Module 1 (Word Discrimination)

- Evaluates attentional processes/verbal recognition memory
- Utilizes a word discrimination paradigm.
- Twelve target words are presented for 750 milliseconds (twice to facilitate learning of the list)
- The subject is then tested for recall via the presentation of the 24-word list that is:
  - comprised of 12 target words and 12 non-target words
  - Words chosen from the same semantic category as the target word.
  - EX: the word “ice” is a target word, while the word “snow” represents the non-target word.
  - The subject responds by mouse-clicking the “yes” or “no” buttons
  - Individual scores are provided both for correct “yes” and “no” responses - In addition, a total percent correct score is provided.
- There are five different forms of the word list.

**Delay Condition:** Following the administration of all other test modules (approximately 20 minutes), the subject is again tested for recall via the same method described above. The same scores that are described above are provided for the delay condition.
Module 2 (Design Memory)

- Evaluates attentional processes and visual recognition memory
- Utilizes a design discrimination paradigm.
- Twelve target designs are presented for 750 milliseconds (twice to facilitate learning)
- The subject is then tested for recall via the presentation of the 24 designs

- Comprised of 12 target designs and 12 non-target designs
- EX: target designs that have been rotated in space
- The subject responds by mouse-clicking the “yes” or “no” buttons
- Individual scores are provided both for correct “yes” and “no” responses
- In addition, a total percent correct score is provided

- There are five different forms of this task
Module 3 (X’s and O’s)

- Measures visual working memory, visual processing speed, and visual memory paradigm
- Encorporates a distractor task.
- The subject can practice the distractor task prior to presentation of the memory task
- The distractor is a choice reaction time test: the subject is asked to click the left mouse button if a blue square is presented and the right mouse button if a red circle is presented.
- Once the subject has completed this task, the memory task is presented.

✓ Memory task: a random assortment of X’s and O’s is displayed for 1.5 seconds
✓ For each trial: three of the X’s or O’s are illuminated in YELLOW (the subject has to remember the location of the illuminated objects).
✓ Immediately after the presentation of the 3 X’s or O’s, the distractor task re-appears on the screen.
✓ Following the distractor task, the memory screen (X’s and O’s) re-appears and the subject is asked to click on the previously illuminated X’s and O’s.
✓ Scores are provided for correct identification of the X’s and O’s (memory), reaction time for the distractor task, and number of errors on the distractor task.

- For each administration of ImPACT, the subject completes 4 trials.
Module 4 (Symbol Matching)

- Evaluates **visual processing speed, learning** and **memory**
- Initially, the subject is presented with a screen that displays 9 common symbols (triangle, square, arrow, etc).
- Directly under each symbol is a number button from 1 to 9
- Below this grid, a symbol is presented.

- The subject is required to click the matching number as quickly as possible and to remember the symbol/number pairings
- Correct performance is reinforced through the illumination of a correctly clicked number in GREEN. Incorrect performance illuminates the number button in RED.
- Following the completion of 27 trials, the symbols disappear from the top grid.
- The symbols again appear below the grid and the subject is asked to recall the correct symbol/number pairing by clicking the appropriate number button.

- This module provides an average **reaction time score** and a score for the **memory condition**.
Module 5 (Color Match)

- Represents a choice reaction time task and measures impulse control/response inhibition
- First, the subject is required to respond by clicking a red, blue or green button as they are presented on the screen. This procedure is completed to assure that subsequent trials would not be affected by color blindness
- Next, a word is displayed on the screen in the same colored ink as the word (e.g. RED), or in a different colored ink (GREEN or BLUE)

✓ The subject is instructed to click in the box as quickly as possible only if the word is presented in the matching ink.

- In addition to providing a reaction time score, this task also provides an error score.
Module 6 (Three letters)

- Measures **working memory** and **visual-motor response speed**
- First, the subject is allowed to practice a distractor task
  - Consists of 25 numbered buttons (5 x 5 grid).
  - The subject is instructed to click as quickly as possible on the numbered buttons in backward order starting with “25.” (has an initial practice task)
  - Then they are presented with three consonant letters displayed on the screen.
  - Immediately following display of the 3 letters, the numbered grid re-appears and the subject is instructed to click the numbered buttons in backward order, again
  - After a period of 18 seconds, the numbered grid disappears and the subject is asked to recall the three letters by typing them from the keyboard.
  - Both the number placement on the grid and letters displayed are randomized for each trial.
- Yields a **memory score** (total number of correctly identified letters) and a score for the average number of correctly clicked numbers per trial from the distractor test.
- Five trials of this task are presented for each administration of the test.