Examiner/Technical Manual

The
Cognitive Processing Inventory (CPI)

Designed for:

- assessment of information processing skills
- evaluation of learning styles
- differential diagnosis of specific learning disabilities

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Section 1

Overview of the Cognitive Processing Inventory (CPI)

Development of the CPI: The CPI has been developed over the past thirty years to assist in the process of non-biased differential diagnosis of students with learning disabilities. It is based upon a thorough review of current neuropsychological research in addition to formal cognitive assessment of over 2000 students, hundreds of parent and student interviews, and direct behavioral observation of students with identified learning disabilities. Ultimately, the intent was to develop a tool which could supplement standard assessment practices and also quantify the information which parents already have about their own child's learning and cognitive skills. It has been found that the CPI can reliably differentiate specific subtypes of learning disabilities and promote clearer understanding of cognitive processing skills and appropriate educational intervention.

Standardization of the CPI: The initial preliminary standardization of the CPI used a two-phase process completed over the course of one year. Phase one of that process involved distribution of CPI rating forms to over 5000 families in a suburban Minnesota area. Approximately 700 of these parent and student/self ratings were completed and returned for data analysis. Teachers were also asked to complete CPI ratings for students who had taken part in the home-rating process. After development of preliminary norms during phase one, phase two was initiated which involved posting an internet web-based CPI rating program. This on-line CPI rating allowed anyone with an internet connection to take part in the standardization process and facilitated the gathering of additional ratings from across the country. The web-based CPI has also enabled ongoing monitoring and revision of the norms.

After establishment of preliminary norms through the two-phase process described above, several school districts and psychologists in private practice across the United States have volunteered to complete a traditional standardization process by gathering rating data from a broad random sampling of subjects. Norms are regularly updated though this process.

Age and Gender: The current total standardization sample of 5776 cases are separated into six age/gender groups to be used in the development of the norms. Table 1.1 shows the total number of individuals in each group.

Table 1.1

Standardization Samples by Age and Gender

Age Group	Male (N)	Female (N)
4.0-6.9	438	444
7.0-10.9	569	547
11.0-14.9	489	583
15.0-18.9	405	546
19.0-22.9	443	471
23+	417	424

Ethnicity: Ethnic distribution within the CPI standardization group has been adjusted to match current U.S. census data.

Because of concern regarding nonbiased assessment practices, further data analysis was conducted to determine the significance of any potential differences found between ratings of "white" and "non-white" individuals. Two-tailed *t*-tests were performed comparing white and non-white average raw scores obtained in each processing domain for parent, teacher, and student/self ratings. **These statistical comparisons found no significant differences across any of the six processing domains or within the Global Processing Index as a function of ethnicity.** This suggests that the CPI is able to provide a nonbiased assessment of cognitive processing skills.

Appropriate use of the CPI: The CPI is intended to provide an observable rating of a student's information processing and/or learning style. It primarily represents a convenient means of gathering information from parents about how they view their child's learning and thinking skills. And for older students (age 12 and up) and adults, valuable information can be directly obtained about how they view themselves. Although teacher norms are included, because the CPI is most accurate when completed by someone with long-term familiarity with the student, teacher ratings tend to be somewhat less reliable than parent ratings. For this reason, **it is suggested that the CPI only be used with teachers who are very familiar with the student in a variety of settings over a relatively long period of time.** In general, parent ratings are preferred (as well as self-ratings for individuals over the age of 12).

The CPI is not intended to be used as a sole or even primary assessment of information processing. In general, it should be used in conjunction with objective assessment data and always interpreted with sound professional judgment.

Brief description of the rating scales: The information processing model chosen for the CPI includes the following six general areas of cognitive processing, each of which is based upon well-researched theories of learning and cognition:

Visual processing

Auditory processing

Sequential/rational processing

Conceptual/abstract processing

Processing speed

Executive Functioning

In order to evaluate these processing areas, rating forms are completed by parents, teachers, or the students themselves. These forms consist of 15 questions pertaining to background and demographic information followed by 50 rating items. Each item is rated on a scale of 1 to 5 with 1 indicating "obvious difficulty" and 5 indicating "obvious strength" for the person being rated. A

rating of 3 is to be used either to indicate "average skill" or when the rater is uncertain about the correct response. This insures that "uncertain" ratings will not significantly skew the results.

Two versions of the rating forms are available in both English and Spanish; the CPI for children ages 4-7, and the CPI for ages 7-adult.

The CPI vs formal cognitive assessment: An individually-administered cognitive assessment instrument is primarily designed and intended to evaluate a student's general intellectual/cognitive abilities. Although subscale or subtest scatter analysis can be an effective means of developing hypotheses regarding an information processing "style", the utility of such approaches has not been clearly substantiated by research. This is probably due to the limited sample of behavior which is available within each subtest along with the inherent error of any "one time only" test of skill.

In contrast, a rating scale such as the CPI is intended to evaluate parents' (and teachers') long-term knowledge and understanding of how a specific child typically performs on everyday activities which have been observed over the course of several months or even years. Each item within the CPI has been carefully chosen because of its direct empirically-based relationship to the given processing area. As such, a certain level of reliability and validity is "built-into" the CPI rating process. Combining the CPI with formal cognitive assessment provides a very solid base of interpretive data for identifying an information processing pattern within a specific individual.

Section 2

Statistical Properties of the CPI

Scores Provided by the CPI:

Presently, the scores provided by the CPI are based upon a normative sample of over 5500 individuals ages 4 through 60, across the United States. Norms are provided for parent ratings, teacher ratings, and self ratings across all age groups. Standardized scores (provided through computer scoring) include:

- Standard Scores (SS) in each processing domain,
- A Global Processing Index (GPI), and
- Standard Deviation of Difference scores (SDD)

Standard Scores (SS) in each processing domain reflect how a particular student's rating compares to the population "norm" for that rating group (parent, teacher, or self). The mean is set at 100 and the standard deviation set at 15 in order to facilitate interpretation. These standard scores are provided on the Technical Report format of the CPI computer scoring program and can also be plotted on the Graphic Report format to provide a visual display of relative processing strengths and weaknesses.

The Global Processing Index (GPI) is also provided on the Technical Report format as a standard score (with a mean of 100 and standard deviation of 15) and simply represents the average "overall" rating of a particular subject. This is used to determine the relative significance of any differences found across the six processing domains. The GPI provides a standardized comparison between a specific person's rating and the "norms" of the standardization sample who have already been rated. Scores within + or - one standard deviation of the mean (from 85 to 115) represent the "average range" of the standardization group and account for approximately 67% of the total population scores. Although it is on the same scale as most IQ scores, the GPI should not be confused with a measure of general intelligence. The GPI is intended to provide a general measure of overall information processing skill (as viewed by those completing the ratings) which can then be used to determine relative processing strengths and weaknesses in specific areas (see below). Although a low GPI score may suggest rather significant overall information processing difficulty, it would not necessarily suggest low cognitive ability. This is a very important distinction.

The Standard Deviation of Difference (SDD) score is provided to assist with the interpretation of the significance of differences found between standard scores in each processing domain and the Global Processing Index. From a diagnostic standpoint, Standard Deviation of Difference (SDD) scores are considerably more valuable than the GPI because these SDD scores reflect measurable differences within the individual rather than in comparison to other students.

SDD scores provide a measure of the significance of differences found between an individual's GPI and their particular rating in each specific processing area. As with the GPI, the SDD scores relate to the differences found within the standardization group of the "normal population". SDD scores within the -1 to +1 range represent the average or "normal" differences found within 67% of

the general population. Based upon the norms, approximately 16% of the general population would obtain an SDD score in any given area lower than -1 and 16% of the general population would be expected to have SDD scores above +1. Only 2% of the general population would be expected to have SDD scores either less than -2 or greater than +2. From a diagnostic perspective, a processing SDD score below -1 could be considered significant enough to negatively impact learning.

For interpretation, "moderate discrepancy" is found in the range of 1 to 2 SDDs (either positive or negative) from the GPI. 2 or more SDDs from the GPI represents a "severe discrepancy" and would indicate either a significant strength or significant weakness in that processing area. Besides the SDD scores in each processing area, the CPI also provides SDD scores reflective of differences between dichotomously paired processing domains. These would included: Auditory Processing vs Visual Processing, and Sequential Processing vs Conceptual processing. Again, 1 or more SDDs between these processing areas would indicate a moderate to significant difference.

SDDs from GPI	**Interpretation**
2 +	Significant Relative Strength
1 to 2	Moderate Relative Strength
-1 to +1	Average Range
-1 to -2	Moderate Relative Weakness
-2 +	Significant Relative Weakness

The computer-generated report automatically calculates the number of SDDs that a specific processing standard score falls above or below the Global Processing Index. For example, if the GPI is 100 and the Auditory Processing SS is 88, that may translate to a difference of -1.5 SDDs. This would suggest that Auditory Processing is moderately discrepant from the GPI indicating an apparent relative weakness in this area.

Intra-cognitive vs inter-cognitive interpretation:

Beginning with version 5.0 of the CPI scoring software, examiners are provided the option of either utilizing the default “intra-cognitive” interpretation (evaluating the significance of differences within the individual subject) or switching to a somewhat more traditional “inter-cognitive” interpretation (evaluating the significance of differences between the individual subject and the mean of the norm group). Before deciding which interpretation to use it is very important to fully understand the design and intent of the CPI as well as the pros and cons of each option.

Intra-cognitive comparison represents the true design and intent of the CPI and also follows the philosophical underpinnings of the term “Learning Disability”. In essence, a true learning disability exists when a student’s underachievement is caused by information processing differences within his or her brain. By default, the CPI provides a formal evaluation of intra-cognitive processing differences by comparing the differences noted on the CPI rating forms with “normal” differences found within the norm group. To do this, the CPI scoring program first calculates the subject’s global processing index (GPI) for each rating as well as standard scores in each processing area. These standard scores are then converted to standard deviation of difference (SDD) scores based

upon the variance of scores among the norm group. These SDD scores range from -4 to +4 with a mean of 0 (zero). A score of zero simply means that the specific processing area score exactly matches the GPI of that particular rating. Since each specific rating for a particular subject is converted to this scale, all ratings can be directly plotted for visual comparison or relative strengths and/or weaknesses. In other words, even if one rating was rather critical and another rating somewhat lenient, intra-cognitive interpretation gives all ratings a mean of zero so that relative highs and lows can be directly compared.

Inter-cognitive comparison represents a means of more directly comparing a given subject's processing skills with the mean of the norm group. In other words, this interpretation simply compares a given subject's standard scores in each processing area with the statistical mean of the norm group (100). Standard scores between 70 and 85 are considered to be of "moderate concern" while scores below 70 would be considered "severe concern". Although this is a traditional interpretive approach (typically used with other types of assessment instruments) it does not provide a means for comparing the significance of differences within the individual subject. **The option of inter-cognitive interpretation is offered primarily for situations in which a subject may have generalized information processing issues (across categories) which may not be revealed via intra-cognitive comparison.**

Reliability of the CPI:

Test-Retest Stability - An evaluation of test-retest reliability was performed which compared initial and follow-up parent and teacher CPI ratings of 630 students at approximate three-year intervals. Of the 630 follow-up sets of ratings, 93% of parent ratings and 87% of teacher ratings were found to show a pattern of processing which identified identical areas of relatively significant strength and weakness as were noted on the initial rating. This suggests an overall stability correlation of approximately .90.

Internal Consistency - In order to assess the internal consistency and overall reliability of the CPI a split-half method was employed in which the entire CPI item pool and each subscale was randomly divided into 2 similar forms. These split-half correlations were then gathered from the entire normative sample of 5776 cases and are presented in Table 2.1. Correlations across specific processing areas range from .85 to .92 with overall Global Processing Index (GPI) correlations ranging from .94 to .96. This data verifies that the CPI has very strong internal consistency.

Table 2.1

Split-Half Reliability Coefficients

	Parent	Teacher	Self
Auditory	.88	.91	.87
Visual	.85	.90	.85
Sequential	.87	.89	.89
Conceptual	.89	.92	.86
Processing Speed	.88	.88	.90
Executive Functioning	.89	.92	.89
Global Processing Index	.95	.96	.94

Validity of the CPI:

Content Validity - The initial item selection and categorization for the CPI was derived through an empirically-based process which utilized published research findings related to cognitive processing along with hundreds of direct observations and interviews with parents and teachers of students with identified learning disabilities. The initial item groupings were then refined through an extensive process of factor analysis to ensure that each item was indeed loading on the specific "processing" factor being rated.

Predictive Validity - In order to evaluate predictive validity of the CPI, parent ratings were obtained on 150 students in grades 3 through 12 who were concurrently being formally evaluated for possible special education services. Using only a pattern analysis* of the general processing clusters of the CPI, correct predictions of learning disability placement were made for 118 of the 150 students (78%) with 12% false-positive and 10% false-negative predictions.

Concurrent Validity - Using data collected following the normative process, concurrent validity was evaluated through parent, student/self, and teacher CPI ratings of students in grades 3 through 12 who had previously been formally identified as having some form of learning disability. For parent ratings of LD students, 843 out of 987 (85%) were found to demonstrate a significant information processing weakness on the CPI at the .15 level. For student/self ratings of LD students, 403 out of 568 (71%) were found to demonstrate a significant information processing weakness on the CPI at the .15 level. For teacher ratings of LD students, 677 out of 868 (78%) were found to demonstrate a significant information processing weakness on the CPI at the .15 level.

Table 2.4
Concurrent Validity
Identified LD Students

Ratings	Total	Significant	Percent
Parent	987	843	85%
Student/self (LD)	568	403	71%
Teacher	868	677	78%

Overall, these reliability and validity studies provide very strong support for both the CPI as a screening/assessment instrument and the underlying information processing model chosen.

Section 3

The Processing Model of the CPI

There are many differing and often conflicting theories of cognitive development and information processing. The information processing model chosen for the CPI includes the following six general areas of cognitive processing, each of which is based upon well-researched theories of learning and cognition:

Visual processing

Auditory processing

Sequential/rational processing

Conceptual/holistic processing

Processing speed

Executive Functioning

These broad processing areas have been chosen because of strong historical and empirical support along with the direct educational implications each can provide.

The auditory/visual (sometimes referred to as verbal/non-verbal or linguistic/visuospatial) comparison is the oldest and most extensively researched processing dichotomy. These were the original processing areas described when the concept of a learning disability was first introduced. Various intelligence scales such as Wechsler scales, McCarthy, DAS, Stanford Binet, etc. have continued to emphasize these as primary processing areas. Research has consistently supported the assumption that the brain processes auditory and visual information in very different ways, and when a student demonstrates a significant preference for one over the other, a learning disability can occur.

The sequential/conceptual (sometimes referred to as sequential/simultaneous or successive/holistic) comparison has evolved directly from extensive neuropsychological research conducted over the past several decades. The implications from this research have clearly suggested that each of the two cerebral hemispheres processes information in a rather unique fashion. The left hemisphere appears to process information in a very orderly and detailed manner whereas the right hemisphere takes a more general, holistic processing approach. The Kauffman Assessment Battery for Children (K-ABC) was developed directly from this neuropsychological research base. Although the term "rational thinking" has taken on a somewhat different meaning, taken literally, the word "rational" means "part by part" which is virtually synonymous with our understanding of left-brain processing. However, since the term "sequential processing" is more widely associated with learning disabilities it will be primarily used to describe this processing domain within the CPI.

Processing speed is a processing area well-supported in research and literature. The actual speed of neural transmission has been measured and found to correlate negatively with some forms of learning difficulties (e.g. low processing speed = high probability of learning difficulty). This has

been endorsed as a distinct area of information processing within the latest editions of the WISC, Woodcock-Johnson, and various other cognitive assessment batteries.

The area of Executive Functioning has gained increasing popularity as a cognitive construct within the educational and mental health communities. Executive Functioning refers to the overall ability to manage or regulate all of the various cognitive and emotional processes. This involves initiation, planning, organization, and execution of various tasks as well as the ability to cope with transitions or regulate emotional responses. Subjects with Executive Functioning issues often need externalized structure (i.e. lists, schedules, etc.) and typically respond well to increased structure and predictability in their lives. Weakness in this area is often associated with an attention deficit disorder.

Educational Implications: The intent of any information processing model is to explain the reasons for the educational difficulties experienced by students. The processing model used with the CPI not only helps to explain existing problems but also provides specific guidance for intervention along with the potential to predict other possible areas of difficulty (both educational and non-educational) which typically relate to a particular information processing style. A text is also available entitled "Uncovering the Mysteries of your Learning Disability: Discovery, Self-awareness, Self-advocacy" which is based upon the processing model used within the CPI and is intended to help students understand and cope with their specific learning disabilities. This text provides direct and specific home and classroom interventions for each of the 6 processing subtypes covered by the CPI.

Clarification of the 6 general processing domains:

Visual Processing involves the ability to understand, remember and utilize visual information even when it becomes abstract or complex. When they see something, especially something complex, do they understand it quickly and easily. Can they "visualize" things (like pictures, shapes, words, etc.) in their head? Can they remember information that they see?

Visual Processing involves:

seeing differences between things
remembering visual details
filling in missing parts in pictures
remembering general characteristics
visual-motor coordination
visualization and imagination
organization of their room, desk, etc.
artistic skills

Students with a general visual processing disability often experience most learning difficulty in the areas of **math** and **spelling** because they have trouble "visualizing" words, letters, symbols, etc.

Specific difficulties may include:

- writing
  - poor handwriting
  - poor spelling (cannot visualize the words)

- math
    - difficulty visualizing problems
    - difficulty with cluttered worksheets
- reading
    - slow speed
    - poor comprehension
- general
    - poor organization/planning/neatness
    - difficulty rechecking work for accuracy
    - difficulty learning by demonstration
    - difficulty learning by video

Auditory Processing involves the general ability to understand, remember, and utilize auditory information. Can they "keep up" when people talk very fast? Can they tell voices apart easily (even on the phone)? Can they imagine the voices of familiar people in their head? Can they remember information that they hear?

Auditory Processing involves:

- hearing differences between sounds/voices
- remembering specific words or numbers
- remembering general sound patterns
- understanding even when they miss some sounds
- blending parts of words together
- music

Students with a general auditory processing disability usually have most difficulty with **general reading, general writing, and language (understanding and expressing)**. Specific difficulties may include:

- reading
    - poor decoding of new words
    - poor comprehension
- writing
    - poor spelling/mechanics
    - poor sentence structure
- communication
    - difficulty with expression
    - poor receptive language
- general
    - difficulty following oral directions
    - difficulty learning in lectures

Sequential/Rational processing is generally regarded as the brain's detailed filing system. It involves the ability to learn, memorize, organize, and express detailed or specific information including facts, figures, and formulas.

This is very much like a computer organizes and stores information. How well does a student remember details (like names, addresses, facts, etc.)? How organized are they?

Students with poor sequencing skills may benefit from external structure (such as lists, schedules, reminders, etc.). Such students also sometimes have stronger conceptual processing abilities (reasoning, abstract thinking, creativity) and may learn best when first presented overviews, summaries, and underlying concepts rather than detailed facts.

Sequential/Rational processing involves:

Short-term memory for details
long-term retrieval of details
fine-motor coordination
finding the word or words you want to say or write
organization of your thoughts and materials
writing mechanics (spelling, punctuation)
reading speed/sounding out new words
attention to details
putting words and thoughts in order

Students experiencing a general Sequential/Rational processing disability often have most learning difficulties in the areas of **basic reading, math computation, expressive language, and writing mechanics**. Specific difficulties may include:

- handwriting
  - speed/clarity
  - letter reversals
  - spelling/mechanics
  - letters in wrong sequence (order)
- reading
  - decoding (sounding our words)
  - speed/fluency
  - remembering details
  - attention/concentration
- math
  - remembering formulas/steps
- communication
  - finding words for verbal or written expression
- general
  - planning lengthy assignments
  - remembering details
  - paying attention - easily distracted by surroundings
  - remembering names of people or objects
  - following specific directions

Conceptual/Holistic processing involves understanding "the big picture", overall patterns and underlying concepts for use in higher-order thinking, creating, and reasoning.

Conceptual/holistic filing is like throwing things into boxes with very general labels.

Conceptual/Holistic (right-brain) processing involves:

memory for general themes or ideas
reasoning
spatial awareness
general knowledge
inferential thinking
estimation/approximation
conceptual understanding
creativity/inventiveness
reading comprehension
use of context
rhythm
music
art

Students experiencing a general conceptual/holistic processing disability often perform quite well during early school years but later experience difficulty with **reading comprehension, math reasoning, and creative writing**. Specific difficulties may include:

- reading
  - understanding irony, inferences, sarcasm
  - general comprehension
- math
  - generalizing to new situations
  - story problems
- written language
  - creative writing
- communication
  - general language comprehension
  - understanding humor
- general
  - global/general awareness
  - attention - may focus too much on a specific area

Processing Speed involves how quickly the brain is able to act or react in various situations. Problems can arise when information is either processed too slowly (i.e. the subject can't keep up) or too quickly (i.e. the subject responds impulsively or carelessly).

All students with learning disabilities experience some processing speed difficulty when required to process information through their weakest processing "channel" or "modality". But for other students, a general weakness in **processing speed** causes difficulty in all areas.

It is like having the brain work at 40 miles per hour when the rest of the world (and all the information) is going 55 miles per hour. Such students just can't keep up.

Relatively low Processing Speed is sometimes associated with ADHD - Inattentive type while relatively high Processing Speed is sometimes associated with impulsivity which can be a characteristic of ADHD – Hyperactive type.

Processing Speed involves:

short-term memory (with time pressure)
long-term retrieval (with time pressure)
talking speed, word-finding
writing speed
reading speed
attention
reasoning (with time pressure)
general response speed

Students experiencing a general Processing Speed disability often have learning difficulties in all academic areas due to their inability to process all types of information quickly. Specific difficulties may include:

- reading
  - reading speed
  - ability to stay focused while reading
- math
  - completing a series of problems
- written language
  - writing speed
  - mechanics
  - clarity (with time pressure)
- communication
  - delays in responding
  - slow, deliberate speech
  - word-finding difficulties
- general
  - coping with implied or expressed time pressures
  - always "a step behind"
  - difficulty maintaining attention to tasks
  - exceeding time limits during tests
  - trouble with social pressures to perform "faster"

Executive Functioning refers to the overall ability to manage or regulate all of the various cognitive and emotional processes. This involves initiation, planning, organization, and execution of various tasks as well as the ability to cope with transitions or regulate emotional responses. Weakness in this area is often associated with an attention deficit disorder.

Executive Functioning skills involve:

ability to stay focused on tasks
ability to plan and anticipate

organization of thoughts and materials
ability to follow-through and complete tasks
ability to cope with unstructured situations
ability to cope with changes in routine
ability to regulate emotions

Students experiencing general Executive Functioning difficulties often struggle academically with work-completion, organization, and motivation for any task which is perceived as difficult, frustrating, or simply unappealing. Specific difficulties may include:

- reading
  - motivation when material is "boring"
  - speed/fluency - skipping words or lines
  - remembering details
  - attention/concentration
- math
  - difficulty seeing the "relevance"
  - difficulty maintaining motivation to complete practice worksheets
- general
  - planning lengthy assignments
  - remembering details
  - paying attention - easily distracted by surroundings
  - completing assignments
  - following specific directions
  - ability to keep school a "priority"

Section 4

The CPI as Part of a Comprehensive LD Assessment

As mentioned previously, the CPI is not intended to be used in isolation to identify LD students but is ideally suited as one component of a broader educational assessment. It may be most appropriate to use the CPI as a pre-referral screening measure to provide an initial indication of a student's learning/processing style followed by more comprehensive cognitive and academic assessment if indicated.

Obviously, the goal of any assessment is to obtain data across settings which consistently points in the same interpretive direction. In order for this to occur, it is very important that all forms of data be interpreted in terms of the same information processing model.

The CPI and Achievement: Table 4.1 is provided to demonstrate the relationship between the processing model of the CPI and specific areas of academic achievement.

Table 4.1

Correlation Between CPI Processing and Achievement

	Auditory	Visual	Sequential	Conceptual	Speed	Executive
Basic Reading	high	moderate	high		high	
Reading Comprehension	high			high	moderate	
Math Calculation		high	high		moderate	high
Math Reasoning		high		high	moderate	moderate
Writing Mechanics	high	high	high		high	high
Writing Content	high			high	moderate	
Oral Expression	high		moderate		moderate	
Listening Comprehension	high			moderate		

This relationship demonstrates one of the greatest strengths of the CPI processing model. It is not only possible, but also relatively easy to differentiate between various subtypes of learning disabilities in order to understand the cause of a student's specific learning problems and promote appropriate and effective intervention. This can be accomplished informally as part of the pre-referral process or formally in conjunction with individual achievement test results.

The CPI and cognitive testing: Table 4.2 displays the relationship between the CPI processing model and the various subtests of the Wisc-IV and Woodcock-Johnson-III as suggested by numerous factor-analytic and empirical research studies. Note: The CPI computerized software package allows entry of objective test data from several current cognitive and academic assessment instruments. This data can then be directly compared to CPI rating data for broader interpretation.

Table 4.2

Correlation Between CPI Processing and Formal Cognitive Assessment

	Auditory	**Visual**	**Sequential**	**Conceptual**	**Speed**	**Executive**
Wisc-IV						
Block Design		high		high	moderate	
Similarities	high			high		
Digit Span	high		high			moderate
Picture Concepts		high		high		
Coding		high	high		high	moderate
Vocabulary	high					
Letter-Num. Sequencing	high		high			moderate
Matrix Reasoning		high		high		
Comprehension	moderate			high		
Symbol Search		high			high	
Picture Completion		high				
Cancellation		high			high	moderate
Information	moderate					
Arithmetic		moderate				moderate
Word Reasoning	high			high		
Picture Arrangement		high		moderate		
Object Assembly		high			moderate	
Mazes		high			high	
Woodcock-Johnson III						
Verbal Comprehension	high			high		
Visual Auditory Learning			high			moderate
Spatial Relations		high		high		
Sound Blending	high			high		
Concept Formation		high		high		
Visual Matching		high			high	
Numbers Reversed	high		high			moderate
Incomplete Words	high			high		
Auditory Working Mem.	high		high			moderate

As Table 4.2 suggests, differing patterns of subtest scatter within formal cognitive assessment batteries may be indicative of various forms of information processing difficulty.

When the same overall pattern of information processing is demonstrated within achievement testing, cognitive assessment and the CPI, diagnostic confidence is clearly enhanced.

General Caution: There is no pure measure of any specific area of information processing. In other words, there can never be any one task designed to exclusively evaluate a student's abilities in a specific processing area. Although some types of tasks are "generally" regarded as heavily favoring one type of information processing over another, every individual task requires, or at least can be performed with, alternative or combinations of processing skills. This is why it is extremely important to always take a very broad perspective of all available information related to a student's processing pattern and never base decisions entirely upon how a student performs on a single task or activity.

Section 5

Rating and Scoring the CPI

The CPI consists of a two-page, 65-item checklist (see Appendix A) which includes 15 items pertaining to background information and 50 items which are used to provide scores in the various cognitive processing domains. When completed by parents, this checklist is typically sent home along with a brief explanation of the intent and purpose of the rating. When completed by students, the checklist can either be given to them directly to complete by themselves, or it can be read to them with their responses recorded by a teacher, psychologist, etc. It is important to note that each and every item must be completed. Raters should be instructed to use a rating of "3" when uncertain about the correct response. This will minimize the impact of incorrect "guesses".

Who should rate the student? Normally, behavior rating scales such as the CPI are completed by teachers familiar with the student. However, since the CPI requires a long-term and in-depth understanding of how a student functions in his or her every-day life, **the most reliable ratings are obtained from parents**. In addition, students aged 12 or above are usually able to provide reliable and accurate ratings of themselves (norms are also provided for younger self-ratings although those results should be viewed with caution). When both student and parent ratings are completed, it has been found that both ratings typically indicate the same general processing pattern although the raw scores for the student rating, in general, tend to be a bit higher than those of the parent rating. This probably reflects the reluctance of students to admit the severity of their own difficulties. Of course, the tendency of students to minimize their difficulties on the CPI is corrected when raw scores are converted to standardized scores for comparison and interpretation. Teacher ratings tend to minimize both strengths and weaknesses due to a tendency to over-utilize the rating of "3" when uncertain of the correct rating for a given item. For this reason, the CPI is only recommended for use as a teacher rating if the teacher has considerable long-term knowledge and understanding of the student.

Scoring the CPI:

Computer Scoring: Computer scoring is easily accomplished with the CPI scoring program which is included as part of the standard professional CPI package. Computer scoring involves simply entering the raw rating data (plus any additional objective test data which may be available) into the appropriate fields of the CPI scoring program. The computer then calculates the standardized scores, generates a graphic display of the data, provides a written interpretation of the results, and generates an extensive list of recommendations based upon the information processing pattern found. Examiners can choose to edit the recommendation choices if desired. The computer program also allows entry and comparison of multiple ratings from different sources and provides a statement of the apparent validity of each rating (based primarily upon the variability of item scores). This can be extremely useful when inconsistency is found among raters.

Detailed instructions for installation and use of the CPI professional software is provided in Section 7 of this manual.

Section 6

Interpretation of the CPI

Once you have gained a basic understanding of the processing components of the CPI (see section 3), interpretation is fairly obvious and straight-forward. Remember, the CPI is not intended to be used as an isolated instrument to identify learning disabled students. But the CPI clearly can be an important tool to help with such placement decisions and to clarify a strategy for educational intervention, even for students who are found not eligible for special education services.

Interpretation of the processing scales: After the CPI ratings have been entered into the computer scoring program a visual display of processing skills is provided. Interpretation can be performed rather informally by simply looking for relative strengths and weaknesses across the 6 processing areas. But the computer scoring program also generates fairly extensive interpretive statements.

Significance of differences – intra-cognitive interpretation: As mentioned in Section 2, by default, Standard Deviation of Difference (SDD) scores are provided to assist with the interpretation of the significance of differences (within the individual subject) between standard scores in each processing domain and the Global Processing Index. The computer-generated report automatically calculates the number of SDDs that a specific processing standard score falls above or below the Global Processing Index. For example, if the GPI is 100, the Auditory Processing SS is 88, and the SDD value for that rating is 8.0, that translates to a difference of -1.5 SDDs. This would suggest that Auditory Processing is moderately discrepant from the GPI indicating an apparent relative weakness in this area. For interpretation, "moderate discrepancy" is found in the range of 1 to 2 SDDs (either positive or negative) from the GPI. 2 or more SDDs from the GPI represents a "severe discrepancy" and would indicate either a significant strength or significant weakness in that processing area. Besides the SDD which has just been discussed, the CPI also provides SDD scores pertaining to differences between dichotomously paired processing domains. These would include: Auditory Processing vs Visual Processing, and Sequential Processing vs Conceptual processing. Again, 1 or more SDDs between these processing areas would indicate a moderate to severe difference. The significance of any differences is identified and clarified by the computer scoring software.

Significance of differences – inter-cognitive interpretation: As mentioned in Section 2, examiners are given the option of basing interpretations on inter-cognitive comparisons if desired. Inter-cognitive comparisons simply involve comparing a subject's standard scores in each processing area with the mean standard score of the norm group (100). For interpretation, standard scores between 70 and 85 would be considered "moderately discrepant" and scores below 70 would be considered "severely discrepant" from the mean of the norm group. Although this is not the recommended interpretive process, it may help to differentiate among generalized processing issues (when all scores are relatively low and intra-cognitive comparison identifies no significant processing pattern).

Statistical Significance vs Logical Significance:

The paragraphs above refer to "statistical significance" which is commonly used by practitioners as a convenient means of establishing the "probability" that a difference in scores actually represents a real difference in skills. Although establishing this statistical probability certainly provides an

objective means of interpreting the data, too often such values or formulas are used as the primary, if not sole basis for determining eligibility or placement decisions. In reality, for some individuals, differences less than the "significant" value may actually represent a "severe" area of difficulty. On the other hand, other individuals may be able to cope very well even with rather high statistical differences. Ultimately, it is important for the examiner and/or assessment team to compare relative strengths and weaknesses indicated on the CPI (even differences of less than 1 SDD) with other data available (from cognitive assessment, achievement assessment, background information, behavioral observation, etc.) in order to determine the consistency and "logical significance" of any pattern found. In many ways, this logical significance is far more valuable than statistical significance when making important educational decisions.

Caution regarding "gifted" individuals: One of the more intriguing aspects of learning disabilities is the fact that every person has some capacity to compensate for his or her processing weakness(es). This is especially true of bright or "gifted" individuals. It is quite possible for such a person to effectively conceal his or her learning difficulties from teachers and parents, at least for a while. It is also quite possible for such a person to compensate quite well during formal cognitive assessment, even on tasks that would normally involve their greatest processing difficulties. For this reason it is especially important for assessment teams to take a very broad perspective when looking for processing patterns in bright students or adults. Don't be fooled by a person's ability to effectively conceal his or her difficulties. Cognitive processing patterns (either from formal cognitive assessment or from the CPI) will often underestimate the real severity of an information processing disability for bright or gifted individuals.

Interrelationship across processing clusters: As mentioned previously, there can be no pure measure or rating of any distinct area of information processing. For example, by definition, general sequential processing involves a combination of visual sequencing and auditory sequencing. Therefore, a weakness in general sequencing would naturally impact both general visual and general auditory processing to some extent. Obviously, a similar relationship is found among conceptual, visual, and auditory processing areas. For this reason, often the most relevant comparisons will be between the 2 dichotomously related processing areas (sequential vs conceptual and visual vs auditory). The area of processing speed is somewhat related to all of the other processing areas because a weakness in any of the other areas will naturally result in somewhat slower processing of some types of information. Similarly, a subject may not be able to demonstrate effective executive functioning if there is also some other area of information processing weakness.

Because of these interrelationships, several areas of relative processing weakness may be indicated for some individuals. In these cases it is important to look both at the severity of the weaknesses indicated along with how well each area of suggested difficulty "fits" with the learning difficulties experienced by the person. In some cases the ultimate interpretation will be reduced to one processing area whereas in other cases all indicated processing areas may be appropriately identified as relative weaknesses. What is most important is that the ultimate interpretation "makes sense" from the standpoint of what is commonly known and understood about the particular person being rated.

Relationship between LD and ADD or ADHD: There are numerous references in research literature about the relationship between learning disabilities and attentional difficulties. This relationship really isn't very surprising given the characteristics of the various forms of information processing disability. For example, a weakness in sequential processing (probably the most

common processing problem for LD students) naturally results in some difficulty focusing on details along with a tendency to be overly sensitive to general surrounding distractions. Similarly, weaknesses in visual or auditory processing naturally result in some difficulty maintaining attention to either visual or auditory instruction. Conversely, a student with an attention deficit disorder naturally will experience difficulty attending to, and therefore "processing" various types of information.

Using the CPI to screen for ADD or ADHD: Research (both within and beyond the CPI) has suggested a relatively strong correlation between low processing speed and passive inattention (or ADHD Inattentive Type). Conversely, high processing speed often suggests impulsiveness which correlates highly with ADHD Hyperactive Type. Similarly, executive functioning difficulties have been implicated as common characteristics among the ADHD population. Although such cluster comparisons may be suggestive of broader attentional concerns, the CPI is not intended to provide a diagnosis of attention deficit disorders.

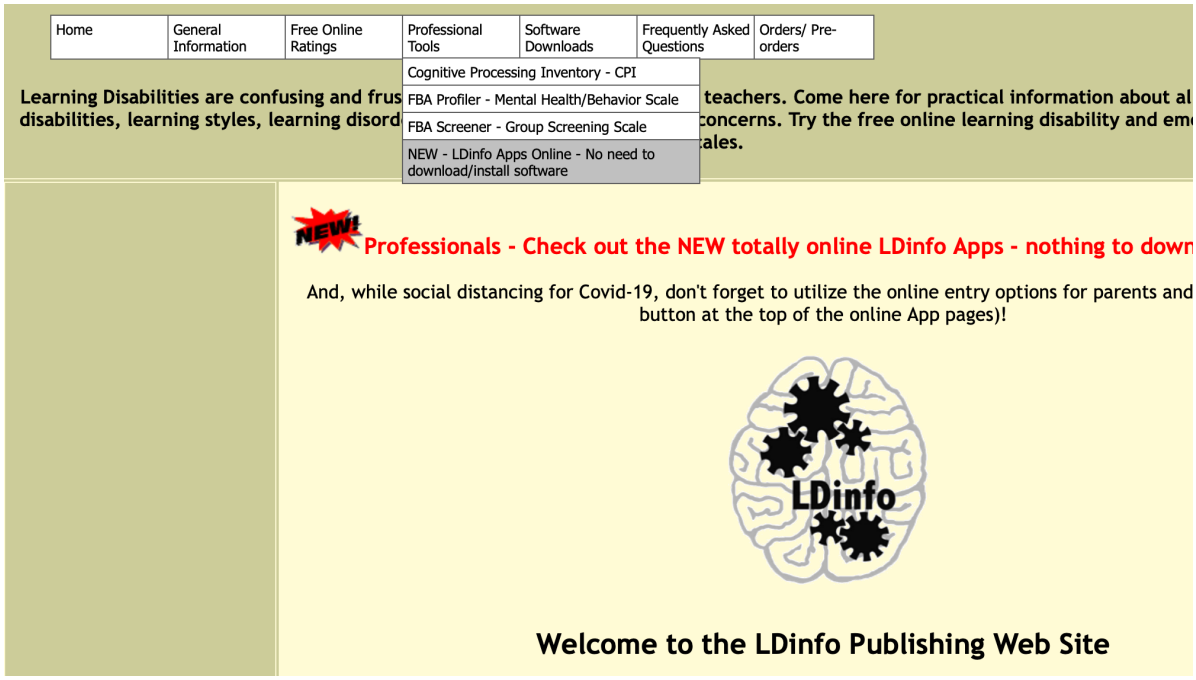
A word about Conceptual processing: Although the area of conceptual processing has been firmly established in research and has a clearly dichotomous relationship with sequential processing, very few identified LD students are found to actually have a weakness in conceptual processing. In fact, for most identified LD students, conceptual processing represents their greatest strength. This probably relates to the fact that the basic academic skills emphasized in elementary grades (when most learning disabled students are identified) rely heavily upon sequential processing. Students with conceptual processing difficulties are often able to learn and memorize detailed information, can read and spell quickly and easily, and can remember basic math formulas. The difficulty these students have with conceptualization often does not become apparent until secondary grades when they begin to struggle with underlying concepts, inferential thinking, creative writing, and abstract problem-solving.

Evaluating the impact of culture, language, or other environmental factors: Whenever attempting to diagnose a learning disability it is important to rule-out factors other than a true learning disability which may be negatively impacting a student's education. Beginning with version 6.0, the CPI provides support for identifying and ruling out such factors. First, the rating forms solicit background and demographic data which helps to identify potential rule-out factors such as behavioral interference, inconsistent educational exposure, lack of instruction in English (either due to schooling in a foreign country or in a foreign language immersion program), lack of English language fluency, or something other than English as the primary language spoken at home. Any identified rule-out factors are then listed on the report to be taken into consideration by the examiner. Second, the CPI report includes a Culture/Language Impact index (both on the graphic display and within the report text) to provide an objective measure of the apparent impact of cultural or language issues. By default, the Culture/Language Index is displayed whenever potential issues of culture or language are identified on the rating form. A checkbox is provided on the Report Preview screen for the examiner to manually include or exclude the Culture/Language index as desired. Note – due to the obvious overlap between the Culture/Language index and certain information processing domains (especially the auditory processing index), it is not possible to ever fully rule in or rule out the impact of cultural or language issues. By "rule of thumb", if the Culture/Language index falls within or above the average or "normal" range (i.e. above -1.0 SDD) you can be fairly confident that issues of culture or language are not significantly impacting the student. On the other hand, if the Culture/Language index shows at least "moderate concern" and is lower than any of the information processing indexes, it is quite possible that issues of culture and/or language are primary factors impacting the student's academic progress.

Section 7

Utilizing the Online CPI Pro App

All LDinfo assessment tools are now available as fully functional online apps eliminating the need to download and/or install software and allowing access to your records from any computer or tablet with an internet connection. To access the app, go directly to www.LDinfo.com/webd.htm or use the dropdown menu at the top of any LDinfo web page.

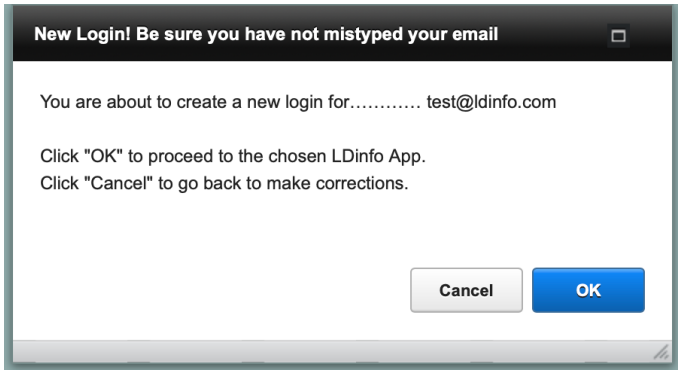


Then select the CPI Pro icon.

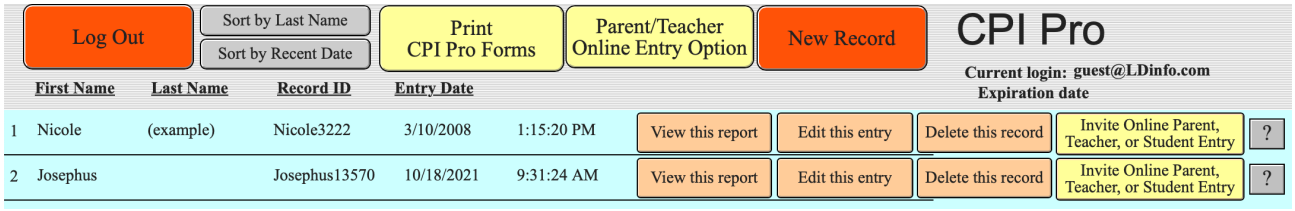
Logging In:

After clicking the CPI Pro icon, you will be taken to the login screen shown below. If you have not yet been provided a registration code, you can simply leave the email field blank and click the "Log In" button to log in with limited guest access (to see how the app works and preview various report options). If you already have an assigned registration code, enter your email address and registration code then click the "Log In" button. If you have lost or cannot remember your assigned registration code, just enter your email address and click the "Forgotten registration code?" button to have your existing code sent immediately via email.

The first time you log in, a popup window (shown below) will ask you to confirm the email address you are attempting to register. If ever again asked to confirm your email address, that suggests you have mistyped the address, in which case you should click the "Cancel" button to correct the error. **Please note that the email address IS CASE SENSITIVE, so you must always enter it exactly as you did when you first signed in.**



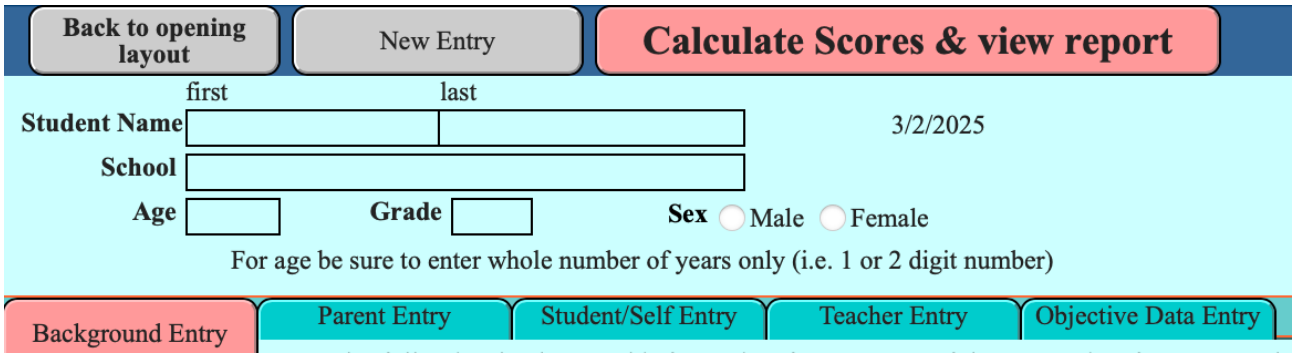
After logging in you will be taken to the list of student records associated with your email address.



Entering rating data:

With the online apps, no more paper rating forms – just invite online entry directly into your account!

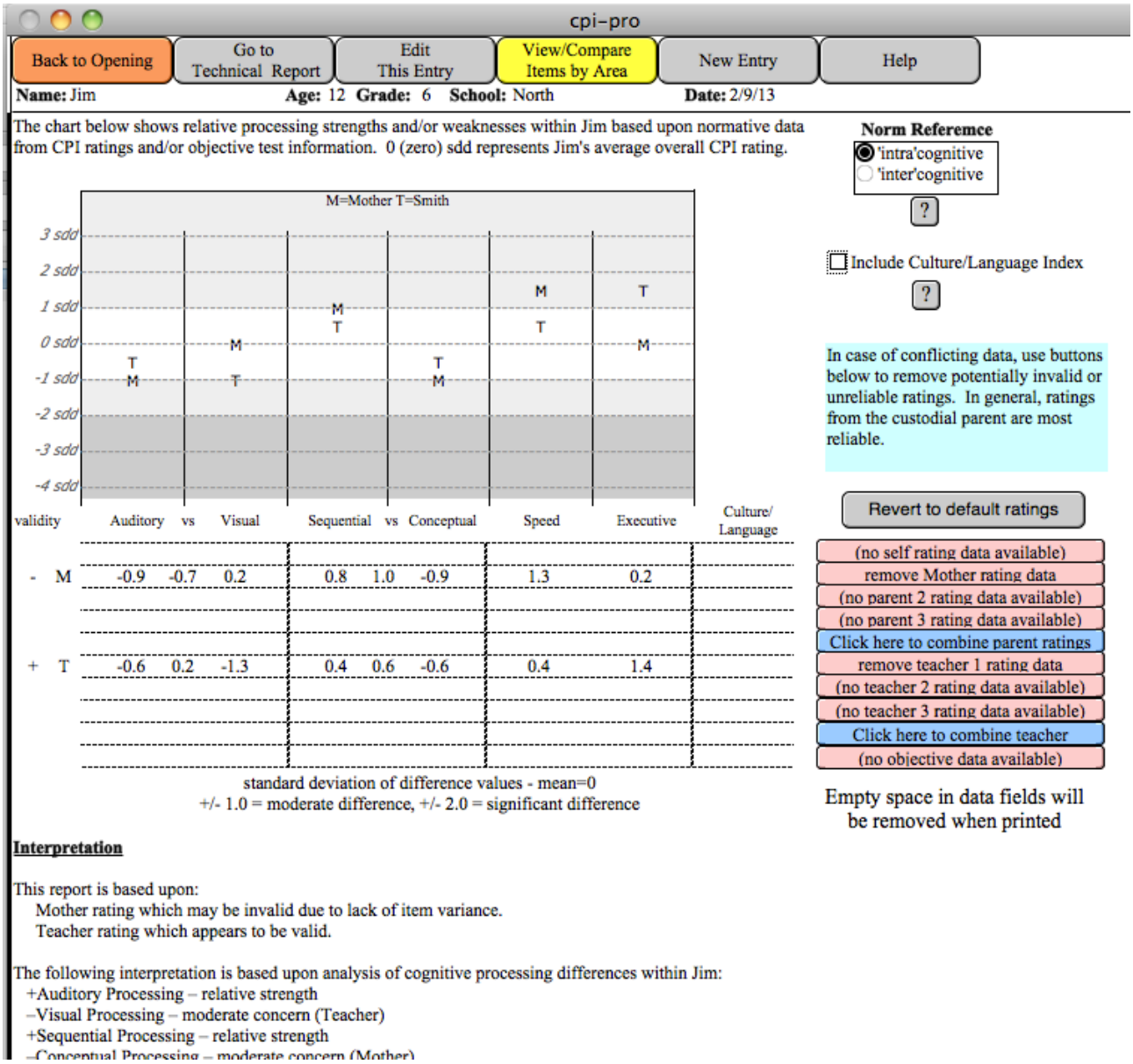
The first step is creating a student record. You can either do this by editing the blank record which is created whenever you log in, or by clicking the red "New Record" button at the top of the page. Then in the next screen (shown below) enter student name and demographic data. When finished, click the "Back to opening layout" button to return to your list of student records.



Next, in your list of students, click the yellow button entitled "Invite Online Parent, Teacher or Student Entry". You will then receive an automated email with clear instructions (which you can edit as you wish) to forward to anyone you would like to complete a rating on this particular student. When they have completed their online entry, you will receive an automated email informing you that the rating has been completed.

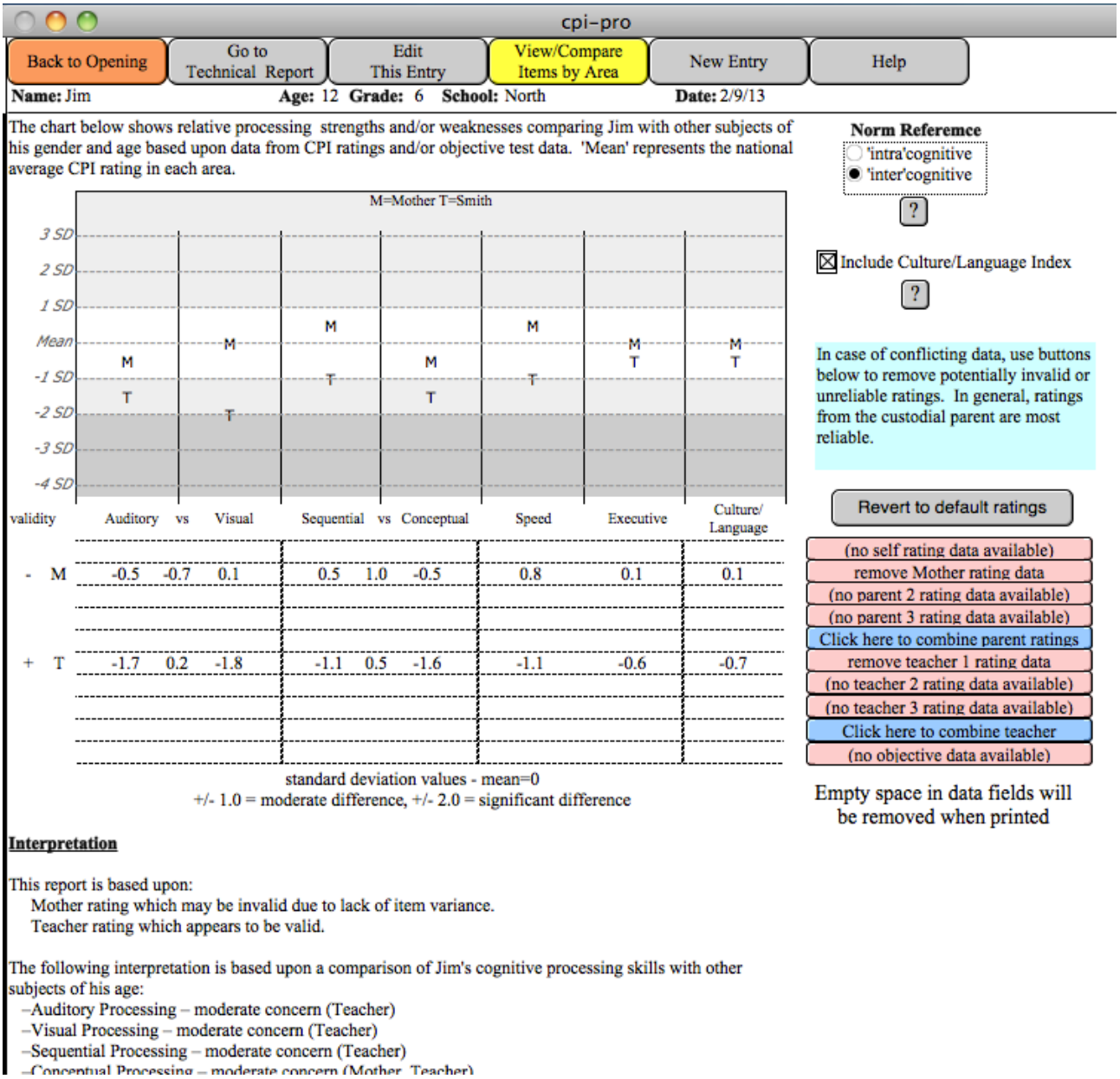
Finally, return to your online account to edit the student's record (to possibly change rating labels used in the report) or review the report.

After selecting the "View Report" option from the list of student entries, a new page will open in which you can preview the report and edit various report options as outlined below.



Report/Interpretation Options:

The default interpretation is based upon intra-cognitive differences (within the subject) based upon the significance of such differences found within the norm group. Although this is clearly the most appropriate interpretive option, in rare cases you may wish to switch to the alternate inter-cognitive comparison (using the button in the top right corner of the screen) which will simply base interpretations on differences between obtained standard scores and the mean of the norm group (100). You can also choose to include or exclude the optional Culture/Language Impact index.



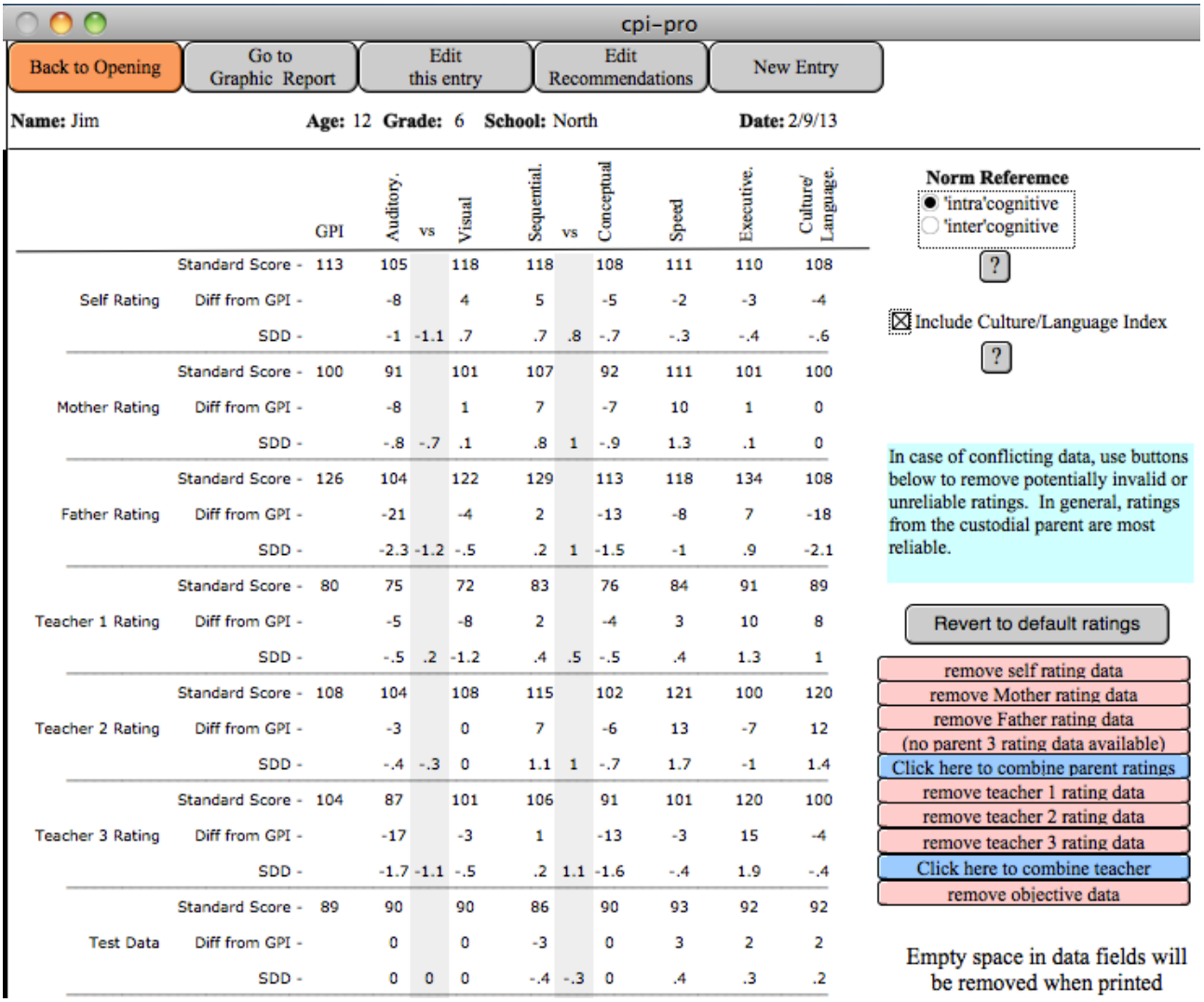
To the right of the graphic display and data chart are additional buttons allowing you to combine/separate multiple parent or teacher ratings or exclude specific ratings (possibly due to low validity).

Combining/Separating parent or teacher ratings: By default, the CPI scoring program combines highly similar parent ratings and separates dissimilar ratings. You can override this selection simply by clicking the appropriate button to the right of the data chart. By default, any available teacher ratings are combined to provide a display of the average teacher rating. Again, you can override the default selection by simply clicking the appropriate button to the right of the data chart.

Excluding Certain Ratings: If it is felt that a given rating may be invalid (and inappropriately skew the overall results or cause confusion) that rating can simply be excluded from the charts and interpretations by clicking the appropriate button to the right of the data chart. Any excluded rating can be 'included' again by simply clicking the same button.

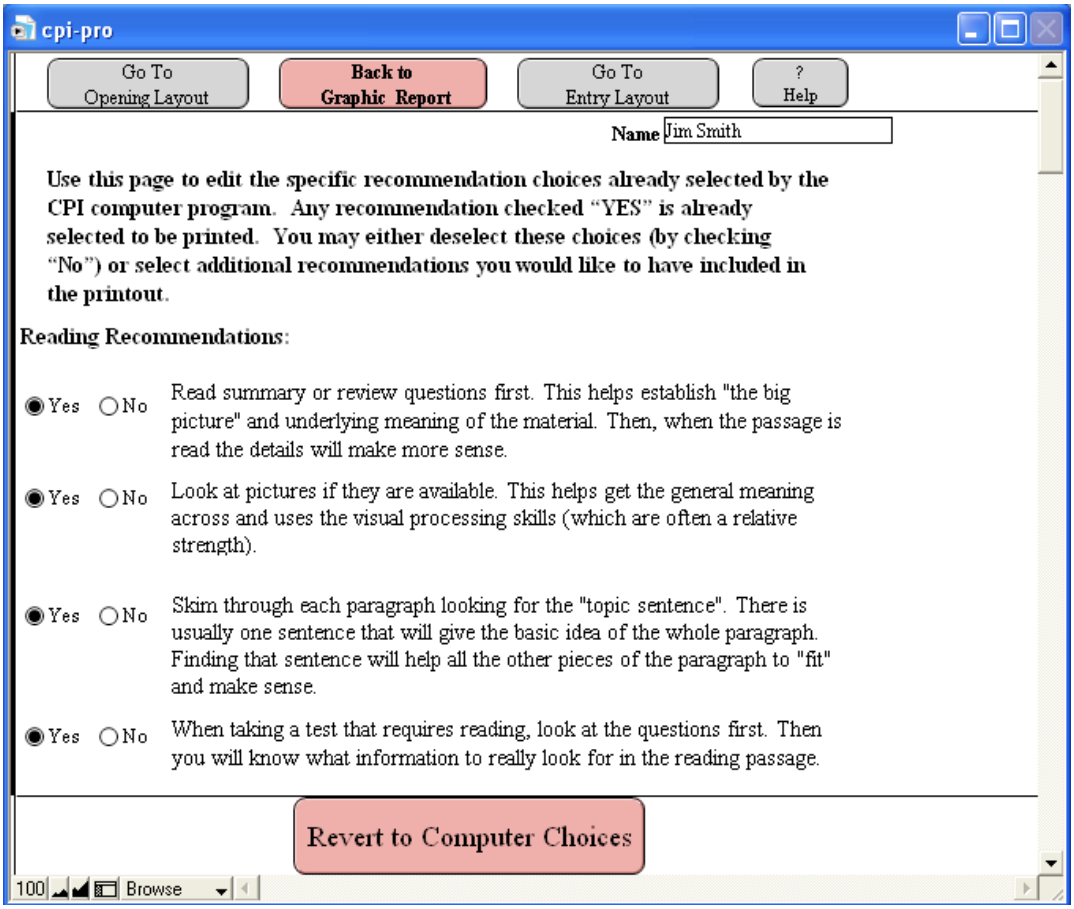
Optional Technical Report: From the Graphic Report screen you may view a somewhat more technical report layout by clicking the appropriate button at the top of the screen.

This report provides the actual standard scores standard deviation of difference (SDD) scores, and global processing index (GPI) scores for each specific rating along with the overall interpretation summary.



From any of the report screens you may choose to view and/or edit computer-generated recommendations by clicking the appropriate button at the top of the screen.

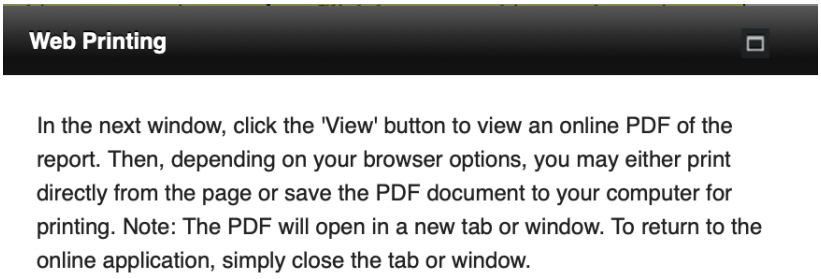
Then you may scroll through all possible recommendations and select (by clicking “yes”) or deselect (by clicking “no”) those which are deemed appropriate.



Printing Reports:

Various print/save buttons are included in any layout which can be printed (typically at the bottom of the page). If you choose to accept the full computer-generated report, simply click the "Print this Report" button.

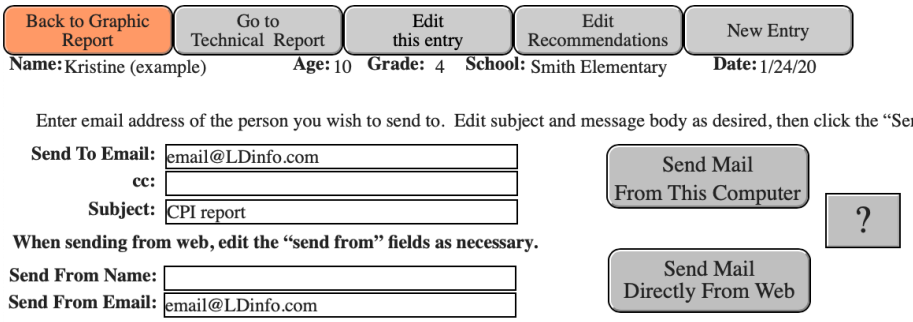
Clicking any print button from the online app will show a dialog window shown below which will explain your saving/printing options from the app:



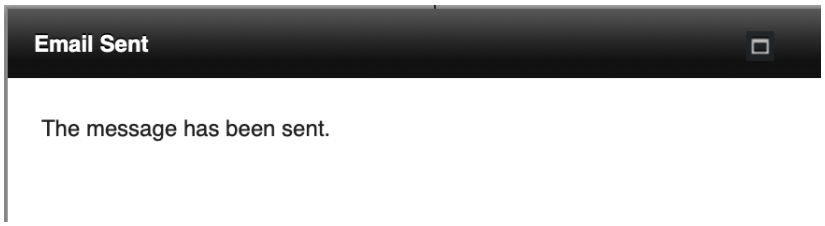
Saving Reports:

Records/reports are automatically saved within the online CPI Pro app.
You can also send report text via email by simply clicking the "Send as email" button at the bottom of the report preview page.

In the page which opens next, simply enter a valid email address and edit the subject and message body as desired before clicking either of the “Send Mail” buttons. Use "Send Mail From This Computer" only if you are working from your own computer and have a default email application. Otherwise use "Send Mail Directly From Web".

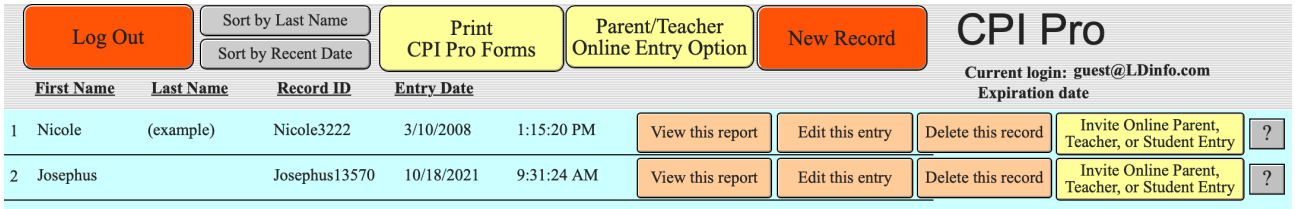


If sending from your email application, after clicking the appropriate button a popup message will inform you that the message has been placed in the outbox of your email application. If sending directly from web, the popup message will simply inform you that the email has been sent.



Deleting Records:

Individual records can be permanently deleted by clicking the “Delete this record” button from the main page.



If you wish to delete all of your records (possibly in order to start fresh for a new school year) just send a request to email@LDinfo.com and we will take care of it for you.

Free Trial / Registration Code:

All LDinfo applications (whether using the online apps or the downloaded software) are initially provided as “demonstration” versions with certain restrictions (such as not being able to print reports) until a registration code has been purchased.

During or after the initial trial period you may remove all restrictions by purchasing a registration code (instructions for purchasing this code are provided on the www.LDinfo.com web site) and entering this code either within the CPI Pro software or when logging into the online app.

If you allow your registration to expire, the software (or online app) will automatically revert to the restricted “demonstration” mode until a new registration code is purchased and entered.

Section 8

Installation and Use of the CPI Professional Software (if not using the online app)

Installation:

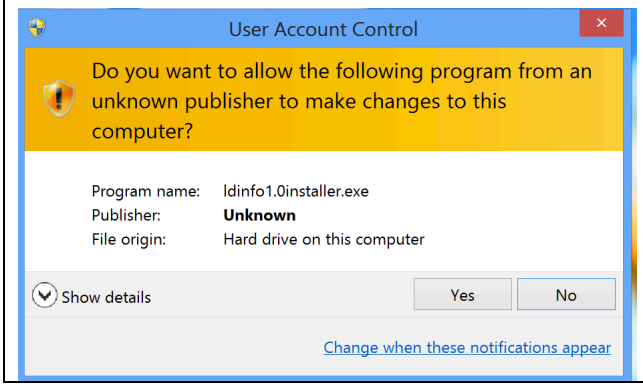
NOTE: All of the LDinfo professional evaluation instruments (CPI Pro, FBA Profiler, FBA Brief Form, and FBA Screener) have now been consolidated into a single software package - LDinfo Apps. Download/installation instructions are the same for either the individual or consolidated apps.

Installation:

If the LDinfo software package was downloaded from the web site, your web browser probably un-stuffed the file and created the appropriate LDinfo installer (for Mac or Windows) on your hard drive. Whether installing from the downloaded installer or from the CD-ROM, simply open the installer package and follow the on-screen instructions.

When first launching the downloaded installer, you will likely be shown a warning similar to that shown below (for Windows and Macintosh)

Windows

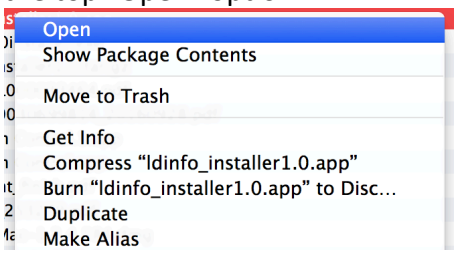


Macintosh

For Windows users, simply click "yes".

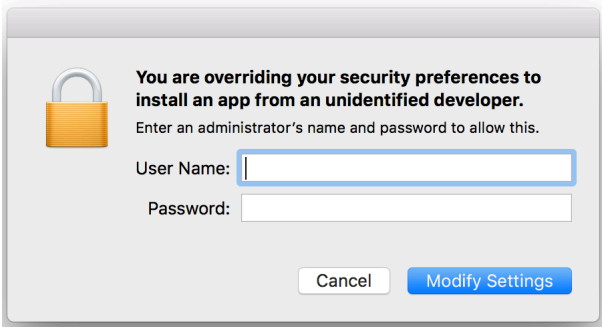
For Macintosh users, click "OK"

Then for Macintosh users: Press and hold the "Control" key while clicking the installer and select the top "Open" option...



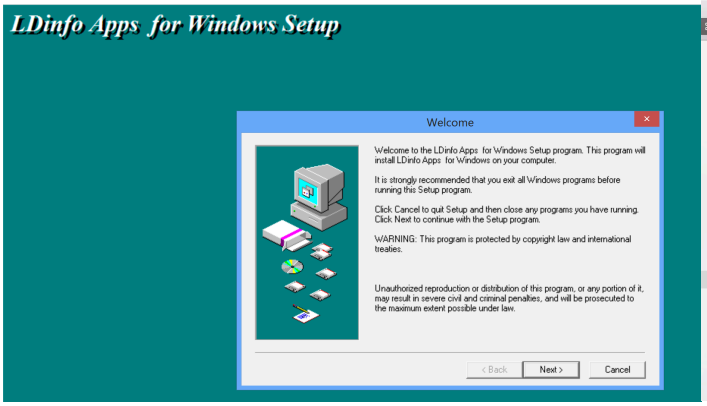
...which will allow you to open the installer

Click "Open" and you may be asked to enter an administrator's name and password to temporarily modify security settings and allow installation.

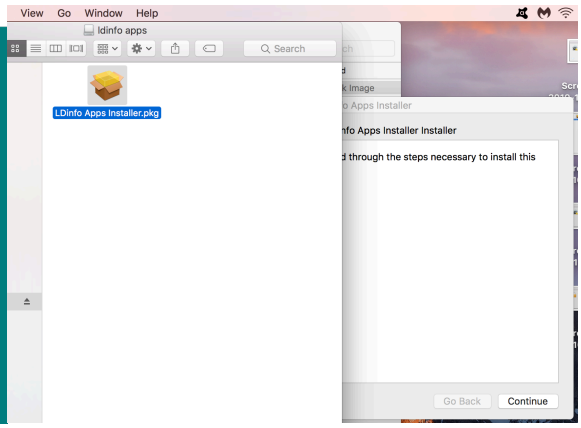


At this point the installer should launch but may be hidden behind other windows

Windows

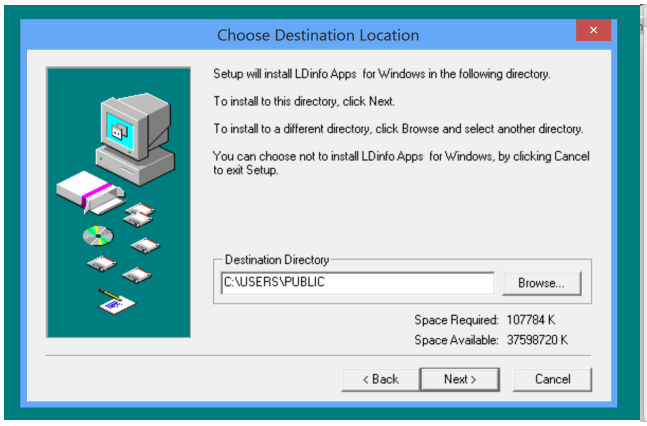


Macintosh

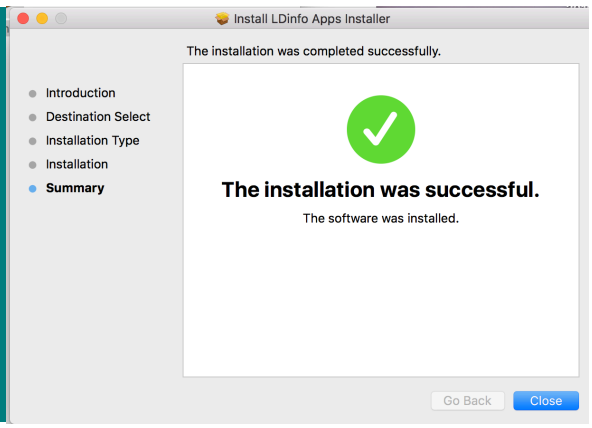


During installation, by default the LDinfo Apps package is placed either in the Users/Public directory (Windows) or in your applications folder (Macintosh) unless you select a different location.

Windows

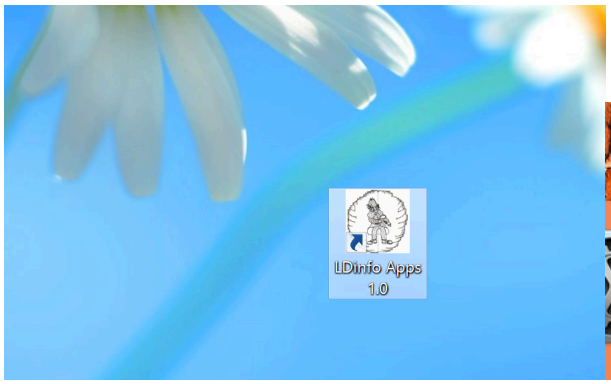


Macintosh



An 'alias' or 'shortcut' is also created on your Windows desktop or Macintosh Dock for easy access to the LDinfo application.

Windows



Macintosh

Opening/registering LDinfo Apps:

To begin using any of the LDinfo Apps (CPI Pro, FBA Pro or FBA Screener) simply double-click the LDinfo Apps icon on the Windows desktop (or from the "Program Files" directory) or on the Macintosh dock.

The opening window will display your registration status. The first time you open the app your status will be "demo" because you have not yet entered a registration code. The demo version includes the complete software package but has somewhat restricted functionality.

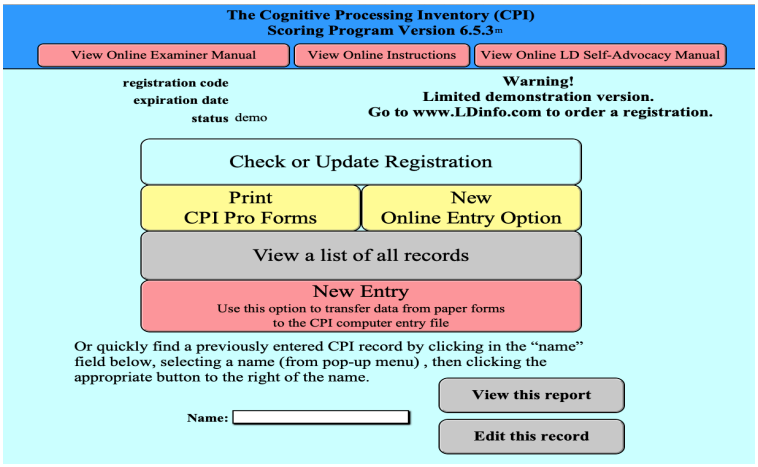
If you have purchased a registration code, simply enter and submit that code toward the bottom of the screen.

You will then be presented with a thank you message to let you know that the registration process has been successful.

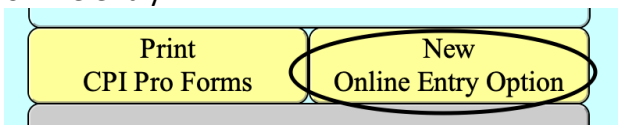
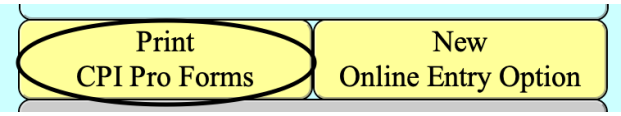
Simply click “OK” on that message and you will see your new "Registered" status.

Using the CPI:

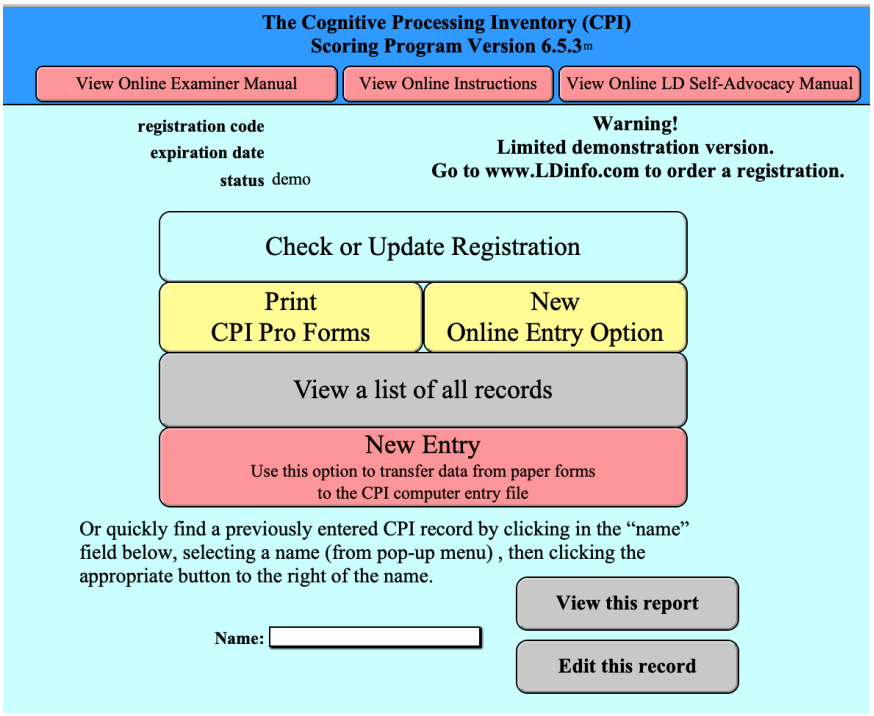
After registration, to begin using any of the CPI materials (scoring file, forms, manual, instructions, etc.) simply double-click the CPI Pro application dock icon (Macintosh) or the desktop shortcut (Windows). The application will open to the window shown below.



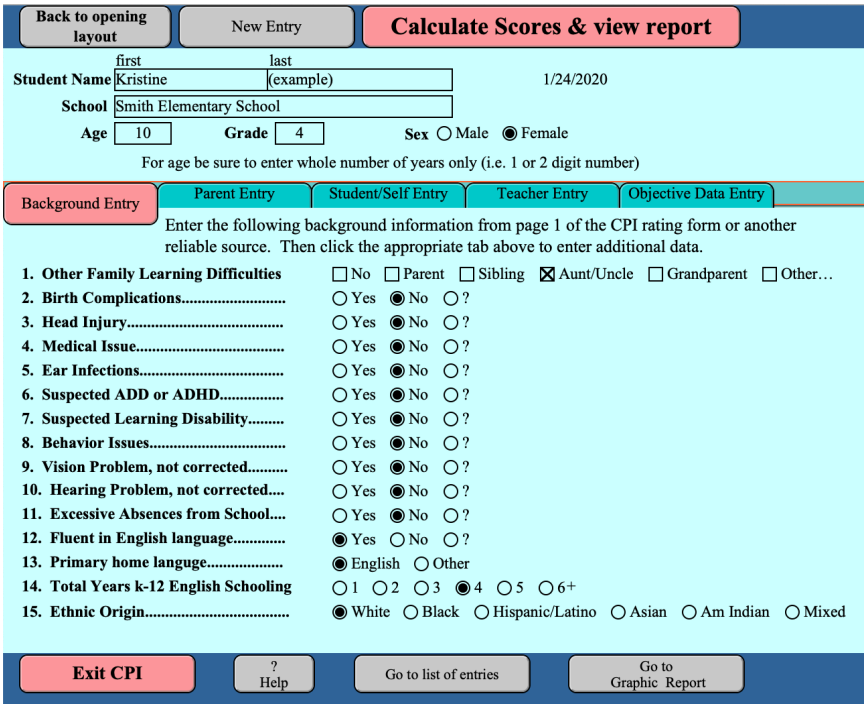
Completing an entry in 4 easy steps:

New Online Entry	Traditional Paper Forms
Step 1a: Use the yellow button at the top of the main page to copy the web address for online entry…  …then copy the displayed web address.  **Step 2a:** Provide the online entry address to parents/teachers asking them to completed the form for the student being evaluated. Be sure to tell them to enter your email address into the designated field on the form so that the contents of the completed form will be emailed directly to you.	**Step 1b:** From the main window click the button entitled 'Print CPI Pro Forms'.  A new window will open in which you can preview and/or print the various paper rating forms (available in English or Spanish). You may either print 1 copy of each form and then duplicate them as needed or just print new forms as you need them. **Step 2b:** Distribute printed CPI Pro rating forms to parents, teachers, and/or students and collect the completed forms for scoring.

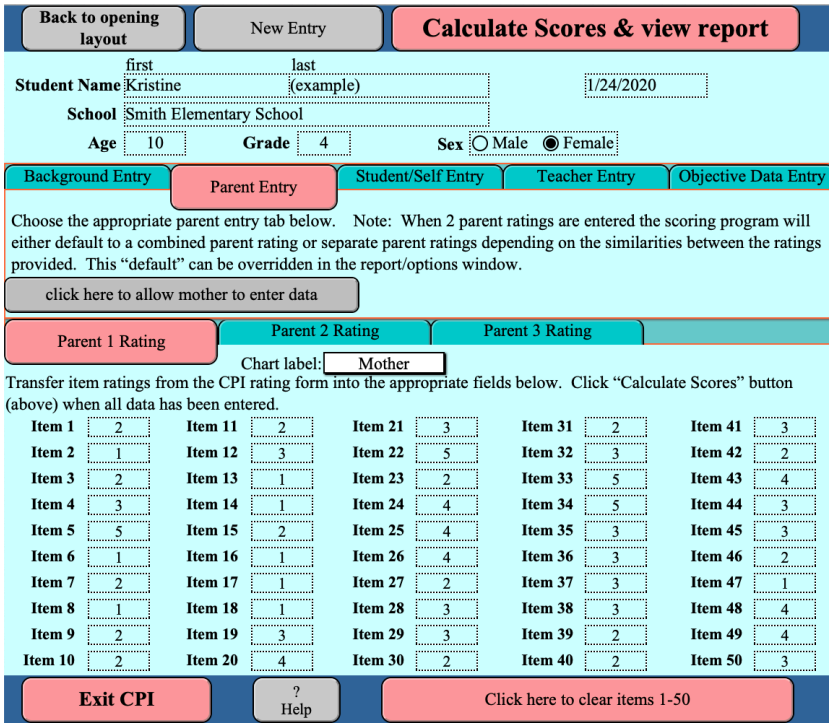
Step 3: To score completed CPI forms, simply open the CPI Pro application and click the 'New Entry' button.



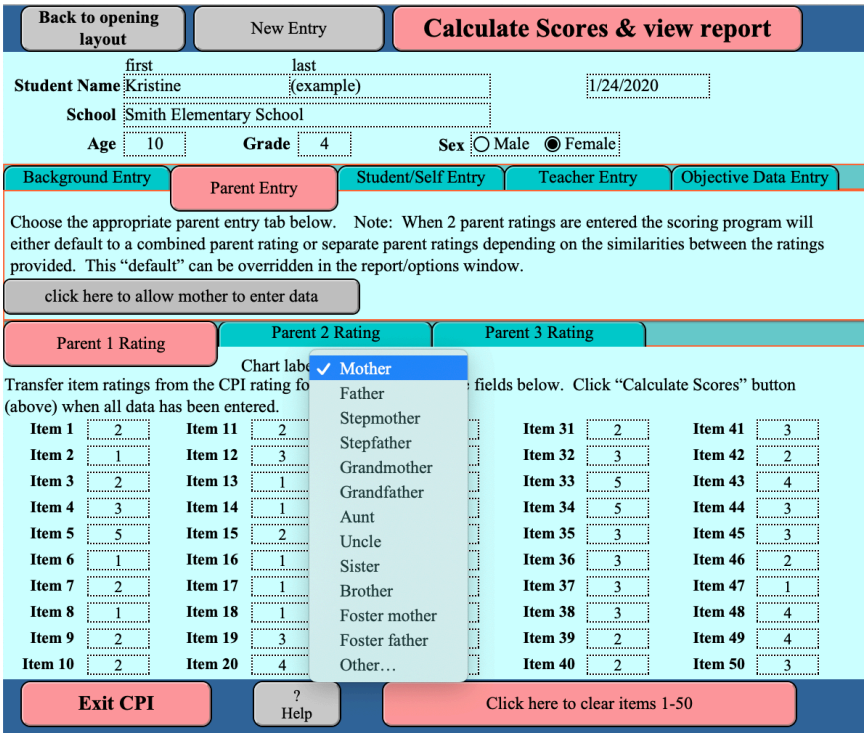
A new window will open which allows entry of subject information including name, age, grade, school, etc. Be sure to enter an age in whole years (no dashes, decimal points, months, etc.) and sex so that the norm-referenced scores can be accurately calculated.



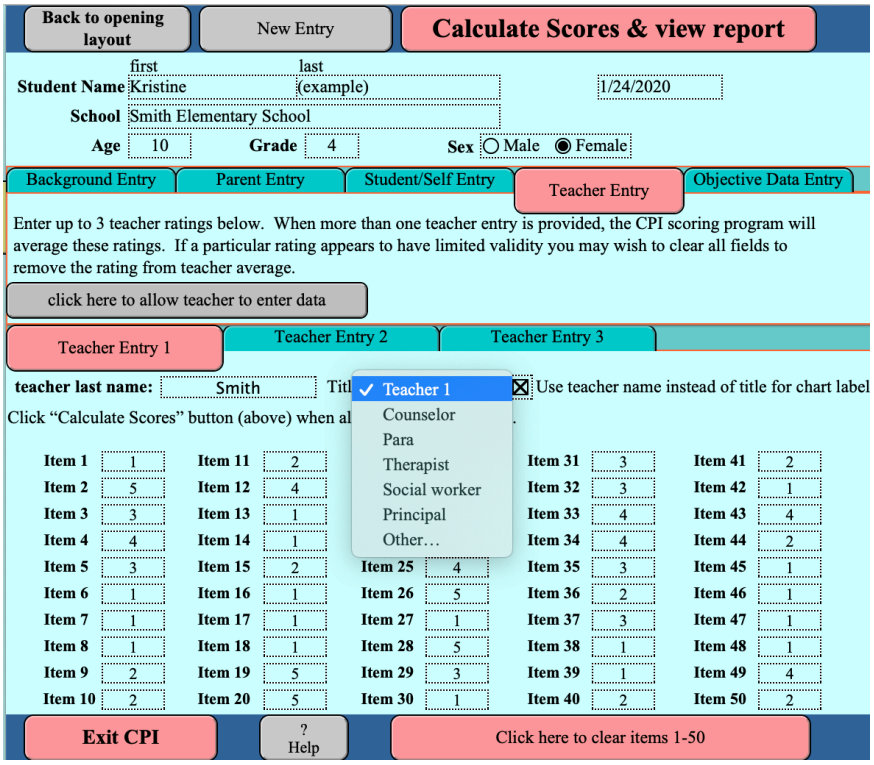
After entry of all background information, select the appropriate button to begin entering actual rating data (from parent, teacher, self-ratings, or objective test data).



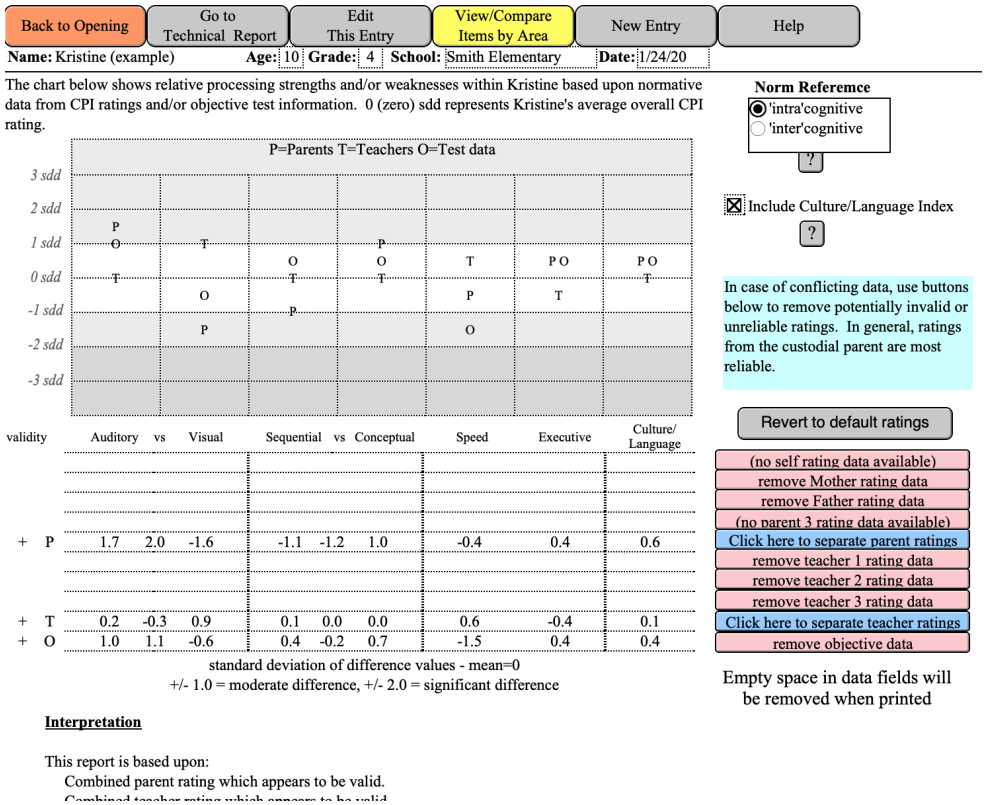
For each parent entry you may select from a list of parent/guardian types to be used as the label in the interpretive chart and descriptions.



You may enter multiple ratings for each subject (i.e. parent, teacher, and/or student/self ratings) in order to directly compare results on the graphic display provided in the report.

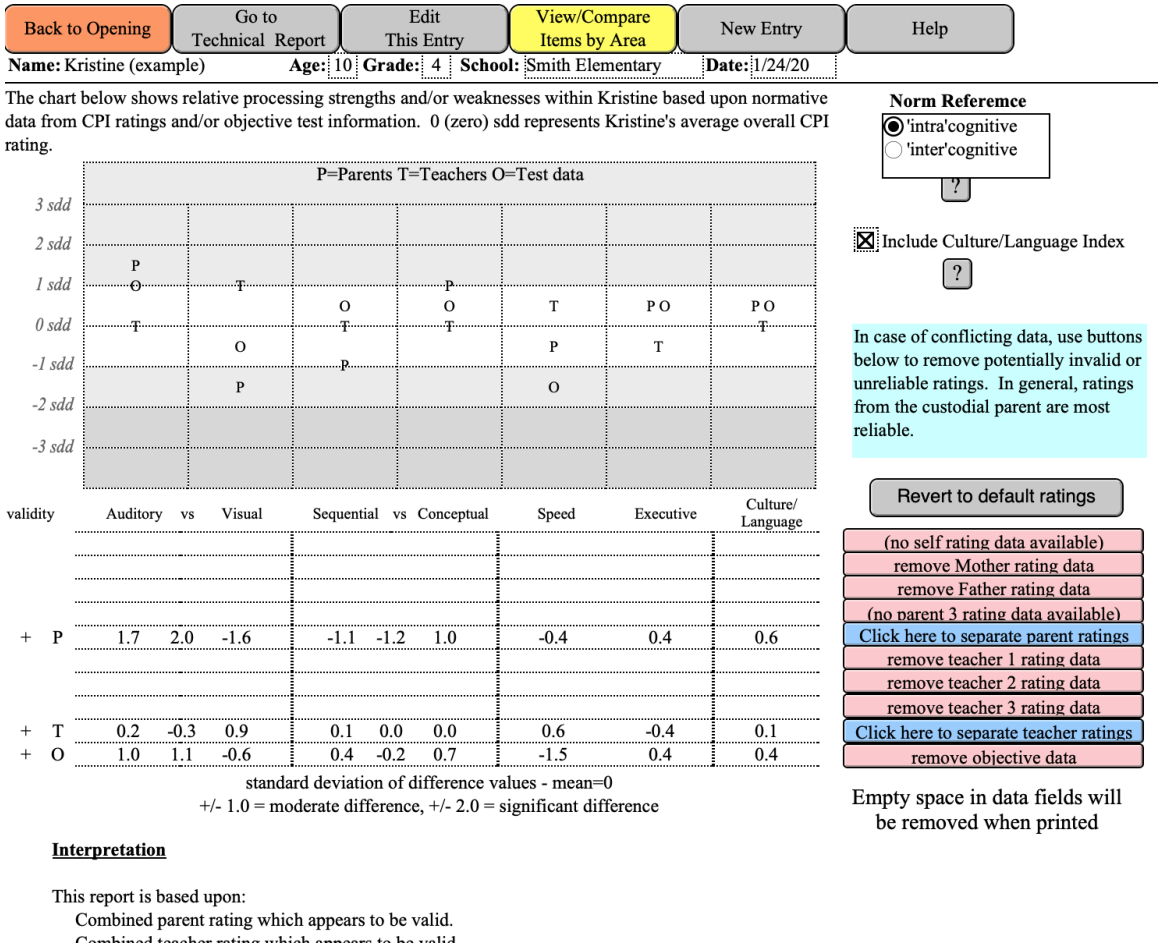


Step 4: When available ratings have been entered, simply click the 'Calculate Scores/View Report' button at the top of the window. A new window will open in which you can preview graphic displays of each rating category, combine or separate parent or teacher ratings or exclude certain ratings. You may also select the level of significance required for interpretation as described below.



Report/Interpretation Options:

The default interpretation is based upon **intra-cognitive** differences (within the subject) based upon the significance of such differences found within the norm group. Although this is clearly the most appropriate interpretive option, in rare cases you may wish to switch to the alternate **inter-cognitive** comparison (using the button in the top right corner of the screen) which will simply base interpretations on differences between obtained standard scores and the mean of the norm group (100). You can also choose to include or exclude the optional Culture/Language Impact index.



To the right of the graphic display and data chart are additional buttons allowing you to combine/separate multiple parent or teacher ratings or exclude specific ratings (possibly due to low validity).

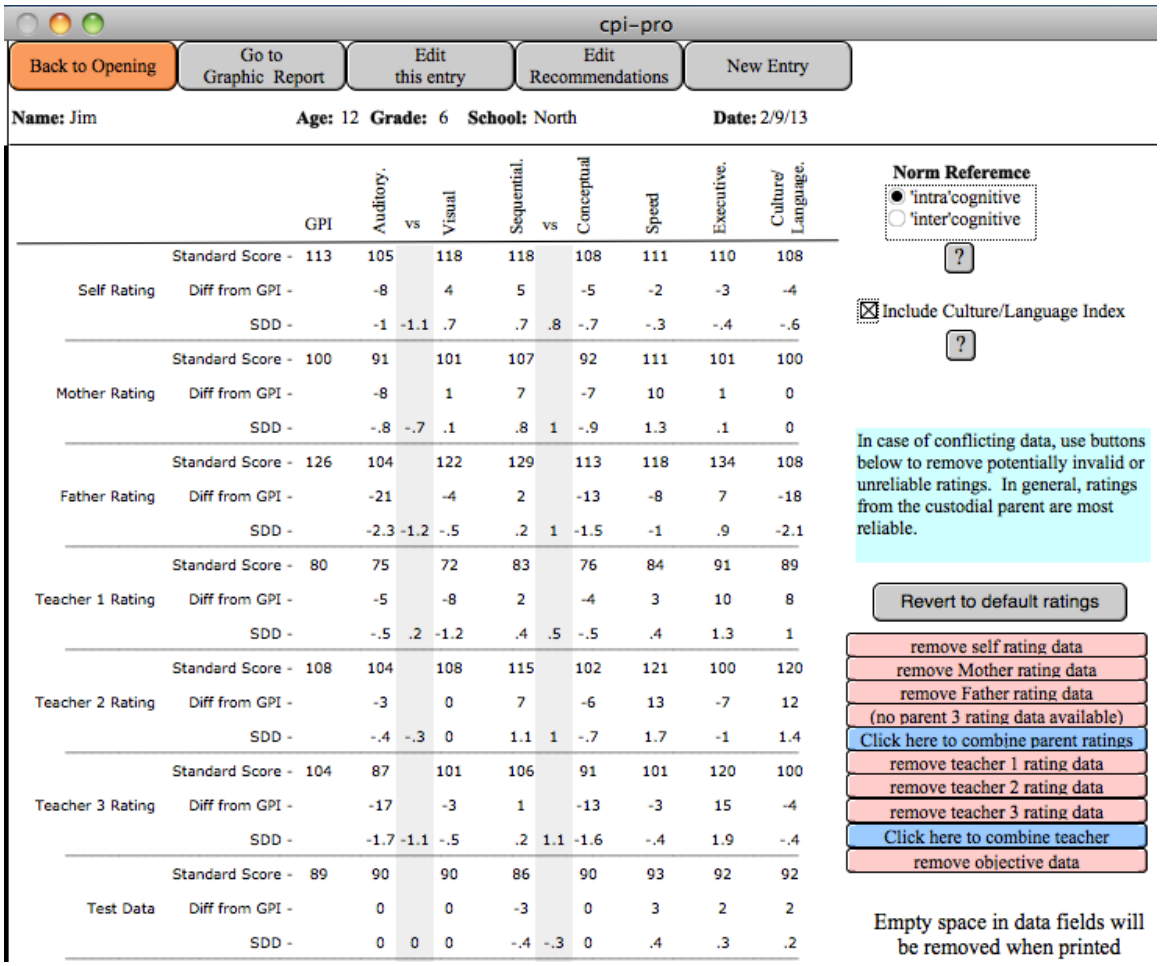
Combining/Separating parent or teacher ratings: By default, the CPI scoring program combines highly similar parent ratings and separates dissimilar ratings. You can override this selection simply by clicking the appropriate button to the right of the data chart. By default, any available teacher ratings are combined to provide a display of the average teacher rating. Again, you can override the default selection by simply clicking the appropriate button to the right of the data chart.

Excluding Certain Ratings: If it is felt that a given rating may be invalid (and inappropriately skew the overall results or cause confusion) that rating can simply be excluded from the charts and

interpretations by clicking the appropriate button to the right of the data chart. Any excluded rating can be 'included' again by simply clicking the same button.

Optional Technical Report: From the Graphic Report screen you may view a somewhat more technical report layout by clicking the appropriate button at the top of the screen.

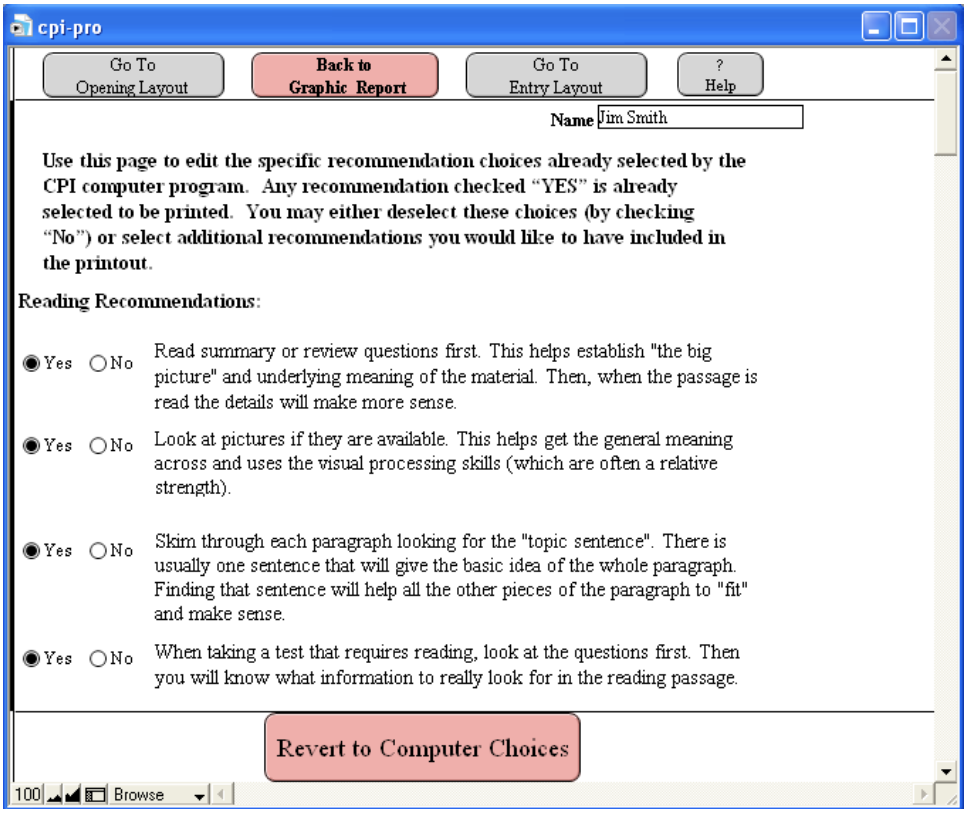
This report provides the actual standard scores standard deviation of difference (SDD) scores, and global processing index (GPI) scores for each specific rating along with the overall interpretation summary.



		GPI	Auditory.	vs	Visual	Sequential.	vs	Conceptual	Speed	Executive.	Culture/ Language.
	Standard Score -	113	105		118	118		108	111	110	108
Self Rating	Diff from GPI -		-8		4	5		-5	-2	-3	-4
	SDD -		-1	-1.1	.7	.7	.8	-.7	-.3	-.4	-.6
	Standard Score -	100	91		101	107		92	111	101	100
Mother Rating	Diff from GPI -		-8		1	7		-7	10	1	0
	SDD -		-.8	-.7	.1	.8	1	-.9	1.3	.1	0
	Standard Score -	126	104		122	129		113	118	134	108
Father Rating	Diff from GPI -		-21		-4	2		-13	-8	7	-18
	SDD -		-2.3	-1.2	-.5	.2	1	-1.5	-1	.9	-2.1
	Standard Score -	80	75		72	83		76	84	91	89
Teacher 1 Rating	Diff from GPI -		-5		-8	2		-4	3	10	8
	SDD -		-.5	.2	-1.2	.4	.5	-.5	.4	1.3	1
	Standard Score -	108	104		108	115		102	121	100	120
Teacher 2 Rating	Diff from GPI -		-3		0	7		-6	13	-7	12
	SDD -		-.4	-.3	0	1.1	1	-.7	1.7	-1	1.4
	Standard Score -	104	87		101	106		91	101	120	100
Teacher 3 Rating	Diff from GPI -		-17		-3	1		-13	-3	15	-4
	SDD -		-1.7	-1.1	-.5	.2	1.1	-1.6	-.4	1.9	-.4
	Standard Score -	89	90		90	86		90	93	92	92
Test Data	Diff from GPI -		0		0	-3		0	3	2	2
	SDD -		0	0	0	-.4	-.3	0	.4	.3	.2

From any of the report screens you may choose to view and/or edit computer-generated recommendations by clicking the appropriate button at the top of the screen.

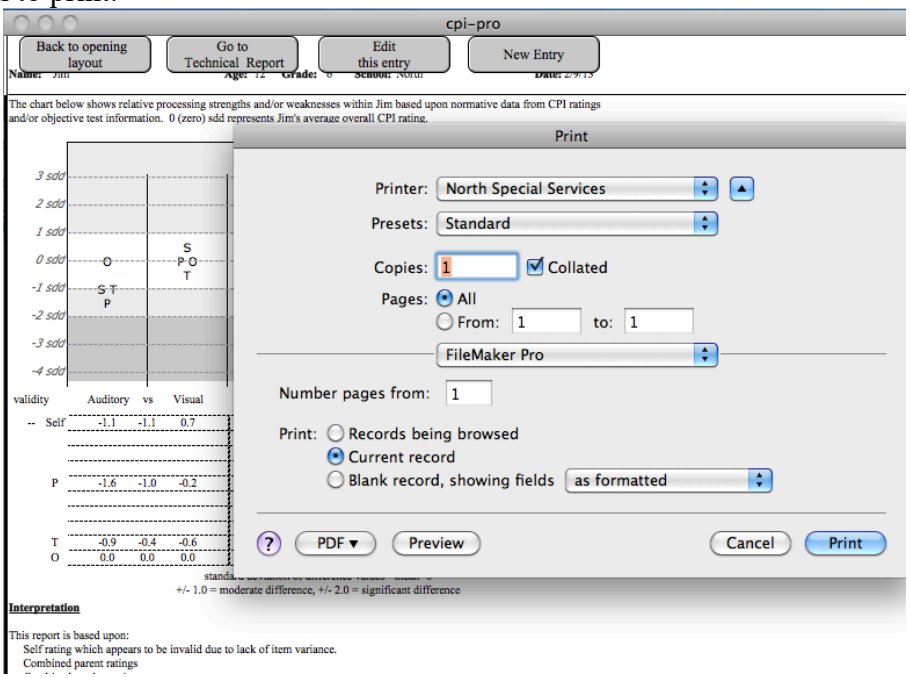
Then you may scroll through all possible recommendations and select (by clicking “yes”) or deselect (by clicking “no”) those which are deemed appropriate.



Printing Reports:

Various print/save buttons are included in any layout which can be printed (usually at the bottom of the page).

Clicking the chosen print button will bring up your normal print screen giving you options such as number of copies, which pages to print, etc. Be sure the page range is set appropriately for the pages you wish to print.

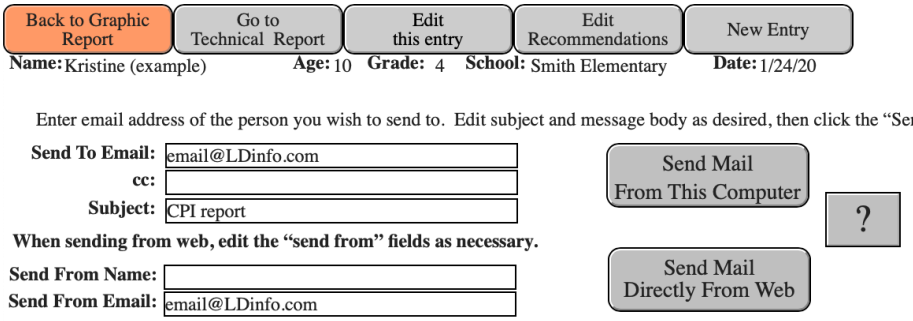


Saving Reports:

Records/reports are automatically saved within the CPI Pro app.

You can also send report text via email by simply clicking the "Send as email" button at the bottom of the report preview page.

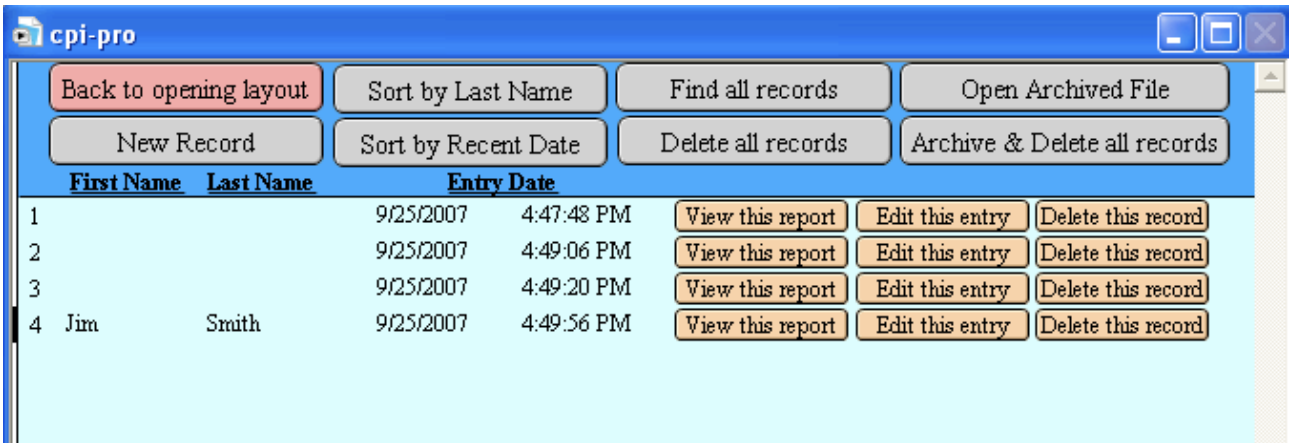
In the page which opens next, simply enter a valid email address and edit the subject and message body as desired before clicking either of the "Send Mail" buttons. Use "Send Mail From This Computer" only if you are working from your own computer and have a default email application. Otherwise use "Send Mail Directly From Web".



If sending from your email application, after clicking the appropriate button a popup message will inform you that the message has been placed in the outbox of your email application. If sending directly from web, the popup message will simply inform you that the email has been sent.

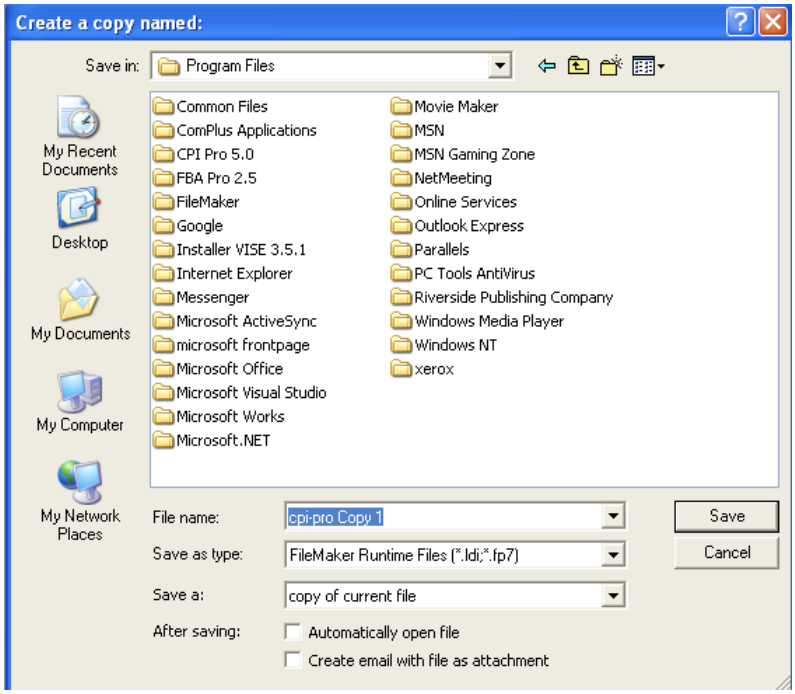
Deleting Records:

If you would like to delete any or all of the records in your CPI file (possibly to start fresh each school year), from the opening screen select the "View List of Records" button. The screen below will open showing you a list of all available records. From this list you may either delete individual records or select the button at the top to delete all records.

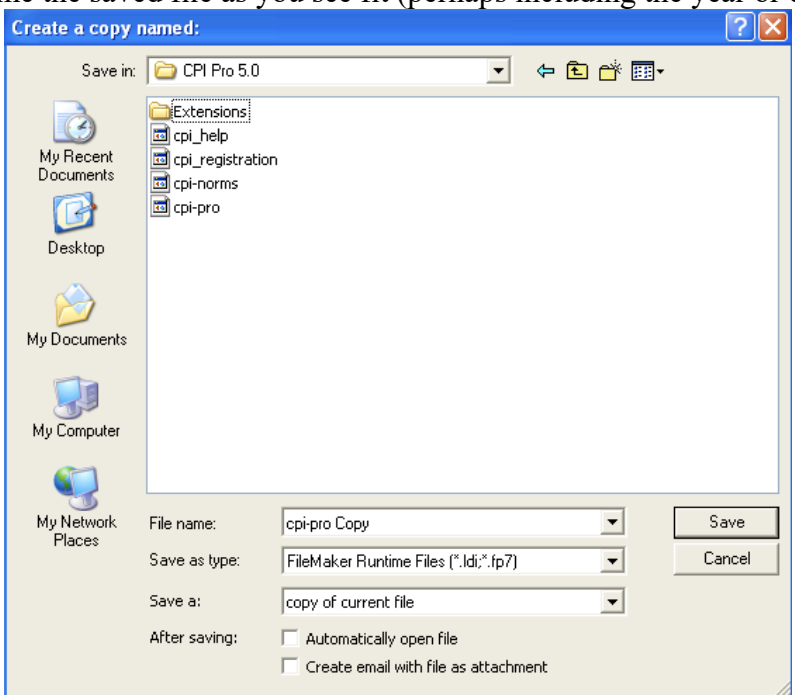


If you would like to delete all records but also save an archived copy of the file (for later review) select the "Archive & Delete all records" button.

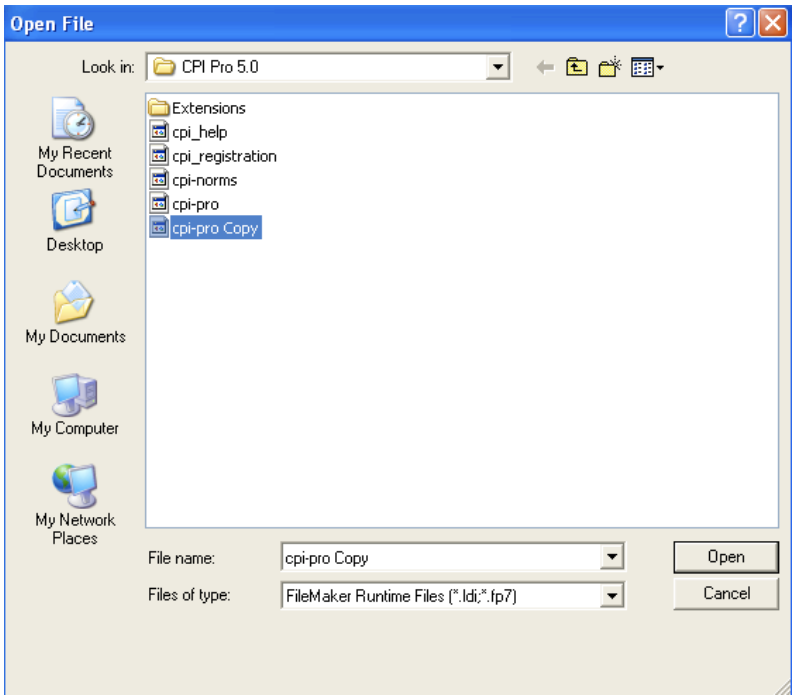
This option will open a window asking you to select a location for saving the copied file. Be sure to navigate to the CPI Pro folder/directory. This location can be found on Windows/PC computers in the Program Files directory of your C Drive (unless you chose a different location during installation). For Macintosh users, the CPI Pro folder/directory is located in your Applications folder (unless you chose a different location during installation).



You may also rename the saved file as you see fit (perhaps including the year or date saved).



At a later date when you wish to reopen the archived file, simply select that option from the top of the "View List of Records" CPI screen and navigate to the CPI Pro folder/directory to open the desired file.



This archived file will open directly in front of the current CPI screen and you can navigate from one file to the other by using the "Window" menu. Both files will close when you exit the CPI application.

Free Trial / Registration Code:

All LDinfo applications (whether using the online apps or the downloaded software) are initially provided as "demonstration" versions with certain restrictions (such as not being able to print reports) until a registration code has been purchased.

During or after the initial trial period you may remove all restrictions by purchasing a registration code (instructions for purchasing this code are provided on the www.LDinfo.com web site) and entering this code either within the CPI Pro software or when logging into the online app.

If you allow your registration to expire, the software (or online app) will automatically revert to the restricted "demonstration" mode until a new registration code is purchased and entered.

Appendix

Sample documents:

- Age 7 to Adult English Rating Form
- Computer-Generated Report

Age 7 to Adult English Rating Form

The Cognitive Processing Inventory (CPI)
for ages 7-adult

Name of person being rated:_____ Date of Rating:_____

School or Organization:_____ Age:_____

Sex/Gender (circle): M F Grade (if in school):_____

Rating Completed by:_____

Relationship (circle): self mother father other guardian:_____
teacher counselor other school staff:_____
(if more than one person is completing this form, use different colored pens)

PART I:

The following questions may provide valuable information which can help in the interpretation of the ratings obtained on page 2. Please answer each of these questions to the best of your ability by circling the correct response as it applies to the person being rated.

1. Are there other family members with learning difficulties? Yes No (if yes, circle below)
   Parent Sibling Aunt/Uncle Grandparent Cousin
2. Were there any complications before or during birth? Yes No ?
3. Has there ever been a serious head injury? Yes No ?
4. Has there ever been any medical issue that may have affected the brain? Yes No ?
5. Did this person have many ear infections during infancy or childhood? Yes No ?
6. Is there an identified or suspected attention deficit disorder (ADD or ADHD)? Yes No ?
7. Does this person have an identified or suspected Learning Disability? Yes No ?
8. In your opinion, are there any behavior problems which may interfere in school? Yes No ?
9. Is there a visual problem that is not fully correctable with glasses? Yes No ?
10. Is there any hearing problem that is not fully corrected? Yes No ?
11. Have there been excessive absences from school (greater than normal) Yes No ?
12. Is this person considered fluent in the English language? Yes No ?
13. What is the primary language spoken in the home? English Other
14. How many years has this person received school instruction in English (k-12)? 1 2 3 4 5 6+
15. What is the ethnic origin of the person being rated?
    White Black Hispanic/Latino Asian Am Indian Mixed

PART II:

For the following 50 items rate yourself (your child/student) based upon information from any reliable source (i.e. direct observation, interview, assessment data, etc.). Use the following scale to circle a number from 1 to 5 to the right of each item. Use "3" if uncertain.

	Obvious Difficulty 1	Apparent Weakness 2		Average or Uncertain 3		Not a Problem 4	Obvious Strength 5

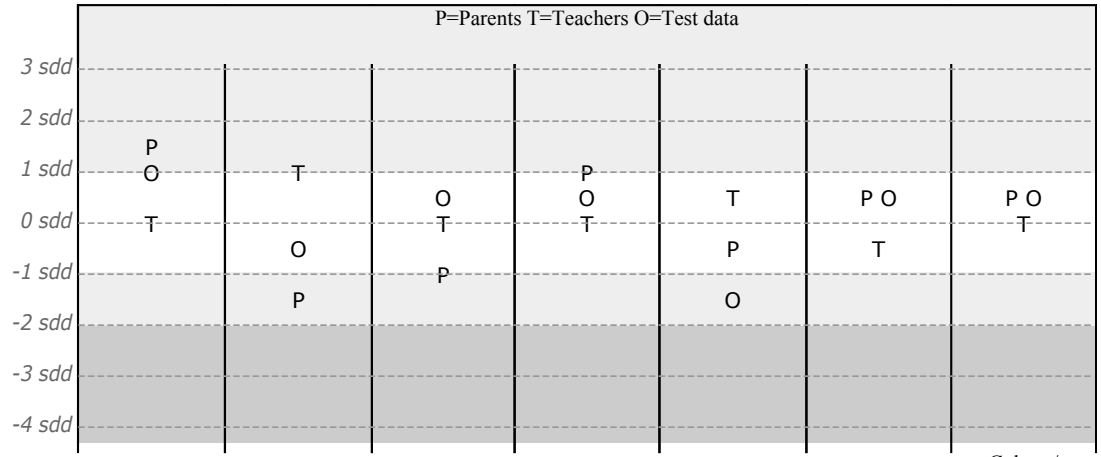
1. Ability to understand or remember questions, directions, or verbal instructions. Like when a teacher is just lecturing or without any charts pictures.	1	2	3	4	5
2. Ability to quickly think through a difficult problem or situation. Does a better answer come later in the day or even the next day?	1	2	3	4	5
3. Ability to remember new phone numbers and/or addresses.	1	2	3	4	5
4. Ability to remember or understand the basic idea of what happened in a movie or story - general information rather than specific details.	1	2	3	4	5
5. Ability to remember the names of characters or other specific details in a story or movie.	1	2	3	4	5
6. Ability to get or stay organized. Does organization come easily?	1	2	3	4	5
7. Ability to pay attention to instruction and lectures.	1	2	3	4	5
8. Ability to remember or follow complex directions or requests (involving 3 or more steps). Does the request need to be repeated?	1	2	3	4	5
9. Ability to read quickly and fluently.	1	2	3	4	5
10. Ability to quickly sound out new words.	1	2	3	4	5
11. Ability to understand what is read just using "context" (without pictures).	1	2	3	4	5
12. Ability to understand what is read when there are pictures for clues.	1	2	3	4	5
13. Handwriting neatness.	1	2	3	4	5
14. Writing mechanics (spelling, punctuation, capitalization, etc.).	1	2	3	4	5
15. Writing content. Ability to express ideas in writing when the mechanics don't matter.	1	2	3	4	5
16. Letter/word orientation. This is a "difficulty" if letters are ever reversed (b/d, etc.), out of order in words or starting words with the wrong letter.	1	2	3	4	5
17. Ability to remember specific formulas for solving math problems.	1	2	3	4	5
18. Ability to estimate or figure out the answer to math problems without using a specific formula.	1	2	3	4	5
19. Verbal speed - ability to talk quickly and clearly.	1	2	3	4	5
20. Verbal fluency without noticeable pauses or groping for words. Is it difficult to come up with the right words to express a thought?	1	2	3	4	5
21. Ability to solve visual or mechanical puzzles problems.	1	2	3	4	5
22. Ability to recognize voices (like on the telephone).	1	2	3	4	5
23. Ability to stay focused and recheck tasks without making careless mistakes.	1	2	3	4	5
24. Ability to be creative and come up with new ideas or new ways of doing something.	1	2	3	4	5
25. General sense of humor. Do you (does he/she) see humor in lots of situations or have difficulty understanding what others think is funny?	1	2	3	4	5
26. Rhythmic or musical skills (even if an instrument is not played).	1	2	3	4	5
27. Ability to "plan" and to break large tasks into smaller parts or steps.	1	2	3	4	5
28. Arts and crafts skills (drawing, painting, sculpture, etc.).	1	2	3	4	5
29. Ability to visualize and imagine things in your (his/her) head (pictures, faces, words, numbers, etc.).	1	2	3	4	5
30. Ability to accomplish long-term goals or projects.	1	2	3	4	5
31. Directional skills (right/left, north/south, etc.).	1	2	3	4	5
32. Ability to complete jigsaw puzzles.	1	2	3	4	5
33. Ability to remember the words of new popular songs.	1	2	3	4	5
34. Ability to remember the tunes to new popular songs.	1	2	3	4	5
35. Ability to cope with an unexpected change in plans.	1	2	3	4	5
36. Ability to cope with transitions from one activity to another.	1	2	3	4	5
37. Ability to remember the rules to games.	1	2	3	4	5
38. Ability to keep up with activities. Are you (is he/she) the first to start and/or finish something (4 or 5) or are others kept waiting (1 or 2)?	1	2	3	4	5
39. Ability to sit still for long periods of time in school.	1	2	3	4	5
40. Ability to control emotions and avoid overreacting to situations.	1	2	3	4	5
41. Ability to cope with disappointment.	1	2	3	4	5
42. Ability to begin tasks without being told or reminded.	1	2	3	4	5
43. Ability to keep busy to avoid being bored.	1	2	3	4	5
44. Ability to follow a schedule for homework or chores.	1	2	3	4	5
45. Awareness of homework assignments. Do you (does he/she) come home knowing what to do?	1	2	3	4	5
46. Ability to find necessary materials to complete chores or assignments.	1	2	3	4	5
47. Ability to keep room or desk clean and organized.	1	2	3	4	5
48. Awareness of how your (his/her) behavior affects others.	1	2	3	4	5
49. Sensitivity to the feelings of others.	1	2	3	4	5
50. Ability to stick with a difficult or unpleasant task.	1	2	3	4	5

Computer-Generated Report

The Cognitive Processing Inventory (CPI)

Name: Kristine (example) **Age:** 10 **Grade:** 4 **School:** Smith Elementary School **Date:** 1/24/20

The chart below shows relative processing strengths and/or weaknesses within Kristine based upon normative data from CPI ratings and/or objective test information. 0 (zero) sdd represents Kristine's average overall CPI rating.



validity		Auditory	vs	Visual	Sequential	vs	Conceptual	Speed	Executive	Culture/ Language
+	P	1.7	2.0	-1.6	-1.1	-1.2	1.0	-0.4	0.4	0.6
+	T	0.2	-0.3	0.9	0.1	0.0	0.0	0.6	-0.4	0.1
+	O	1.0	1.1	-0.6	0.4	-0.2	0.7	-1.5	0.4	0.4

standard deviation of difference values - mean=0
+/- 1.0 = moderate difference, +/- 2.0 = significant difference

Interpretation

This report is based upon:
Combined parent rating which appears to be valid.
Combined teacher rating which appears to be valid.
Objective test data derived from: Wechsler IQ Scale

The following interpretation is based upon analysis of cognitive processing differences within Kristine:
+Auditory Processing – relative strength
—Visual Processing – severe concern (Parent), moderate concern (Test data)
–Sequential Processing – moderate concern (Parent)
+Conceptual Processing – relative strength
–Processing Speed – moderate concern (Test data)
Executive Functioning – no concern
Culture/Language Impact – no concern

Risk Factors (factors which are commonly associated with learning disabilities)

Family learning difficulties

Rule-Out Factors (factors which frequently impact education and should be ruled out before identifying a learning disability)

No rule-out factors noted

Auditory Processing - relative strength: Auditory processing involves the general ability to understand, remember, and utilize auditory information. For Kristine, Auditory Processing is suggested to be a relative strength. This indicates that she may learn

better when visual information (such as charts, graphs, maps, demonstration, etc.) is supported with verbal clarification.

Visual Processing - severe concern (Parent), moderate concern (Test data): Visual Processing involves the ability to understand, remember and utilize visual information even when it becomes abstract or complex. For Kristine, Visual Processing is suggested to be a relative weakness. This suggests that she may experience difficulty coping with visual information such as charts, graphs, or cluttered worksheets. Students with this learning/processing style often struggle with the visualization required for math and spelling but may also experience some difficulty with reading comprehension (especially without pictures). Such students may need to be prompted or reminded to 'visualize' information and may benefit from extra verbal instruction or clarification.

Sequential Processing - moderate concern (Parent): Sequential Processing is generally regarded as the brain's detailed filing system. It involves the ability to learn, memorize, organize, and express detailed or specific information. For Kristine, Sequential Processing is suggested to be a relative weakness. This indicates that she may experience difficulty learning or remembering specific facts or instructions. Students with this learning/processing style usually struggle with reading speed, learning/remembering specific math steps or formulas, the mechanics of writing, and organizing thoughts for expression - especially in writing. Students with poor sequencing skills may benefit from external structure (such as lists, schedules, reminders, etc.). Such students also sometimes have stronger conceptual processing abilities (reasoning, abstract thinking, creativity) and may learn best when first presented overviews, summaries, and underlying concepts rather than detailed facts.

Conceptual Processing - relative strength: Conceptual Processing involves the ability to learn, remember, and understand overall patterns and broad concepts as well as the ability to utilize this 'deeper understanding' for use in higher-order thinking, creativity, and reasoning. For Kristine, Conceptual Processing is suggested to be a relative strength. This indicates that she may be a 'big picture' learner who is particularly adept at grasping broad meaningful knowledge, inferring complex or abstract relationships, and demonstrating considerable creativity. Students with this processing style tend to learn best and be better able to maintain engagement and motivation when given opportunities to utilize their creativity and conceptual thinking skills before or in conjunction with attempts to teach more detailed or sequential skills.

Processing Speed - moderate concern (Test data): Processing Speed involves how quickly the brain is able to act or react in various situations. Problems can arise when information is either processed too slowly (i.e. the person can't keep up) or too quickly (i.e. the person responds impulsively or carelessly). For Kristine, Processing Speed is suggested to be somewhat lower than normal. This indicates that she may struggle to keep up with all types of instruction, classroom activities, and homework assignments. Any situation with an expressed or implied time pressure - such as tests or even class discussion - will probably be difficult. Impulsive or careless behavior may arise out of a need to act or react to a given situation before the brain has a chance to develop a more thoughtful response. Students with this learning/processing style sometimes demonstrate surprisingly strong reasoning and problem-solving skills when given enough time to fully process the information. Relatively low Processing Speed is sometimes associated with an attention deficit disorder (ADHD - Inattentive type).

Executive Functioning - no concern: Executive Functioning refers to the overall ability to manage or regulate several primary cognitive and emotional processes. This involves initiation, planning, organization, and execution of various tasks as well as the ability to cope with transitions or regulate emotional responses. For Kristine, Executive Functioning is not identified as an area of concern.

Culture/Language Impact - no concern: Culture/Language Impact refers to the potentially negative impact which issues such as cultural background or limited exposure to English language instruction may have upon academic progress. Within the CPI, the Culture/Language Index attempts to evaluate how an individual responds to situations which typically are highly influenced by issues of culture or language. For Kristine, Culture/Language Impact is not identified as an area of concern.

Recommendations

Based upon the overall results of available CPI ratings, the following educational recommendations are offered for Kristine:

READING RECOMMENDATIONS

Read summary or review questions first. This helps establish the big picture and underlying meaning of the material. Then, when the passage is read the details will make more sense.

Look at pictures if they are available. This helps get the general meaning across and uses the visual processing skills (which are often a relative strength).

Skim through each paragraph looking for the topic sentence. There is usually one sentence that will give the basic idea of the whole paragraph. Finding that sentence will help all the other pieces of the paragraph make sense.

When taking a test that requires reading, look at the questions first. Then you will know what information to really look for in the reading passage.

Force yourself to spend extra time reading through material in order understand the deeper meaning.

While reading try to visualize what is happening.

Stop after each paragraph to see if you really understood what you read. Try to guess what may happen in the next paragraph.

Use your finger, a bookmark, or piece of paper to help keep your place while reading.

WRITING RECOMMENDATIONS

Outline your thoughts. It is very important to get the main ideas down on paper without having to struggle with the details of spelling, punctuation, etc. Try writing just one key word or phrase for each paragraph, then go back later to fill in the details.

Really practice keyboarding skills! It may be difficult at first, but after you have learned the pattern of the keys, typing will be faster and clearer than handwriting.

Use a computer to organize information and check spelling. Even if your keyboarding skills aren't great, a computer can sure help with the details.

Continue practicing handwriting. As frustrating as it may be, there will be times throughout your life that you will need to be able to write things down and maybe even share your handwriting with others. It will continue to improve as long as you keep working at it.

Talk to yourself as you write. This may provide valuable auditory feedback.

Slow down! Take time to really plan and organize your thoughts before starting to write.

Take time to "visualize" letters and words when working on spelling.

Use spell check when appropriate and really pay attention to your mistakes.

Draw a picture of a thought for each paragraph.

MATH RECOMMENDATIONS

Take extra time to look at any visual information that may be provided (picture, chart, graph, etc.).

Read the problem out loud and listen very carefully. This allows you to use your auditory skills (which may be a strength).

Ask to see an example.

Try to think of a real-life situation that would involve this type of problem.

Do math problems on graph paper to keep the numbers neat and organized.

Ask for uncluttered worksheets so that you are not overwhelmed by too much visual information.

Spend extra time memorizing math facts. Use rhythm or music to help memorize.

Use a calculator when necessary, but continue working on basic math facts. Know where to find important formulas when you need them.

Draw simple pictures to help solve story problems.

Work extra hard to visualize math problems. Maybe even draw yourself a picture to help understand the problem.

Recheck your work to avoid making careless mistakes.

GENERAL RECOMMENDATIONS

Take extra time to look at any visual information which may be available (pictures, videos, writing, etc.).

Ask for a verbal description or explanation when visual information is confusing.

Listen, listen, listen for any information you may need.

Make lists of assignments, chores, or other obligations. Take time to break large tasks into smaller, manageable pieces. Make a schedule of when different portions of a task should be done.

Ask teachers/instructors for a clear and simple overview or summary of what will be learned before a lesson is broken into specific parts.

Ask to be tested in a quiet area to avoid distractions.

Ask for an alternative to computer-scored answer sheets (the small boxes or circles can be very visually confusing).

Ask for repetition and clarification of verbal instruction (the more you hear it, the better you will learn).

Ask to have important information drawn or at least written on the board so you have time to look at it.

Try sitting near the front of the classroom to maintain attention.

Ask for examples and demonstrations of what is expected from assignments and projects.

Be sure you have enough time to think. Ask teachers/instructors not to "put you on the spot" by asking questions unless you have time to organize your thoughts.

Ask for a clearer explanation when you don't understand the details.

When memorizing details, combine words with music or rhythm to provide a more "conceptual feel". Also try mnemonic devices.

Ask for concrete visual aids (drawing, charts, video, etc.) to help understand the "big picture".

Take extra time to think through tests and assignments.

Pay attention, watching and listening for any important information you may need.

Ask teachers/instructors for worksheets or tests with larger print and less "clutter".

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