Early Spark

Cognitive Assessment Report

Overview

This report presents an analysis of cognitive performance based on data gathered from a series of digital tasks and speech analytics. The assessment incorporates scores from Stroop Colour, Memory Recall, and Object-Purpose Matching games (with placeholder scores for the latter), along with metrics derived from speech analysis and sentiment analysis of transcribed audio. The purpose of this report is to provide a preliminary indication of cognitive function, identify potential areas of concern, and suggest recommendations for further evaluation if necessary.

Metrics Explanation

* Stroop Colour: This task measures selective attention and cognitive flexibility. Participants are asked to name the colour of a word while ignoring the word's meaning (e.g., the word "blue" printed in red ink). The score reflects the number of correct responses within a given time. A lower score suggests difficulties in inhibiting cognitive interference.
* Memory Recall: This assesses short-term and working memory. Participants are presented with a sequence of items (e.g., numbers, words, images) and asked to recall them in the same or reverse order. The score represents the number of items successfully recalled. A low score indicates potential memory impairment.
* Image Recall: This assesses visual memory and recall accuracy.
* Speech Metrics: These metrics are derived from transcribed speech and include:

Total time:* Duration of audio file.

Total pause time:* Cumulative duration of pauses within speech.

Pause density (%):* Percentage of time spent pausing relative to total time. Elevated pause density can indicate word-finding difficulties or hesitation.

Repeated words:* Number of instances of word repetition. Frequent repetition can signal language retrieval problems.

Filler words:* Number of filler words (e.g., "um," "ah"). Increased use of filler words may reflect uncertainty or difficulty formulating thoughts.

Filler frequency (%):* Percentage of filler words relative to total words.

Unique words:* Number of distinct words used.

Lexical diversity (%):* A measure of vocabulary range and complexity, calculated as a percentage. Reduced lexical diversity might suggest diminished language skills.

Speech fluency (words/sec):* Rate of speech, measured in words per second. Reduced fluency can be indicative of cognitive slowing or language impairment.

* Sentiment Analysis: This evaluates the emotional tone of the transcribed speech, providing a "label" (e.g., positive, negative, neutral) and a "weighted score" reflecting the intensity of the identified sentiment.

Memory game Analysis

The memory game score is 1. This is a low score. A low score on a memory recall task often indicates difficulties with short-term memory, working memory, or attention. It could suggest problems encoding new information or retrieving it from memory. Factors that might influence this score include:

* Attention: Difficulty focusing on the task can impair memory performance.
* Anxiety: Stress or anxiety can negatively impact cognitive function, including memory.
* Fatigue: Tiredness can also reduce cognitive performance.
* Underlying cognitive impairment: In some cases, a low memory score may be an early sign of mild cognitive impairment (MCI) or dementia.

Image recall

The image recall score is 4. A low score on a image recall task often indicates difficulties with visual memory. It could suggest problems encoding new image information or retrieving it from memory. Factors that might influence this score include:

* Attention: Difficulty focusing on the task can impair memory performance.
* Anxiety: Stress or anxiety can negatively impact cognitive function, including memory.
* Fatigue: Tiredness can also reduce cognitive performance.
* Underlying cognitive impairment: In some cases, a low memory score may be an early sign of mild cognitive impairment (MCI) or dementia.

Stroop Colour

The Stroop Colour score is 25. This score reflects the ability to inhibit cognitive interference. A higher score indicates better cognitive flexibility and attention. A score of 25 is not particularly low, but comparing it against normative data for age and education level would provide a more precise assessment. Factors that could influence this score include:

* Attention Deficits: Individuals with attention deficits may struggle to focus on the colour and ignore the word.
* Executive Dysfunction: Difficulties with executive functions (e.g., planning, organization) can impair performance on the Stroop test.
* Age: Stroop performance tends to decline with age.
* Practice Effects: Repeated testing can improve Stroop performance.

Speech Analysis

The speech metrics vary across the three audio files.

* File 1 and File 3: Show zero values across all metrics, indicating no speech data was recorded or

processed for these files. This suggests a technical issue or lack of verbal response during these segments.

* File 2: Shows non-zero values. The total time is 2.22 seconds, with a pause density of 50%, suggesting significant hesitation. The presence of one repeated word and a lexical diversity of 81.82% are noted. The speech fluency is 84.86 words/sec. This high word/sec could be an anomaly due to the short total time.

The high pause density in File 2 warrants further investigation. Increased pausing can be associated with:

* Word-finding difficulties: A common symptom of cognitive decline.
* Hesitation due to uncertainty: Reflecting indecisiveness or anxiety.
* Cognitive slowing: A general slowing of thought processes.

Sentiment Analysis

Sentiment analysis was only possible for file 2. The overall combined sentiment is "positive" with a weighted score of 78.779. A positive sentiment does not necessarily negate cognitive concerns, but provides context regarding the speaker's emotional state during the assessment.

Heuristic Cognitive Risk Assessment

Based on the available data, there are indicators suggesting potential cognitive concerns:

* Low Memory Recall score
* Potentially Elevated Pause Density (File 2)

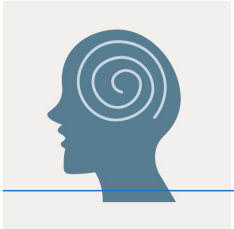
Integrated Interpretation

The combination of a low Memory Recall score and possible high pause density, taken together, might suggest mild cognitive impairment. The limited speech data (only one file with usable metrics) restricts a more definitive conclusion. The Stroop score is within a normal range. The single sentiment score is positive.

Recommendations

1. Repeat the Assessment: Repeat the digital tasks to ensure the results are consistent. Address technical issues that resulted in missing data for the first and third audio files.
2. Consult a Healthcare Provider: Share this report with a physician or qualified healthcare professional. Further cognitive testing, including a comprehensive neuropsychological evaluation, may be warranted.
3. Consider Neuroimaging: Depending on the clinical presentation, brain imaging (e.g., MRI) may be helpful to rule out structural abnormalities.
4. Monitor Speech Patterns: Continue to monitor speech patterns for changes in fluency, pause density, and lexical diversity.

It is a test done by AI; if the score is too high it is suggested to consult a doctor immediately, if not then also it is better to meet a doctor.



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