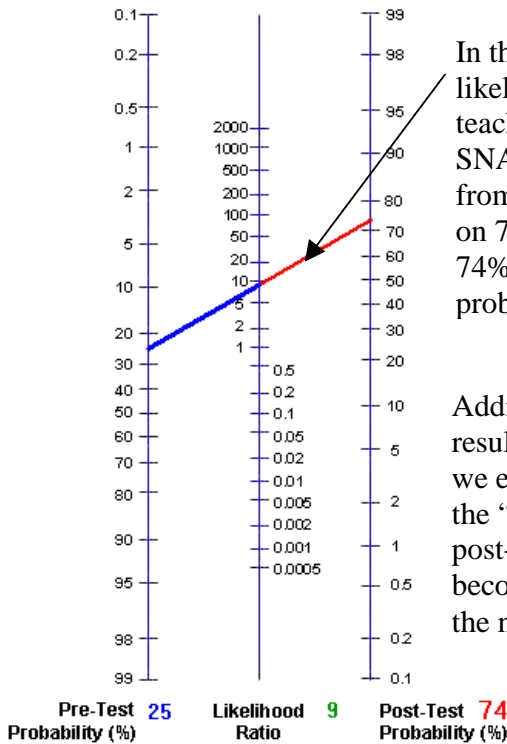
In the examples below, we see two Fagan's nomograms. The leftmost scale for each nomogram is labeled "Pre-Test Probability" and runs from 0.1% at the top to 99% at the bottom. The rightmost scale is labeled "Post-Test Probability" and runs from 99% at the top to 0.1% at the bottom. In the center scale, we apply the likelihood ratio to adjust the Pre-Test Probability into the Post-Test probability. We will step through a typical PADDs Testing sequence to illustrate how the individual scores are incrementally combined. To use a Fagan nomogram to calculate probabilities, you would draw a line connecting the pre-test probability to the likelihood ratio. When you extend this line to the right, it intersects at the new post-test probability.



Before we begin scoring, the nomogram is set at 4%. This is the prevalence or "base rate". We set it to a conservative estimate of ADHD in the population.

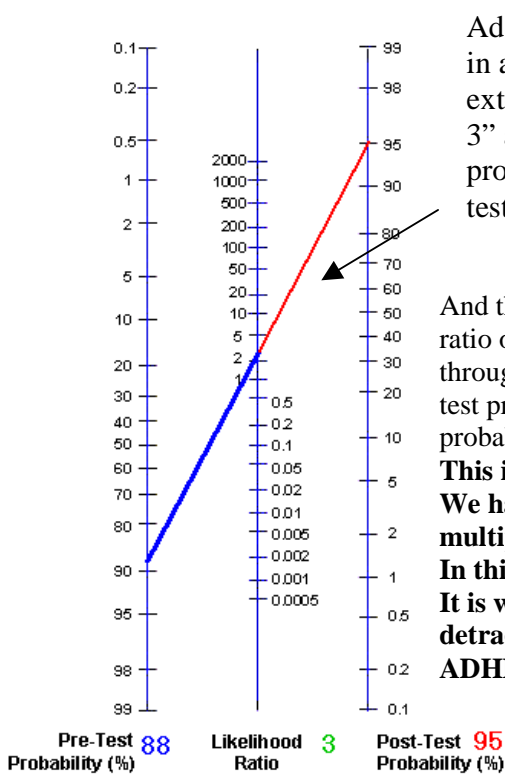
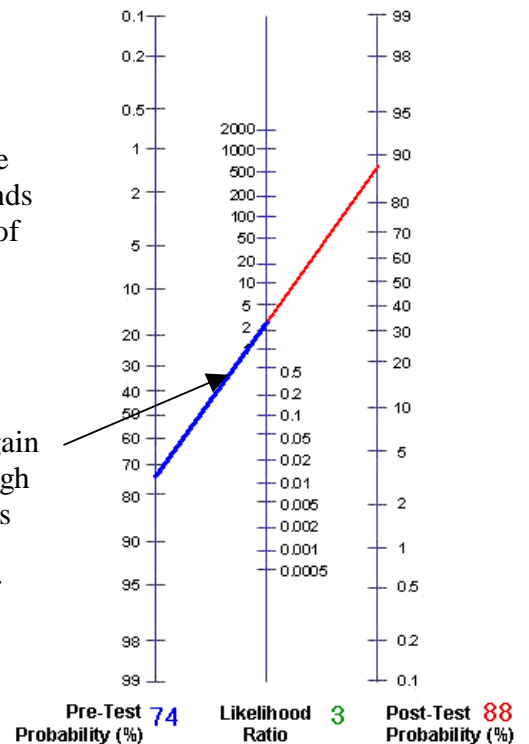
In this next step, we calculate a likelihood ratio of 9 based on a parent rating of ADHD using the SNAP-IV. When we extend the line from 4%, through the "LR9" it ends on 25%. This post-test probability of 25% now becomes the pre-test probability for the next measure.





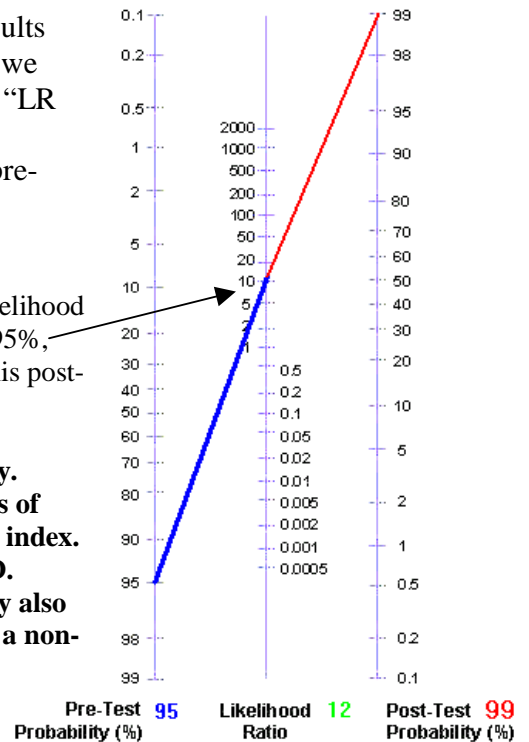
In this next step, we calculate a likelihood ratio of 9 based on a teacher rating of ADHD using the SNAP-IV. When we extend the line from 25%, through the “LR 9” it ends on 74%. This post-test probability of 74% now becomes the pre-test probability for the next measure.

Adding in the first target test score results in a likelihood ratio of 3. Again we extend the line from 74%, through the “LR 3” and it ends on 88%. This post-test probability of 88% now becomes the pre-test probability for the next measure.



Adding in the next target test score results in another likelihood ratio of 3. Again we extend the line from 88%, through the “LR 3” and it ends on 95%. This post-test probability of 95% now becomes the pre-test probability for the next measure.

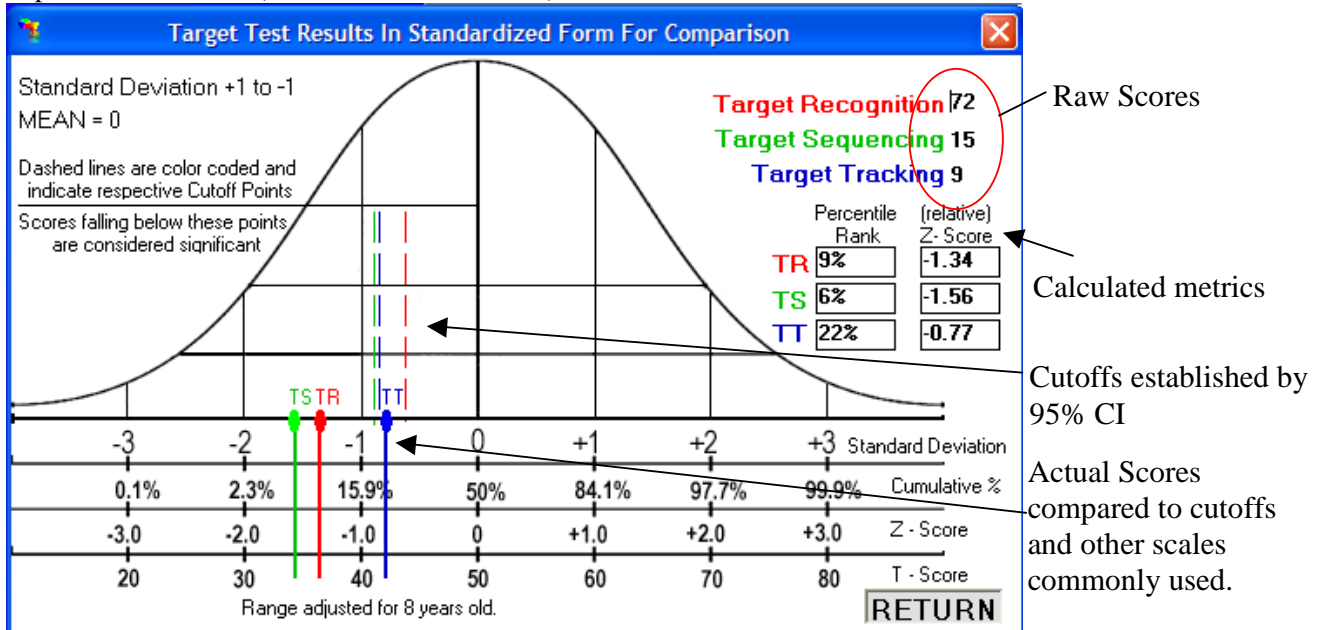
And the final target test score results in a likelihood ratio of 12. Again, we extend the line from 95%, through the “LR 12” and it ends on 99%. This post-test probability of 99% is now the overall probability of ADHD for this patient. **This is the strength of incremental validity. We have successfully combined the results of multiple measures into a single predictive index. In this instance, it clearly indicates ADHD. It is worth noting that these measures may also detract from the overall index, indicating a non-ADHD condition may exist.**



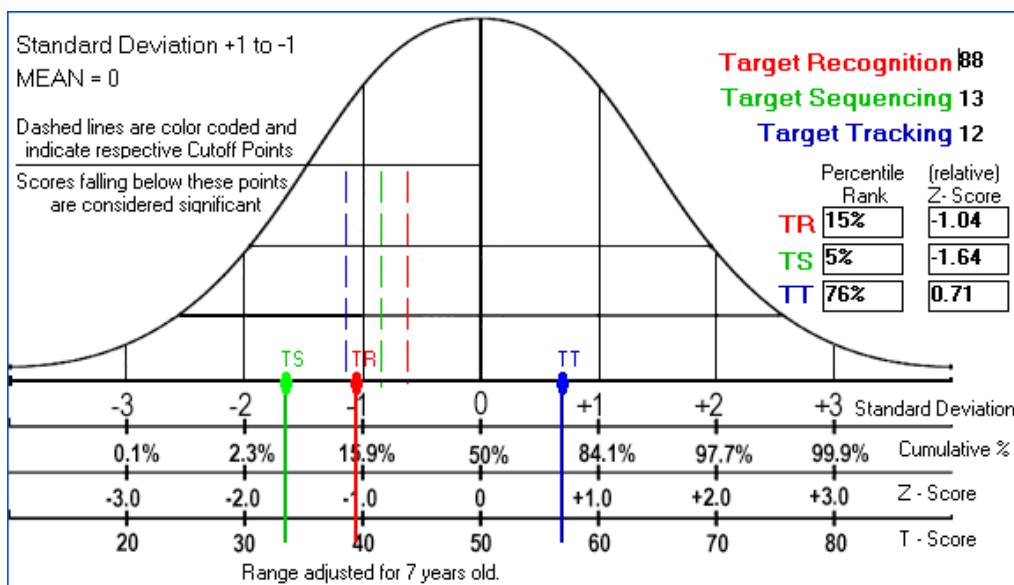
## Interpretation of Target Test scores compared to the non-ADHD group

While the PADDs program automatically calculates the predictive index for the user, at times, it is helpful to review raw score and standard score information. This also helps to illustrate the metrics used in calculating the probability index. The bell curve gives a visual representation of the normalized Relative Z-Scores, percentile rank, and cutoff points shown in the cognitive test report. Table 1 below shows the 95% confidence intervals and the age adjusted cutoff points relative to a given raw score.

This graph is used to visually compare the individual test performances, (color coded indicators), to the non-ADHD group cutoff points for that test, (color coded dashed lines).



Using these age specific cut points, the following decision rule is applied: In order to be considered as a classification hit, two of the three Target Tests of Executive Functioning performances must fall within the expected direction, i.e., (At least two clinical scores for ADHD classification, or at least two non-clinical scores for classification as non-clinical).



This graphic shows an instance where one of the target test scores, (TT), falls well outside the range of the other scores. Because of the additive and subtractive nature of our predictive index, this one extreme score will affect the overall probability in an unexpected direction, (as well it should). In an instance such as this, the clinician should consider the 2 out of 3 rule described above when making a clinical judgment.

Analysis of the Target Subtests psychometric and clinical support revealed that individuals with a clinical diagnosis of ADHD scored significantly lower on each of the three tests as compared to individuals who had not been diagnosed with ADHD, all  $t_s > 19, p < .001$ . It is also important to note that the 95% confidence intervals that are based on standard errors of measurement (SEM) calculated with reliability estimates of .85 supports the selection of the cut scores used for diagnostic purposes with very little error in classification. Table 4.1 presents the 95% confidence intervals for each individual age grouping. As can be seen little to no overlap is evident on the Target subtests between the Typical and Clinical groups.

**Table 1.** PADDs cut scores, means, standard deviations, standard errors of measurement, and 95% confidence intervals as a function of sample and age groupings.

| AGE    | PADDs subtest | Cut score | Typical  |           |            |               | Clinical  |          |           |            |               |
|--------|---------------|-----------|----------|-----------|------------|---------------|-----------|----------|-----------|------------|---------------|
|        |               |           | <i>M</i> | <i>SD</i> | <i>SEM</i> | 95% <i>CI</i> | Cut score | <i>M</i> | <i>SD</i> | <i>SEM</i> | 95% <i>CI</i> |
| 6 yrs  | TR            | >94       | 103.12   | 34.23     | 12.81      | 78 – 128      | ≤94       | 65.72    | 37.31     | 13.96      | 38 – 93       |
|        | TS            | >22       | 24.12    | 10.83     | 4.05       | 16 – 32       | ≤22       | 16.54    | 9.46      | 3.54       | 10 – 23       |
|        | TT            | >6        | 8.65     | 3.46      | 1.29       | 6 – 11        | ≤6        | 4.98     | 3.11      | 1.16       | 3 – 7         |
| 7 yrs  | TR            | >102      | 111.75   | 24.92     | 9.32       | 93 – 130      | ≤102      | 75.68    | 33.92     | 12.69      | 51 – 100      |
|        | TS            | >26       | 30.29    | 5.2       | 1.95       | 26 – 34       | ≤26       | 16.15    | 8.83      | 3.30       | 10 – 23       |
|        | TT            | >6        | 10.13    | 3.18      | 1.18       | 8 – 12        | ≤6        | 4.5      | 2.43      | 0.91       | 3 – 6         |
| 8 yrs  | TR            | >111      | 118.41   | 27.36     | 10.24      | 98 – 138      | ≤111      | 80.91    | 31.74     | 11.88      | 58 – 104      |
|        | TS            | >26       | 31.39    | 6.62      | 2.48       | 27 – 36       | ≤26       | 18.21    | 9.14      | 3.42       | 11 – 25       |
|        | TT            | >8        | 11.6     | 3.53      | 1.32       | 9 – 14        | ≤8        | 5.82     | 3.66      | 1.37       | 3 – 9         |
| 9 yrs  | TR            | >113      | 130.25   | 14.77     | 5.53       | 119 – 141     | ≤113      | 83.72    | 30.93     | 11.57      | 61 – 106      |
|        | TS            | >28       | 32.23    | 6.11      | 2.29       | 28 – 37       | ≤28       | 19.77    | 8.75      | 3.27       | 13 – 26       |
|        | TT            | >8        | 11.91    | 3.97      | 1.49       | 9 – 14        | ≤8        | 5.78     | 3.31      | 1.24       | 3 – 8         |
| 10 yrs | TR            | >125      | 134.32   | 12.03     | 4.50       | 125 – 143     | ≤125      | 107.63   | 18.95     | 7.09       | 94 – 122      |
|        | TS            | >31       | 34       | 5.2       | 1.95       | 30 – 37       | ≤31       | 26.79    | 6.36      | 2.38       | 22 – 31       |
|        | TT            | >11       | 13.65    | 3.54      | 1.32       | 11 – 16       | ≤11       | 9.13     | 4.50      | 1.68       | 6 – 12        |
| 11 yrs | TR            | >128      | 140.49   | 8.49      | 3.18       | 134 – 147     | ≤128      | 98.85    | 34.68     | 12.98      | 73 – 124      |
|        | TS            | >32       | 34.87    | 6.52      | 2.44       | 30 – 40       | ≤32       | 27.1     | 7.48      | 2.80       | 22 – 33       |
|        | TT            | >12       | 14.8     | 3.47      | 1.30       | 12 – 17       | ≤12       | 8.95     | 4.43      | 1.66       | 6 – 12        |
| 12 yrs | TR            | >128      | 137.77   | 9.77      | 3.66       | 131 – 145     | ≤128      | 130.07   | 14.42     | 5.40       | 119 – 141     |
|        | TS            | >34       | 36.27    | 2.49      | 0.93       | 34 – 38       | ≤34       | 29.79    | 4.08      | 1.53       | 27 – 33       |
|        | TT            | >14       | 16.05    | 2.77      | 1.04       | 14 – 18       | ≤14       | 10.64    | 4.80      | 1.80       | 7 – 14        |

Note. Within typical sample, age 6  $n = 25$ , age 7  $n = 32$ , age 8  $n = 52$ , age 9  $n = 64$ , age 10  $n = 79$ , age 11  $n = 53$ , age 12  $n = 25$ . Within clinical sample, age 6  $n = 72$ , age 7  $n = 80$ , age 8  $n = 95$ , age 9  $n = 67$ , age 10  $n = 44$ , age 11  $n = 22$ , age 12  $n = 15$ . SEM = Standard error of measurement.

Using interval specific cut points, the following decision rule was applied to 725 subjects: In order to be considered as a classification hit, two of the three Target Test scores must fall within the predicted direction for subjects to remain classified in their initially known group assignment (At least two clinical scores for ADHD classification and at least two non-clinical scores for classification as non-clinical).



Table 2 presents the clinical utility of the Target subtests by individual age. Taken along with the lack of overlap seen in the 95% confidence intervals presented in Table 1, the Target Subtests have demonstrated superior clinical performance in separating typical age peers from their ADHD counterparts.

**Table 2.** Sensitivity, specificity, positive predictive power, and negative predictive power by age grouping.

| AGE    | SENS | SPEC | PPP | NPP |
|--------|------|------|-----|-----|
| 6 yrs  | .89  | .84  | .94 | .72 |
| 7 yrs  | .90  | .88  | .95 | .78 |
| 8 yrs  | .87  | .87  | .92 | .79 |
| 9 yrs  | .91  | .92  | .92 | .91 |
| 10 yrs | .86  | .91  | .84 | .92 |
| 11 yrs | .86  | .92  | .83 | .94 |
| 12 yrs | .80  | .84  | .75 | .88 |

### Interpretation of PADDs Results (General Guidelines)

Despite the highly acceptable clinical performance revealed above, raw scores for each Target subtest were analyzed to determine the specific sensitivity and specificity for each raw score at a given age interval. These sensitivities and specificities were then converted to specific Likelihood ratios, which could be applied incrementally via a nomogram to combine information from behavioral ratings along with the cognitive performances from the TTEF. The incremental inputs from behavioral and cognitive results develop a predictive index for and or against a diagnosis. This analysis when considered against the calculated base rate constitutes a highly standardized and effective evidence based ADHD screening procedure.

**PADDs is one of the few tools available for ADHD assessment that incorporates these methods by design.**

### Evidence Based Assessment / Evidence Based ADHD Assessment

The practice of Evidence-Based Medicine (EBM) is described as the application of evidence gained from the scientific and research communities to medical practice. These EBM practices have long been established for treatment and therapeutic strategies, but are now being recommended to increase the efficacy of many diagnostic methods and instruments as well.

In the areas of assessment and test publishing, we refer to this as EBA, or Evidence Based Assessment.

In the mental health professions, many sources referring to EBA mean to suggest that a particular treatment, intervention or assessment has some level of empirical evidence to support its use. In the medical sense, EBM is more specific to mean that you have evaluated the scientific literature and reviewed the published findings of the statistical relationships between a given condition and an assessment measure, treatment or intervention. This is commonly recorded as the effect size of the relationship. These published effect sizes can be converted to useful metrics, such as sensitivity and specificity, which can then be easily translated into Receiver Operating Characteristics, (ROC), and Likelihood Ratios, (LR). Using likelihood ratios, the clinician can build a predictive index by combining the results from multiple lines of evidence, by far one of the most useful approaches in assessment and treatment. This is referred to as incremental validity or the use of multiple measures in combination to add greater predictive power to a diagnosis and proposed treatment plan.

This approach is important because it allows the clinician to evaluate these inputs while considering the Prevalence, or base rate of a condition without adversely inflating the predictive power, as can happen when we rely only on sensitivity or specificity alone.

Sensitivity and Specificity refer to research comparison groups where 100% group membership is known before you take any action or make any determination.

For example, the result of a test with 90 percent accuracy should predict that you could correctly assign 9 out of 10 subjects with that measure if you knew they came from one of two groups, those with the condition and those without.

This is the most frequently used approach and can be often misleading in terms of the true diagnostic predictive power. To reliably assess any given measure's true predictive power we have to know the degree of relationship (effect size) of a condition to its proposed assessment or treatment and we need to know the actual base rate of that condition within the population in general. In clinical practice, rarely are we faced with determining membership when we have 100% percent knowledge that a given subject will belong to one of two groups. For example, with ADHD a conservative base Rate is 4% ADHD and 96% Non-ADHD. In contrast when using a tests sensitivity and specificity only one incorrectly assumes they are applying the same predictive power of 100% group understanding to a condition where it is actually 4% and 96% respectively. In the EBA approach used in this example of ADHD where the base rate is 4% known, that same test with 90% sensitivity and specificity will have a limited effect on a predictive index of 21% increasing our true odds of correctly diagnosing based on that result alone from 4% to 25%. This is very different from the widely misunderstood belief that a test with 90% sensitivity and specificity will yield an accuracy rate of 90%. If we add a second measure with 90% accuracy to the EBA process, we would improve our predictive index to 74%, not 90% times two. 74%, while an improvement may not be appropriate depending on the impact of diagnosing or treating or doing nothing depending on the risks associated with each. Clearly, we want to be more informed when the stakes are higher. Adding a third measure of 80-90 % sensitivity and or specificity to the EBA process will push the predictive index above 90 % which can more effectively guide the decisions to treat or not treat, diagnose or not diagnose. Alternatively, using multiple measures with proven effectiveness in this fashion can also push the predictive index in the opposite direction, away from a positive diagnosis.

The bottom line is that when assessing conditions with relatively low base rates you will need multiple measures with strong diagnostic evidence working in conjunction with each other all telling you the same thing if strong predictive power is to be obtained.

The Base Rate is also known as "Prevalence", or Pre-Test Probability.

Establishing the proper base rate is important because it will have a dramatic effect on the Post-Test, or Posterior Probability, (outcome).

Currently reported base rates of ADHD can range anywhere from 0.03 to 0.74. The higher estimates are from specialized ADHD clinics and the lower estimates are from recent epidemiological studies. Specialized neuropsychology clinics normally have higher base rates as a result of referral sources weeding out many of the more unlikely cases in advance, however, a solid rationale must exist for the use of these extremely high base rates. Whenever possible, the practitioner should calculate the base rate of ADHD based on literature review and the past history of their particular setting, and periodically update this to reflect changes in the population or individual client pool. This approach is important because it allows the clinician to evaluate these incremental inputs while considering the prevalence, or base rate of a condition, without adversely inflating the predictive power, as can happen when we rely on assumptions of sensitivity or specificity alone.

While Evidence-Based Medicine (EBM) has emerged as an influential model for the teaching and practice of clinical medicine, this actuarial/statistical approach is still unfamiliar to many mental health clinicians. However, the literature produces ample evidence that simple statistical approaches, such as the nomogram method, have consistently outperformed typical clinical judgment alone.

When these components are used *in conjunction with clinical judgment* they have proven to be highly effective for consideration of diagnosis, in highlighting and documenting a need for further evaluation or actions, and may allow the clinician to evaluate their own diagnostic practices and effectiveness over time.

## Quick checklist of steps to use PADDs

**In accordance with proper testing procedure and to avoid interruption during testing it is strongly advised that PADDs be the only program open during testing. Close all other programs i.e. E-mail & messaging, auto updates, and or Internet applications, and / or scheduling programs**

**Antivirus and or Firewall programs normally do not interfere.**

It is recommended that you have the various protocols printed ahead of time so they may be sent home with the parent and provided to the teacher. The necessary forms are always available for printing from the Tools and Help menu item. The CADI and SNAP-IV forms are available in English and Spanish languages by default.

### Simple steps are:

1. Have Diagnostic Interview (CADI) and SNAP-IV Reports completed for input into the program.
2. Enter the Patient's Demographic information in the database.
3. Enter the Diagnostic Interview (CADI) and SNAP-IV information if available.
4. Make sure to have a behavioral observation form ready before starting the tests.
5. Administer the Cognitive Tests, (all 3 in the same session with minimum interruption).
6. Input the behavioral observation and med status info while saving the scores.
7. Generate the reports, they can be viewed directly, printed, or exported in several electronic formats, as you prefer.

**To ensure a valid administration the following standard guidelines should be adhered to:**  
**Administered in this order on the same day Target Recognition, Target Sequencing, Target Tracking.**  
**Administered in the morning hours to avoid diurnal effects if possible.**  
**The environment should be clear of undue noise, conversation and distracting toys or equipment.**  
**If a patient cannot learn the practice items after several attempts, the tests should not be given.**  
**A behavioral observation score must be recorded, even if zero, for the subtest scores to be saved.**  
**The attendant must sit with the patient and provide gentle redirection when needed.**  
**The attendant must have the ability to establish and maintain rapport.**  
**The attendant must not be a relative or personal friend of the subject.**  
**The subtests are completed outside of the presence of the parent or guardian.**

Although a trained assistant (qualified technician) can administer and input information into the PADDs, the responsibility for interpreting the PADDs results and reports must lie with the appropriately licensed professionals. Specific environmental considerations and standard administration procedures outlined in the clinical manual must also be maintained. These individuals should have training in the fundamental principles of assessment, such as establishing rapport with the subject, familiarity with computer-administered tests, and following standard administration procedures as outlined in the clinical manual.

It is also the responsibility of the licensed professional to ensure the PADDs materials are only released to responsible assistants as necessary and to maintain the security and integrity of the test materials by safeguarding the proper use of PADDs at all times.

**The PADDs system is intended to work as an adjunct with proper clinical experience and as such is not intended for use as stand alone diagnostic measure.**

**The SNAP-IV Teacher and Parent Rating Scale**  
James M. Swanson, Ph.D., University of California, Irvine, CA 92715

Name: \_\_\_\_\_ Gender: \_\_\_\_\_ Age: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Ethnicity (circle one which best applies): African-American Asian Caucasian Hispanic Other: \_\_\_\_\_

Completed By: \_\_\_\_\_ Relationship to Patient: \_\_\_\_\_

| For each item, check the column that best describes this child:   | Not at All | Just a Little | Quite a Bit | Very Much |
|---|------------|---------------|-------------|-----------|
| <b>Attention</b>  |            |               |             |           |
| 1. Often fails to give close attention to details or makes careless mistakes in schoolwork or tasks     |            |               |             |           |
| 2. Often has difficulty sustaining attention in tasks or play activities                                |            |               |             |           |
| 3. Often does not seem to listen when spoken to directly  |            |               |             |           |
| 4. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties      |            |               |             |           |
| 5. Often has difficulty organizing tasks and activities   |            |               |             |           |
| 6. Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort            |            |               |             |           |
| 7. Often loses things necessary for activities (e.g., toys, school assignments, pencils, or books)      |            |               |             |           |
| 8. Often is distracted by extraneous stimuli  |            |               |             |           |
| 9. Often is forgetful in daily activities   |            |               |             |           |
| 10. Often has difficulty maintaining alertness, orienting to requests, or executing directions          |            |               |             |           |
| <b>Hyperactivity and Impulsivity</b>  |            |               |             |           |
| 11. Often fidgets with hands or feet or squirms in seat   |            |               |             |           |
| 12. Often leaves seat in classroom or in other situations in which remaining seated is expected         |            |               |             |           |
| 13. Often runs about or climbs excessively in situations in which it is inappropriate                   |            |               |             |           |
| 14. Often has difficulty playing or engaging in leisure activities quietly                              |            |               |             |           |
| 15. Often is "on the go" or often acts as if "driven by a motor"  |            |               |             |           |
| 16. Often talks excessively   |            |               |             |           |
| 17. Often blurts out answers before questions have been completed                                       |            |               |             |           |
| 18. Often has difficulty awaiting turn  |            |               |             |           |
| 19. Often interrupts or intrudes on others (e.g., butts into conversations/games)                       |            |               |             |           |
| 20. Often has difficulty sitting still, being quiet, or inhibiting impulses in the classroom or at home |            |               |             |           |

The 4-point response is scored 0-3 (Not at All=0, Just A Little=1, Quite a Bit=2, and Very Much=3). Subscale scores on the SNAP-IV are calculated by summing the scores on the items in the specific subset (1 - 10 and 11 - 20) and dividing by the number of items in the subset (10). This is referred to as the Average. The 5% cutoff scores for teachers and parents are provided. Compare the Average score with the related cut off score to determine if the score falls within the top 5% of scores.

These results should be input to the proper section, (parent or teacher), for automatic scoring and inclusion in the PADDs final reports. Additional scoring instructions are found in the manual if desired

|  | Parent Report | 5%   |  | Teacher Report | 5%   |
|--|---------------|------|--|----------------|------|
| Averages for Inattention (Sum of 1-10) / 10    |               | 1.78 |  |                | 2.56 |
| Averages for Hyperactivity (Sum of 11-20) / 10 |               | 1.44 |  |                | 1.78 |
| Averages for combined (Sum of 1-20) / 20       |               | 1.67 |  |                | 2.00 |

Completed By: Dad Subject Relationship: Father

| #  | Question  | Answer        |
|----|---|---------------|
| 1  | Often fails to give close attention to details or makes careless mistakes in schoolwork or tasks    | Just a Little |
| 2  | Often has difficulty sustaining attention in tasks or play activities                               | Quite a Bit   |
| 3  | Often does not seem to listen when spoken to directly   | Very Much     |
| 4  | Often does not follow through on instructions and fails to finish schoolwork, chores, or duties     | Quite a Bit   |
| 5  | Often has difficulty organizing tasks and activities  | Very Much     |
| 6  | Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort           | Quite a Bit   |
| 7  | Often loses things necessary for activities (e.g., toys, school assignments, pencils, or books)     | Very Much     |
| 8  | Often is distracted by extraneous stimuli   | Quite a Bit   |
| 9  | Often is forgetful in daily activities  | Very Much     |
| 10 | Often has difficulty maintaining alertness, orienting to requests, or executing directions          | Quite a Bit   |
| 11 | Often fidgets with hands or feet or squirms in seat   | Not at All    |
| 12 | Often leaves seat in classroom or in other situations in which remaining seated is expected         | Just a Little |
| 13 | Often runs about or climbs excessively in situations in which it is inappropriate                   | Just a Little |
| 14 | Often has difficulty playing or engaging in leisure activities quietly                              | Not at All    |
| 15 | Often is on the go or Often acts as if driven by a motor  | Just a Little |
| 16 | Often talks excessively   | Just a Little |
| 17 | Often blurts out answers before questions have been completed                                       | Quite a Bit   |
| 18 | Often has difficulty awaiting turn  | Just a Little |
| 19 | Often interrupts or intrudes on others (e.g., butts into conversations/games)                       | Quite a Bit   |
| 20 | Often has difficulty sitting still, being quiet, or inhibiting impulses in the classroom or at home | Just a Little |

This rating scale indicates the possibility of ADHD. Details are given below.

|   | Totals | Average | 5% Cutoff | Indication                           |
|---|--------|---------|-----------|--------------------------------------|
| Average of scores for ADHD - Inattention        | 23     | 2.30    | 1.78      | Inattention: #TRUE#                  |
| Average of scores for Hyperactivity/Impulsivity | 10     | 1.00    | 1.44      | Hyperactivity / Impulsivity: #FALSE# |
| Average of scores for ADHD - Combined Type      | 33     | 1.65    | 1.67      | Combined-Type: #FALSE#               |

The 4-point response is scored 0-3 (Not at All = 0, Just A Little = 1, Quite A Bit = 2, and Very Much = 3). Subscale scores on the SNAP-IV are calculated by summing the scores on the items in the specific subset (eg., Inattention) and dividing by the number of items in the subset (eg.,10). The score for any subset is expressed as the Average Rating-Per-Item. Comparing this average to the respective 5% Cutoff for parent ratings allows us to identify the top 5% of ADHD.

## PADDS Assessment of Testing Behaviors Form

The Assessment of Test Behavior was developed to help assess and quantify behavior changes in subjects across administration as in pre-medication and post-medication challenges.

Redirection/Re-instruction: For this reference a stick mark should be recorded for every instance that the examiner has to remind the patient to attend to the task at hand or to repeat instructions once the test has been started. Note this should be recorded each time regardless of whether the need to redirect or to restate instructions was caused by inattention, other fidgeting behaviors or emotional reactions.

Fidgeting: For this reference a stick mark should be recorded for each instance of fidgeting observed. For example, non-helpful movement, out of seat, bouncing, climbing around, excessive questions/talking.

Emotional Reaction: For this reference, a stick mark should be recorded for every observed instance of emotional reactivity. For example, the need for strong encouragement, sulking, negative comments, demonstrations of frustration, refusals to work, requests to stop.

|                                 | <u>Total</u> |
|---------------------------------|--------------|
| <u>Target Recognition</u> _____ | _____        |
| <u>Target Sequencing:</u> _____ | _____        |
| <u>Target Tracking:</u> _____   | _____        |
| <i>Grand Total</i>              | _____        |

This form is used to record behavioral observations during testing, these will be input by you along with medication status before scoring. This data is useful in determining treatment efficacy

**To ensure a valid administration the following standard guidelines should be adhered to:**

Administered in this order on the same day Target Recognition, Target Sequencing, Target Tracking.  
Administered in the morning hours to avoid diurnal effects if possible.

The environment should be clear of undue noise, conversation and distracting toys or equipment.

If a patient cannot learn the practice items after several attempts, the tests should not be given.

A behavioral observation score must be recorded, even if 0, for the subtest scores to be saved.

The attendant must sit with the patient and provide gentle redirection when needed.

The attendant must have the ability to establish and maintain rapport.

The attendant must not be a relative or personal friend of the subject.

The subtests are completed outside of the presence of the parent or guardian.

# PADDS Test Results Report Sample

Test Subject Age: 8

Age at this testing: 7

The SNAP-IV\* Parent rating scale indicates the possibility of ADHD is #TRUE#, Details are given below.

| SAMPLE DATA for evaluation                      | Totals | Average | 5% Cutoff | Indication                          |
|---|--------|---------|-----------|-------------------------------------|
|   | 28     | 2.80    | 1.78      | Inattention: #TRUE#                 |
| Average of scores for Hyperactivity/Impulsivity | 27     | 2.70    | 1.44      | Hyperactivity / Impulsivity: #TRUE# |
| Average of scores for ADHD - Combined Type      | 55     | 2.75    | 1.67      | Combined-Type: #TRUE#               |

ADHD Criteria Rating Scales based on the SNAP-IV, James M. Swanson Ph.D. (used by permission, 2008)

\* Swanson J.M., Nolan W., Pelham W.E., (1992) The Snap-IV Rating Scale. <http://www.adhd.net>

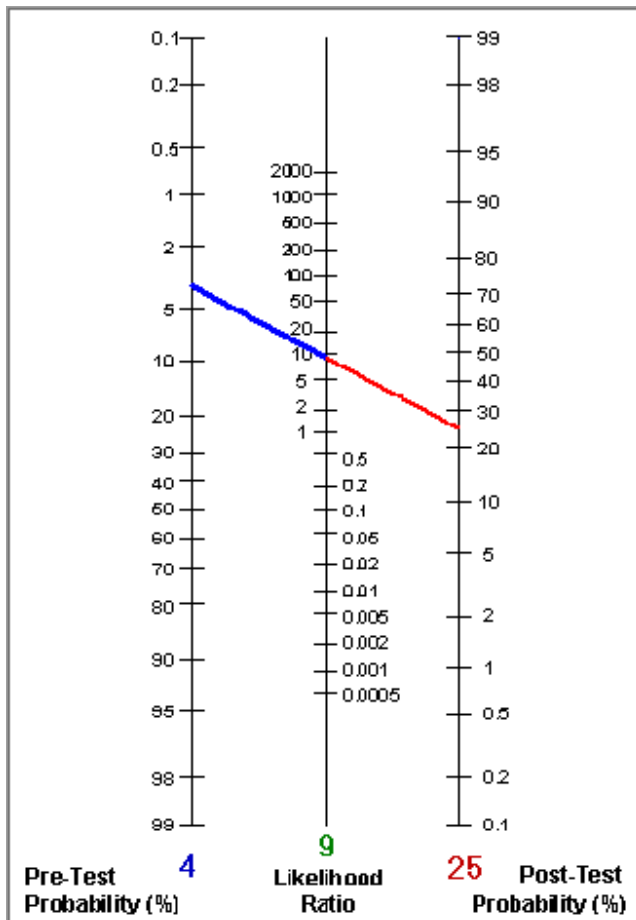
The SNAP-IV\* Teacher rating scale indicates the possibility of ADHD is #TRUE#, Details are given below.

|   | Totals | Average | 5% Cutoff | Indication                          |
|---|--------|---------|-----------|-------------------------------------|
| Average of scores for ADHD - Inattention        | 25     | 2.50    | 2.56      | Inattention: #FALSE#                |
| Average of scores for Hyperactivity/Impulsivity | 25     | 2.50    | 1.78      | Hyperactivity / Impulsivity: #TRUE# |
| Average of scores for ADHD - Combined Type      | 50     | 2.50    | 2.00      | Combined-Type: #TRUE#               |

ADHD Criteria Rating Scales based on the SNAP-IV, James M. Swanson Ph.D. (used by permission, 2008)

\* Swanson J.M., Nolan W., Pelham W.E., (1992) The Snap-IV Rating Scale. <http://www.adhd.net>

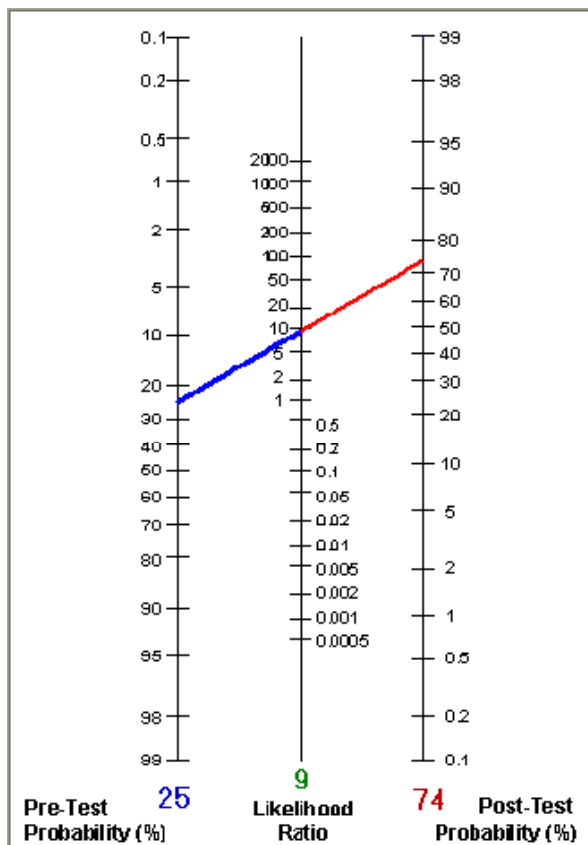
6/16/2008



This graph shows the change in probability made when the Parent Report suggests ADHD ~

The Calculated Likelihood Ratio is: 9

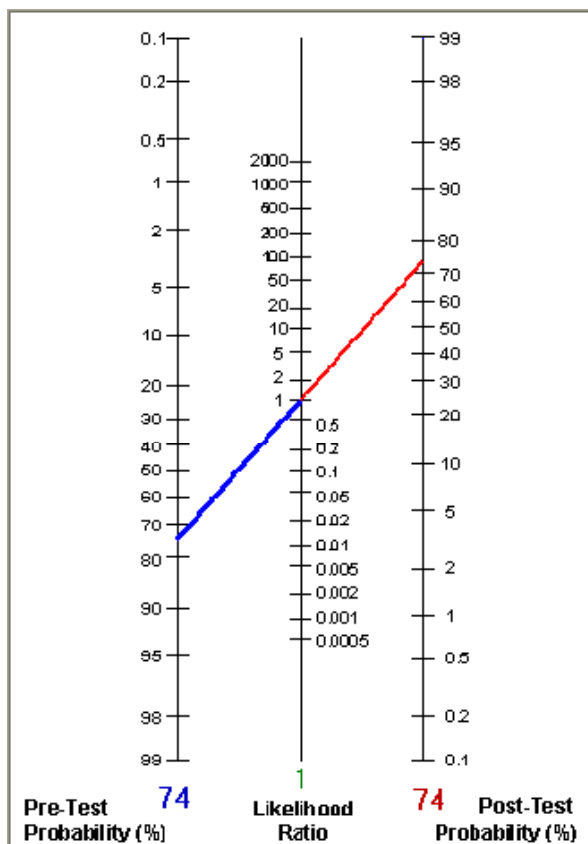
The new calculation seen here is made using the above likelihood ratio and shows the revised probability of 25 %, that the condition exists at this point.



This graph shows the change in probability made when the Teacher Report suggests ADHD ~

The Calculated Likelihood Ratio is: **9**

The new calculation seen here is made using the above likelihood ratio and shows the revised probability of **74 %**, that the condition exists at this point.

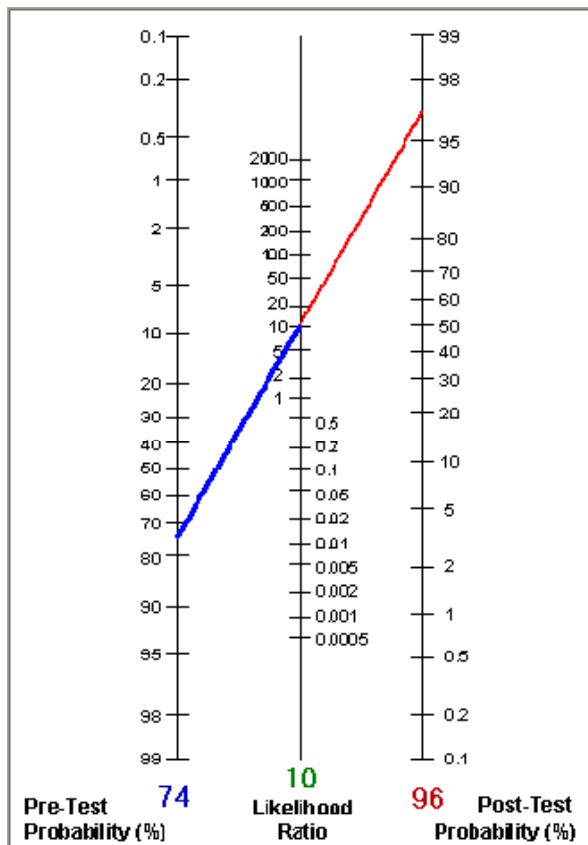


This graph shows the change in probability made when the Target Recognition score is **101**

The Calculated Likelihood Ratio is: **1**

The new calculation seen here is made using the above likelihood ratio and shows the revised probability of **74%**, that the condition exists at this point.

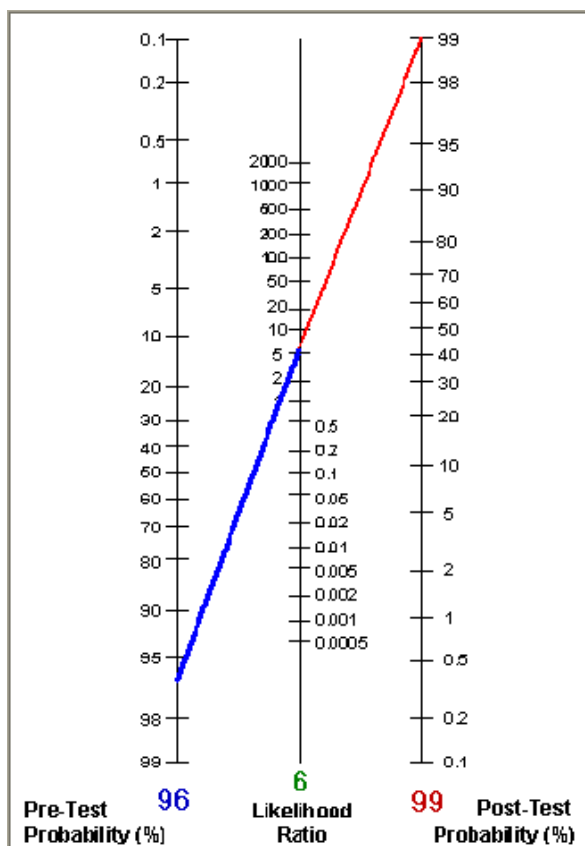




This graph shows the change in probability made when the Target Sequencing score is **15**

The Calculated Likelihood Ratio is: **10**

The new calculation seen here is made using the above likelihood ratio and shows the revised probability of **96%**, that the condition exists at this point.



This graph shows the change in probability made when the Target Tracking score is **5**

The Calculated Likelihood Ratio is: **6**

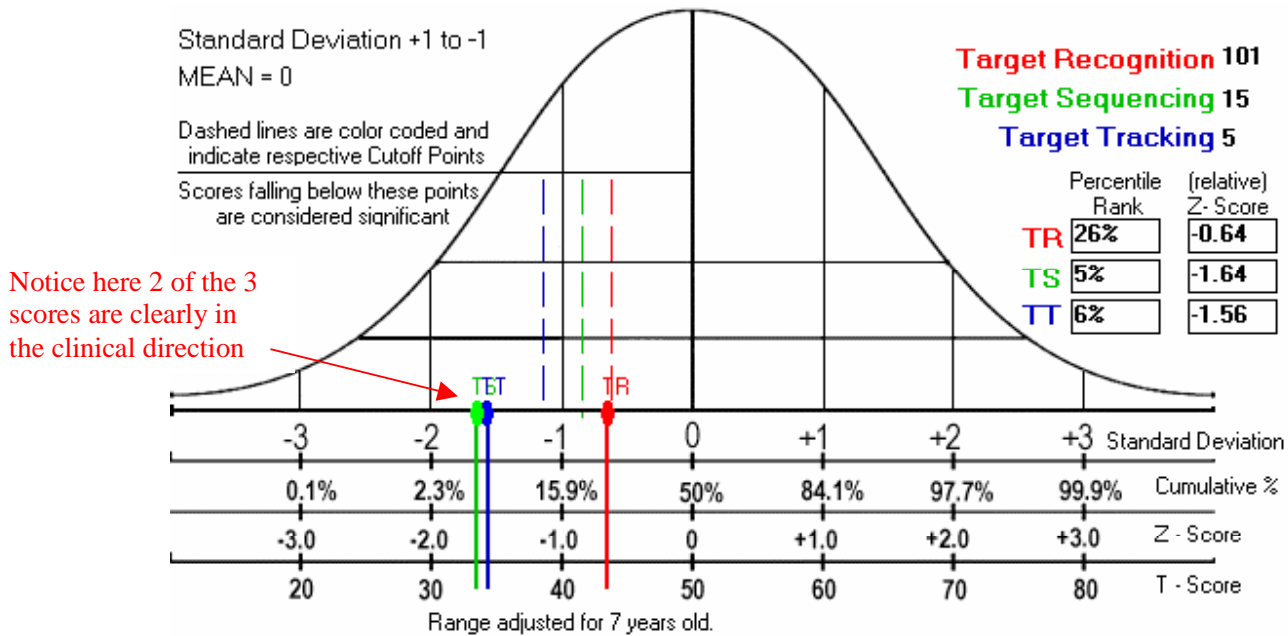
The new calculation seen here is made using the above likelihood ratio and shows the revised probability of **99%**, that the condition exists at this point.

**SAMPLE DATA** for evaluation purposes only. Items triggered to illustrate report sections. Actual reports will range 3 – 6 pages depending on information given.

The age adjusted score calculations for this session result in a: **99% Overall Probability**

**STANDARD SCORE COMPARISONS OF TARGET TEST PERFORMANCES:**

This standard score comparison depicts the relative placement of the subject's Target Subtest Raw Scores to the Normalized distribution of the PADDs NON-Clinical reference group.



It is possible in unusual instances for a single subtest performance to significantly alter the predictive index in an unexpected direction. This graph above is used to visually compare the individual tests performance, (color coded indicators), to the non-clinical group cutoff points for that age, (color coded dashed lines). Test indicators that fall on or to the left of the matching cutoff line are considered to be clinically significant. This is where it may be helpful to apply the "2 out of 3" rule in addition to your clinical judgment.

**Table 3.** Age adjusted 95 % confidence intervals for TR, TS & TT raw scores

| RAW SCORES |               |           | 7 YRS  | Typical |      |          |
|------------|---------------|-----------|--------|---------|------|----------|
| AGE        | PADDs subtest | Cut score | M      | SD      | SEM  | 95% CI   |
| TR = 101   | TR            | >102      | 111.75 | 24.92   | 9.32 | 93 – 130 |
| TS = 15    | 7 yrs TS      | >26       | 30.29  | 5.2     | 1.95 | 26 – 34  |
| TT = 5     | TT            | >6        | 10.13  | 3.18    | 1.18 | 8 – 12   |

The PADDs system is designed to combine all three subtests into one predictive index. Therefore, it is possible in unusual instances for a single subtest performance to significantly alter the predictive index in an unexpected direction. A quick comparison to the age appropriate cut off points and the 95% confidence intervals (in the table above) can reveal if this performance is not in agreement with the bulk of other information obtained.

Chapter 6 in the clinical manual shows the clinical utility (Sensitivity, Specificity, Positive & Negative predictive Power) of the Target subtests when two of the three subtests fall within the predicted direction of the normative samples. Thus, if behavior ratings are positive and impairment is evident then, despite an unusually high single score, the "2 out of 3" rule should be considered to help inform clinical judgment and to validate the confidence of using the remaining evidence.

**In the previous nomograms, the age adjusted score calculations for this session were combined incrementally and resulted in a: 99 % Overall Probability that ADHD is present.**

### **INTERPRETATION GUIDELINES:**

#### 90-99 Percent Probability:

PADDS Predictive Index Scores in this range clearly support a diagnosis of ADHD and suggests that strong consideration of the risk for intervening should be made against the risks of not intervening. Typically, Scores in this range will have multiple confirming sources of information from well-established measures including demonstrated impairment in academic and or social/emotional areas of functioning. A review of PADDS inputs will show that Parent and/or Teacher Ratings and at least two of the three Target subtests were found in the clinical range (See published Cut Off scores listed below for the Target Tests of Executive Functioning). Consideration of the objective assessment must be made in conjunction with Clinical Judgment, and other sources of information (i.e. the CADI or other interview and information or tests deemed useful).

#### 80-90 Percent Probability:

PADDS Predictive Index Scores in this range are suggestive of ADHD. Again, multiple inputs will be found supporting a diagnosis. *However*, Actual Impairment may not be as evident from the background report and should be considered in conjunction with Clinical Judgment and other information deemed appropriate. (i.e. the CADI or other interview and information or tests deemed useful).

#### Below 80 Percent Probability:

PADDS Predictive Index Scores below this range are not deemed adequate to support a clinical diagnosis of ADHD and suggests that comorbid issues should be looked at closely. *However*, other information obtained by the clinician along with clinical judgment may in fact show that a diagnosis is warranted.

#### **Clinical Note**

## Diagnostic Interview (CADI) Report Sample

### COMPUTER ASSISTED DIAGNOSTIC INTERVIEW

### SUMMARY REPORT

Date:  
3/1/2008

Thomas K. Pedigo ED.D & Kenneth L. Pedigo

The Computer Assisted Diagnostic Interview, (CADI), is designed to assist clinicians with the collection and consolidation of pertinent patient information. The CADI is not sufficient by itself for clinical diagnosis of any mental disorders. This information is appropriate to help structure the assessment process and to support recommendations that might be generated. The CADI should be reviewed, with the informant, by a competent professional to cross validate any concerns presented.

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**Patient: John Stest**

**Age: 8**

**Grade: 2nd**

**Respondent: Dad Stest**

**Relationship: Father**

Domains considered in this interview:

Medical History / Systems Review  
Developmental History  
Social / Emotional Functioning

Depression / Anxiety  
Behavior  
School History

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Possible concerns were reported for the following areas.

**Speech/Language Difficulty:**

*Reference section: Developmental History*

**ADHD Related Concerns Reported:**

*Reference section(s): Reason for referral, Developmental History, School History, Attention/Concentration/Hyperactivity, .*

**Social/Emotional/Behavioral Difficulty:**

*Reference section(s): Emotional/Social Development, School History,*

**Developmental Issues:**

*Reference section: Developmental History*

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### **Reason for referral**

| <b>Question</b>  | <b>Answer</b> |
|--|---------------|
| Are there any school or academic problems?                         | Yes           |
| Are there any behavioral problems?                                 | Yes           |
| Is there any hyperactivity or overactivity?                        | Yes           |
| Are there problems with poor attention span or weak concentration? | Yes           |

Comments:

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### **Developmental History**

| <b>Question</b>   | <b>Answer</b> |
|---|---------------|
| When did your child roll over?                                    | More than     |
| When did your child sit up alone?                                 | More than     |
| When did your child crawl?  | More than     |
| When did your child walk holding onto furniture or other things?  | More than     |
| When did your child walk without holding onto things?             | More than     |
| When was your child potty trained?                                | More than     |
| Does your child feed themselves properly?                         | No            |
| Can your child ride a bike without training wheels?               | No            |
| Can your child skate?   | No            |
| Can your child throw and kick a large ball?                       | No            |
| Can your child catch a large ball when tossed to them?            | No            |
| Does your child seem confused by your instructions?               | Yes           |
| Is there a family history of attention or concentration problems? | Yes           |
| Is there a family history of learning difficulty?                 | Yes           |

**Given the number of concerns reported for developmental skills, consideration should be given for the impact of general intellectual ability. If sub-average intellectual ability is suspected and concerns are reported for attention and concentration, then intellectual screening is recommended as an adjunct to the assessment and diagnostic process.**

Comments:

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## **School History**

### **Question**

Has your child ever been kept back a grade?

### **Answer**

Yes

Has the teacher expressed concern for your child's progress?

Yes

Has the teacher complained about your child's behavior?

Yes

Has the teacher reported problems with your child's attention?

Yes

Has the teacher reported your child to be overactive?

Yes

**An attempt to confirm the child's reported school grades and performance is recommended.**

Comments:

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## **Attention, Concentration, and Hyperactivity.**

| <b>Question</b>   | <b>Answer</b> |
|---|---------------|
| Does the child fail to give attention to details or make careless mistakes?                     | Yes           |
| Does the child have difficulty maintaining concentration?                                       | Yes           |
| Does the child not seem to listen when spoken to directly?                                      | Yes           |
| Does the child not follow through on instructions and fail to finish tasks?                     | Yes           |
| Does the child have difficulty organizing tasks and activities?                                 | Yes           |
| Does the child avoid dislike or is reluctant to do tasks that require sustained mental effort?  | Yes           |
| Does the child often lose things necessary for tasks or activities?                             | Yes           |
| Is the child easily distracted by things around them?   | Yes           |
| Is the child often forgetful in daily activities?   | Yes           |
| Does the child often fidget with hands or feet or squirm in seat?                               | Yes           |
| Does the child often leave seat in classroom or in other situations?                            | Yes           |
| Does the child often run about or climb excessively in situations in which it is inappropriate? | Yes           |
| Does the child often have difficulty playing or engaging in activities quietly?                 | Yes           |
| Does the child often appear to be driven by a motor always on the go?                           | Yes           |
| Does the child seem to talk constantly?   | Yes           |
| Does the child often blurt out answers before questions have been completed?                    | Yes           |
| Does the child often have difficulty awaiting their turn?                                       | Yes           |
| Does the child often interrupt or intrude on others?  | Yes           |
| Did the child display these behaviors before 7 years of age?                                    | Yes           |
| Do these behaviors occur away from home as well as at home?                                     | Yes           |
| Have these behaviors affected the child's social and/or academic functioning?                   | Yes           |

**Given the number of concerns reported suggestive of ADHD, a review should be made to determine the age at which the problems emerged along with the range of settings in which they occur and the degree of functional impairment experienced. Comparison with other confirmatory lines of information is recommended (i.e. Teacher behavior reports, evidence for underachievement, behavioral impairment, cognitive assessment of ADHD symptoms). Additionally, determination of the potential impact of psychosocial stress and major emotional difficulty should be considered. If significant signs of ADHD are evident with multiple areas of functional impairment, Professional evaluation would be recommended.**

Comments:

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**FURTHER CONSIDERATIONS :**

The respondent reported that the patient displays symptoms suggestive of **ADHD** in conjunction with suspicion of **atypical development**. Regarding the ADHD symptoms reported, a review of multiple lines of evidence is warranted such as the consistency of home and school reports, assessment of functional impairment if any along with objective clinical assessment of attention/concentration and/or impulse control/hyperactivity. Assessment of intellectual functioning is advised.

Complete review of lines of evidence: Check all that are positive for ADHD

|   |  |
|---|--|
| Parent report                                 | Functional and/or academic impairment is evident         |
| Teacher report                                | Problems were evident before age 7                       |
| Target Recognition                            | Problems occur in more than one setting                  |
| Target Sequencing                             | No significant emotional or mood problems                |
| Target Tracking                               | Child does not display severe speech/language impairment |
| Positive family history                       | Child does not display severe neurological impairment    |
| Child appears to possess average intelligence | Diagnostic impression: ADHD                      Other   |

Plan of action:

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Medication Trial: Med: \_\_\_\_\_ Dose \_\_\_\_\_ Follow up date: \_\_\_\_\_

Instructions to monitor behavior: \_\_\_\_\_

Complete Lab work: \_\_\_\_\_

Psychological Consult: \_\_\_\_\_

Other Action taken: \_\_\_\_\_

Clinician Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Parent or Guardian Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## PADDS Testimonials

"The PADDs system represents a clear advancement over existing computerized performance tests for ADHD. The colors, sounds, and videogame-like format of the Target Tests appeal to children without compromising the sensitivity and specificity of the tests. The reporting feature of the PADDs system also signals the future of evidence-based diagnostic screening. To my knowledge, the PADDs system is the first of its kind to include actuarial tools (diagnostic likelihood ratios, a nomogram, and posttest probability) in its reporting feature. This user-friendly reporting feature provides a step-by-step process for understanding how results from behavioral reports and the Target Tests influence the probability of ADHD. I have found this feature to be invaluable when screening for ADHD, as well as for diagnostic decision making when used as part of a comprehensive evaluation."

Jason J. Washburn, Ph.D. ABPP  
Chicago Children's Clinic  
Chicago, IL

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The PADDs reflects a more sophisticated understanding of attentional problems and thus approaches their diagnosis with a model that fits better with the diagnosis. But it is also more attractive to the children and produces better compliance with the test, reducing likelihood of motivation as a confounding variable. We intend to use it initially as an added measure to our usual CPTs to learn more of the differences, but anticipate the PADDs replaces CPTs in our testing protocols soon.

Timothy A. Sisemore, Ph.D.  
Director  
CBI Counseling Center  
Psychological Studies Institute  
Chattanooga, TN

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Pediatric Attention Disorders Diagnostic Screener (PADDs) is an innovative, highly reliable and valid screening instrument for children at risk for and with attention disorders. PADDs includes three brief and highly engaging target subtests that measure important aspects of executive functioning. I applaud the authors for developing this highly sensitive and valuable instrument!

Linda A. Reddy, Ph.D.  
Former Director of the Child/Adolescent ADHD Clinic  
Fairleigh Dickinson University Hackensack, NJ

Associate Professor, Rutgers University  
Director, Child ADHD and ADHD-Related Disorders Clinic  
The Graduate School of Applied and Professional Psychology Piscataway, NJ

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"As a certified school psychologist and Licensed Psychologist I am frequently asked to screen children for possible ADHD. My recent use of the PADDs system has been very favorable in that the children routinely remain engaged without becoming frustrated as often happens with other CPT's. This ensures a more accurate effort and help builds rapport. I plan to incorporate the PADDs system into my future clinical work."

Larry D. Long, Ed.S.  
School Psychologist, ID  
Licensed Psychologist, MO.

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As a clinician working in a highly mobile (military) community, I am often confronted with a need for thorough yet quick and accurate assessments. Since incorporating PADDs into my assessment battery, not only am I able to complete assessments in a more timely manner, but the assessments are much more accurate at isolating ADHD concerns. I plan to continue using the PADDs in all my adolescent and youth assessments when attention or hyperactivity concerns are noted.

Tom Black, Ph.D. Clinical Director  
Darsey, Black & Associates

As a licensed mental health provider and school psychologist, I am frequently asked by primary care physicians and schools to evaluate children for possible ADHD. The most valuable research based assessment tool that is available to clinicians to address this concern is the PADDs. Targeted Testing inc. has created a valid and reliable assessment instrument that is quick and easy to administer which yields immediate results that can be used as the centerpiece of a comprehensive clinical assessment for ADHD. The PADDs is truly a state-of-the-art instrument that is invaluable to the qualified clinician to assist in accurately making this diagnosis.

Will Darsey, M. A., LPC, CCMHC  
Licensed Professional Counselor  
National Certified School Psychologist  
Board Certified Clinical Mental Health Counselor

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Having used the PADDs in numerous evaluations, I have found the product to be superior to other computerized assessment tools in that children routinely report the Target Tests of Executive Functioning as fun but hard when taking them. The children are instantly attracted to its presentation of vivid colors and game like quality. Because of these reactions to the measures, children are more cooperative and require minimal prodding or coercion from the examiner as is routine in the use of traditional CPTs. When using the PADDs system I can be confident that a child's results more accurately reflect their abilities rather than just how quickly they gave up on a boring task.

Bonnie Craven, MA  
Professional Psychometrist  
Savannah Child Study Center

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The Pediatric Attention Disorders Diagnostic Screener was well received by the children who participated in the study. Compared to other tests that assess the same constructs, children were attracted to the variety of colors and shapes. They remained engaged through the overall interactive nature of the tool. The instructions were clear as few clarifying questions were asked.

Heather Landreth  
Research Assistant  
Psychological Studies Institute  
Chattanooga, TN

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"In our experience administering the PADDs Target Tests of Executive Functioning we observed that children found it fun and engaging. In fact several children thought the assessment was actually a game! Administering the Target Tests were quick, easy, and much more enjoyable for the clinician and child than the conventional CPT it was compared with. The computer administered instructions provided by the program were straight forward and easily understood by the children."

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| Alisa Manulkin, Ph.D.<br>Former Director<br>University of Miami<br>Mailman Center for Child Study<br>The divisions of General Pediatrics and Clinical Psychology<br>University of Miami Miller School of Medicine. Miami, FL | Gianna Locascio, Psy. D.<br>Research Assistant |
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"In over thirty-five years I have never come across an AD/HD screening test that is so exciting and best of all it is evidence-based. The PADDs incremental plotting "wows" parents so they can visually compare their child's performance in concert with their own results as well their child's teacher's. The utility of the PADDs for pre/post medication testing is also invaluable. I look forward to using this test in the years to come."

Steven Spector, Ph.D.  
Licensed Psychologist  
Independent Practice  
Adjunct Assistant Professor, Departments of Pediatrics/ Psychiatry  
Wayne State University School of Medicine

**USER QUALIFICATION AND AGREEMENT  
FOR PURCHASE AND USE OF THE PADDs SYSTEM:**

The PADDs system is classified as a class B instrument and can be purchased by individuals with certification or membership in appropriate professional organizations such as AAA, AAP, ACA, AEA, AERA, AMA, AOTA, APA, ASHA, CEC, EAA, INS, NAN, NASP or in a closely related field that requires comparable professional codes of conduct and experience with testing and/or measurement.

OR

Individual holds a masters degree in education, occupational therapy, psychology, social work, speech-language pathology, or in a field closely related to the intended use of the assessment, with documented formal training in the ethical administration, scoring, and interpretation of clinical assessments.

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Other \_\_\_\_\_

I understand that the PADDs system is administered by computer and may be supervised by my assistant (qualified technician). However, I certify by signature or by completing a web based order that I and/or other persons using the PADDs System licensed to me for clinical purposes will have general knowledge of ethical use and interpretation of such measures for their intended purpose. I acknowledge that the PADDs system is intended to work as an adjunct with proper clinical experience and as such is not intended to be used as stand alone diagnostic measure. I will maintain full responsibility for the Proper use of the PADDs system as stated/intended in this qualification/users agreement form.

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## PADDS Price Sheet

PADDS Is A Suite Of ADHD Assessment Tools Created Specifically To Improve Diagnostic Accuracy Helping To Reduce ADHD Over-identification While Minimizing The **Time** And Material **Expenses** Of ADHD Screening. This version Of PADDS is Designed For Children Ages 6 - 12



The practitioner or properly trained assistant can administer the cognitive tests in about 30 minutes.

PADDS is a multi-dimensional, evidence-based approach to ADHD screening.

Consisting of the "Target Tests of Executive Functioning" which are 3 newly developed, innovative and psychometrically superior computer administered tests, with a unique automatically calculated predictive index scoring and reporting method using Bayesian reasoning, likelihood ratios, and graphed on a nomogram to maximize the predictive power gained by combining multiple sources of evidence.

Each of the 3 Target Tests are designed to place distinctly different demands on several key areas of executive functioning that have been identified as important to ADHD assessment. The Target Tests' superior reliability and validity, when applied incrementally in combination with other evidence sources, allows the PADDS system to raise the standard for psychometric performance and clinical utility in ADHD screening.

All necessary documents, protocols, reports and scoring are included with the program and printable at any time, you won't need to purchase anything else. The program automatically does scoring and reporting for you. These "Kid Friendly" tests are easier to administer and take compared to current CPT's, as a result re-testing is also easier because most children are eager to re-take these tests. Subjects may be re-tested as many times as necessary and can help to determine treatment efficacy.

### Price Models

PADDS Full Version, Unlimited Use Model: ~~\$695.00~~ \$545.00 Conference Special

This is the full version of PADDS, unlimited uses. Printed Manuals and CD-Rom Media included. Works with MS Windows 2000, XP, and VISTA. This version represents the best value for clinicians, who do a larger number of assessments per year. Unlimited copying and printing of program documents is allowed including manuals and Spanish protocols.

PADDS Full Version, Pay Per-Use Model: ~~\$395.00~~ \$295.00 Conference Special

This is the full version of PADDS, pay per-use model. Printed Manuals and CD-Rom Media included. Works with MS Windows 2000, XP, and VISTA. This version represents the best value for clinicians, who do a smaller number of assessments.

This version **comes pre-loaded with 5 clinical uses**, and 2 training uses to familiarize yourself with the program, total of 7 uses. Additional uses can be purchased in different quantities at costs of \$7 - \$10 ea depending on quantities ordered. Unlimited copying and printing of program documents is allowed including manuals and Spanish protocols.

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