

NEUROMITE Diagnostic

STUDENT ABILITY ASSESSMENT

RESULTS REPORT

Purpose of Report

This report is provided to teachers and relevant qualified educational staff for the purpose of understanding the relative strengths and areas of development of their students on pertinent abilities.

Confidentiality

This is a highly confidential report and should be treated with due care and responsibility. It contains sensitive information concerning the test results of a student. The report is intended for use by teachers and educational staff. The information should not be released to students, parents or other staff members without the supervision of a Psychologist.

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Student Ability Assessment Report

NAME: Joe Student
DATE OF BIRTH: 01/03/2004
TEST DATE: XXXX XXX XXX 2014

This report presents the test results for Joe Student for the purpose of evaluating his current capability, future learning and scholastic potential. It aims to assist education staff to better recognise this student's ability strengths and developmental areas, which will impact how effectively he can learn and progress in school curriculum activities.

The first section of the report provides an overview of the assessment areas for cognitive and non-cognitive abilities. The test results are then provided followed by an interpretation of results. The last section provides recommendations in the areas of student feedback, learning and teaching environment, development of key cognitive abilities, and the need for reassessment over a period of time.

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VTS Cognitive Ability Assessment Areas

DIMENSION	COGNITIVE ABILITY	DEFINITION
ATTENTION	Intrinsic Alertness (Visual and Auditory)	Ability to temporarily increase and sustain energy in order to respond quickly and accurately to visual and or auditory information over the short term without any cues or prompts (self-directed).
	Sustained Attention	Ability to maintain adequate energy levels, alertness and effort over a long period of time under monotonous conditions.
	Visual Selective Attention	Ability to respond correctly to relevant words, images, shapes, or visual cues in the presence of other competing visual information and distractions.
	Auditory Focused Attention	Ability to listen and take in relevant auditory information while ignoring external auditory distractions (e.g., ambient noise such as chatter, music and background noise) and refraining from engaging with or responding to such distracters.
MEMORY	Visuospatial Working Memory	Ability to store and recall newly received visual information over a short period of time.
EXECUTIVE FUNCTIONING	Impulse Control	Ability to inhibit irrelevant responses and control internal distractions in order to respond more deliberately and methodically.
PERFORMANCE UNDER PRESSURE	Multi-limb Motor-Coordination	Ability to maintain focus, and continue to persevere in a learning environment under duress, as well as the capacity and resilience to recover from mistakes and errors.

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Non-Cognitive Assessment Areas

DIMENSION	NON-COGNITIVE ABILITY	DEFINITION
CONFIDENCE (Self-Belief)	Academic Efficacy	The belief in oneself to work hard, learn difficult class work, and master challenging concepts, tasks and skills.
CONSCIENTIOUSNESS (Goal orientation, task focus, cognition control, and meta-cognition)	Motivation	The student’s reason for learning at school and working on classwork from a motivational perspective, ranging from internally directed motivation to externally controlled motivation. Internally directed motivation is intrinsic in nature, where the will to learn is due to interest itself, curiosity, or the joy of learning and thinking about new things. In contrast, motivation sourced from external factors can be attributed to perceived matters of importance (principles, values, future benefits), one’s ego or sense of self (pride, anxiety or guilt), or reinforcement from others (positive, negative or simply a demand for compliance).
	Goal Orientation for learning tasks	Students tend to actively set, or subconsciously pursue, different types of goals when it comes to learning: 1) task mastery where learning itself, understanding concepts and mastering skills are important, 2) performance goals that are focused on comparing and competing with other students, or 3) avoidance goals that seek to avoid being perceived by others as incompetent or not smart.
	Effort	The willingness to put effort into, and work hard at, learning new material, completing assignments and preparing for exams.

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DIMENSION	NON-COGNITIVE ABILITY	DEFINITION
RESILIENCE (Emotional control, recovery, and persistence)	Emotional Control	Being able to approach and respond to learning new material and school work in a calm and focused way in the presence of difficulties. Being able to control emotional responses and worrisome thoughts so as to not get distracted or sidetracked when difficulties arise.
	Persistence	Being able to persist and show resilience when experiencing confusion or frustration associated with learning material, a lack of interest in a school topic, boring or tedious subjects, and difficult or complex school work.
MINDSET (Growth mindset, learning orientation, and effort based beliefs)	Growth Mindset	The extent to which the student believes that abilities can change and where each individual has the potential to continue to grow and develop (growth mindset). In contrast, the student believes that abilities are fixed and cannot change (fixed mindset). In a growth mindset, learning is most important; the student continues to work hard after failure. In a fixed mindset, looking smart is most important; the student tends to give up after failure.
	Learning Orientation	The extent that the student perceives learning itself as motivating, enjoys learning new things, likes to be challenged by difficult school work, and recognises the benefits of making mistakes during the learning task.
	Effort Beliefs	The degree to which the student believes that effort and a preparedness to work hard leads to positive outcomes in school subjects, regardless of one's talent or ability.

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Cognitive Assessment Results

DIMENSION	COGNITIVE AREA		RESULTS
ATTENTION	Intrinsic Alertness	Visual	Average
		Auditory	Very Low
	Sustained Attention		(Not Assessed)
	Visual Selective Attention		High Average
	Auditory Focused Attention		Very Low
MEMORY	Visuospatial Working Memory		Low to Very Low
EXECUTIVE FUNCTIONING	Impulse Control	Auditory cued with visual tasks	Very Low
		Auditory cued with auditory tasks	Very Low
PERFORMANCE UNDER PRESSURE	Response under pressure		Very High

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Non-Cognitive Assessment Results

DIMENSION	NON-COGNITIVE ABILITY		RESULTS
CONFIDENCE	Academic Efficacy		Low
CONSCIENTIOUSNESS	Motivation	Internally directed motivation (intrinsic self-regulation)	Uncertain*
		Perceived matters of importance (identified self-regulation)	Uncertain*
		Ego response (introjected self-regulation)	Above Average*
		Reinforcement from others (extrinsic regulation)	Uncertain*
	Goal Orientation for learning tasks	Task mastery goals	High**
		Performance (comparison) goals	High**
		Avoidance goals	High**
Effort		Average	
RESLIENCE	Emotional Control		Low Average
	Persistence		Low Average
MINDSET	Growth Mindset		Average
	Learning Orientation		Average
	Effort belief (effort-outcome drive)		Average

* All areas were rated similarly by Joe Student, suggesting that he is uncertain about his motivational drive.

** It is unusual to see ratings as high for each of the three goal orientation areas. Typically, one area is rated as the predominant goal orientation.

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Interpretation of results

Cognitive Abilities

The assessment of Joe Student's cognitive abilities indicates a range of capacity from very low to very high. Joe Student scored in the very high range for the visual selective attention. Such a strong ability will enable him to attend to a range of visually presented information, even in the presence of competing information or distractions. He will be able to generally cope with complex but age-relevant forms of learning material or teaching information of a visual kind. This is further supported by an average ability to maintain his alertness. For each learning task a certain amount of alertness or energy is required to maintain a task focus. Joe Student has a sufficient amount of alertness when it comes to visually presented material but not for oral or acoustic learning tasks or instructions. His ability to maintain alertness in the presence of auditory information is very low.

It is important for students to differentiate between relevant auditory information (e.g., teacher instructions or video presentation) and ignore distracting thoughts (e.g., day dreaming) and noises (e.g., next door classroom chatter). Joe Student's score on auditory focused attention was in the very low range. When subjects are instructed using multiple auditory and oral material, Joe Student will have difficulty processing, listening to and taking in relevant, as opposed to, irrelevant auditory information.

Joe Student scored in the high range for performance under pressure, which suggests that he is quite robust when the learning is challenging or quickly paced. He is likely to be able to continue with a learning task even when he makes mistakes and errors. However, he may have trouble motivating himself to do so because of a low self belief in being able to work hard and master challenging concepts, tasks or skills (see non-cognitive abilities section for further information).

Verbal working memory is a critical cognitive ability and a prerequisite for knowledge acquisition across all areas of academia. Deficiencies in working memory (visuospatial) often leads to difficulties in (1) memorising newly learnt information, (2) applying already learnt concepts in assignments or exams, and (3) following multiple instructions. Joe Student scored in the low to very low range, which would have had a negative effect on his learning ability for visual information. Furthermore, his reading and spelling are likely to be poor as a result of difficulty visualising and remembering word and letter shapes.

A key ability area for students, particularly as they progress from lower to higher school levels, is executive functioning. Effective acquisition and utilisation of many skills at school require executive functioning capabilities to direct attention, memorise, and control impulses and distractions. Success depends on a student's ability to plan, organise and prioritise tasks, materials, and information, separate main ideas from details, think flexibly

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and monitor their progress. During the assessment, Joe Student's capacity to manage impulses was measured. He scored in the very low range. He had difficulty managing auditory information and sound based cues in order to attend and respond to key information presented thereafter, whether it be visual or acoustic information. Teachers frequently cue and alert students with information associated with goal setting, task sequencing, monitoring and feedback to help students anticipate, attend, memorise, understand, and practice knowledge and skills. In Joe Student's case, such cued information in an auditory form is unlikely to be successful. He becomes highly distracted as a result of these cuing and alerting mechanisms and is, for the most part, unable to manage his attention and thinking as a result. Auditory reminders and prompts overload Joe Student's processing capacity, causing interference with visual tasks such as reading, note taking, and following instructions on the board.

Non-Cognitive Abilities

A range of non-cognitive factors (e.g., drivers, motivators, and attitudes) relevant in academic settings were assessed. One of 4 key dimensions assessed was his confidence and in particular academic efficacy - an individual's belief that they can successfully achieve at a certain level on an academic task or attain a specific academic goal. Joe Student has rated himself in the low range on academic efficacy. This suggests that Joe Student sees himself as someone who is unlikely to succeed at academic tasks and unlikely to reach desired levels of academic success.

Joe Student shows uncertainty as to what drives or motivates him to perform well at scholastic tasks, given that he has rated all forms of motivation relatively similarly and in the average range. There is vagueness around whether he is: (1) intrinsically directed (i.e., motivated by the fun and enjoyment of learning or performing a task), (2) purpose and principle driven (i.e., school tasks are perceived to be contributing to a desired future state, such as to do well at school), (c) ego and guilt driven (i.e., motivated by the need to avoid anxiety and guilt or to maintain self esteem, such as completing homework to please a teacher or parents), or (d) externally directed (i.e., motivated by negative or positive reinforcement, rewards and incentives, punishment or compliance). Interestingly, his score on ego and guilt driven motivation (introjected motivation) is elevated and, at this stage, may be his prime motivator. Although teachers may initially find Joe Student to be more responsive to requests and demands placed on him using this type of influence, ego and guilt driven motivation is not the most effective for academic development. Therefore, efforts to shift his mindset to be more purpose and enjoyment driven with regards to school work will be important.

Goal setting is a predominant feature/task of successful students, but the nature or orientation of goal setting is just as vital. Students set goals to (1) master and acquire

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knowledge and deep understanding of concepts learned, (2) compete and compare against others (i.e., performance is always measured against other students), or (3) mask or cover up incompetence, inadequacies and avoid being perceived as inept by others. Joe Student has rated himself high on all measures, indicating a lack of insight as to why or how he sets his learning goals.

Joe Student's capacity to exert energy (effort) and to attempt to attain a goal is in the average range and similar to other students. Under stressful situations or when beset by problems and challenges, Joe Student's natural response is to give in and become overwhelmed by the experience. This may be an over-learned response, if he has had repeated exposure to disappointments or letdowns at school. However, from an ability point of view, he has the capacity to deal with and manage himself under pressure (i.e., deadlines or cognitive demand). His beliefs about himself are preventing him from accessing that strength.

Mindset around effort and outcome is often a precursor as to whether a student engages and dedicates himself to the task of studying and learning. Those that believe that effort and hard work yield a positive outcome are likely to continue to exert and apply themselves. Joe Student has rated himself in the average range and similar to other students on mindset; he is not predominantly fixed or growth oriented in his mindset.

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Conclusions and Recommendations

The assessment of Joe Student's cognitive and non-cognitive factors revealed a number of strengths and weaknesses that are important for his school work and academic achievement. On the positive side, Joe Student is able to selectively (i.e., correctly) attend to visually presented learning material. When the learning task becomes difficult or time-bound, Joe Student can maintain his ability to respond quickly and correctly when he is confident and can engage with the learning content. On the down side, Joe Student has poor visuospatial working memory and a weakness in auditory processing associated with alertness, focused attention and impulse control. These two key areas are restricting his capacity to learn, along with a below average belief in self about academic achievement and uncertainty about this motivation.

Feedback to Joe Student

It is recommended that feedback be given to Joe Student so that he is aware of this strengths and areas for improvement. Care will need to be exercised during the feedback process because Joe Student does not have a strong self-belief for academic achievement. It will be important for Joe Student's strengths to be emphasised and reiterated overtime in order to build his confidence. The zone of positive action for Joe Student is that he focuses on visual learning strategies and content (using pictures, diagrams, flow charts, tables or information organisers) in small portions, which are well sequenced for comprehension, and punctuated with time to practice.

Learning Environment

The learning environment is considered in these recommendations for Joe Student as an opportunity for him to better utilise his strengths, build his confidence and increase his willingness to exercise effort in order to learn successfully. It was clear from the discussion with Joe Student's teacher that she is keenly aware of Joe Student's learning capacity, behavioural idiosyncrasies and interpersonal sensitivities. Such insight will be of great support in constructing a learning environment for Joe Student based on his cognitive and non-cognitive results. From a teaching process, the profile of Joe Student's abilities suggests the need to reduce learning task demand by limiting auditory information, presenting learning information in visual format, limiting visual information to small chunks and sequences, and providing regular task feedback using hand gestures, directional pointing and visual references. Care should be exercised not to provide too much auditory information or oral instruction as it is likely to overload Joe Student and interfere with learning itself. Overtime, a prime goal of teaching will be to build his academic efficacy through success learning and effort-based expectations and feedback.

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Direct Development

The best result for Joe Student is likely to come from a cognitive development program so that the low level cognitive abilities can be built. It is recommended that Joe Student undergoes direct development of the abilities that pertain to alertness, attention and impulse control. Without such development the learning process is likely to be hindered, where the abilities are not readily available to the student and teacher to effectively acquire new information and skills.

The cognitive program targets the key abilities, using computer adaptive training modules, in the correct sequence at the proper level to enable development and retention. The cognitive program is free from academic content in order to isolate the abilities for development and reduce interference. Non-cognitive abilities are also developed at the same time through direct coaching and learning support. During the process special emphasis would be placed on building Joe Student's academic efficacy and resilience. When these abilities have been developed, Joe Student will be able to better acquire classroom learning content, especially auditory information, without it being a source of distraction and confusion.

Reassessment

Joe Student has a number of abilities that require development. Furthermore, a number of these abilities depend on each other for successful application on a learning task. For example, auditory alertness is required as a base requirement for impulse control. Similarly, focused attention is dependent upon a certain level of alertness and impulse control being present. To measure the extent of ability improvement to support effective learning, reassessment is recommended at the completion of a direct development program, then at 6 months and at 12 months.