# ASSESSMENT OF INTELLIGENCE EXPLAINED

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ADVICE SHEET

**Summary**
Intelligence assessments vary greatly in terms of validity, reliability, length, popularity, and methods used. The concept of intelligence tests offering an unequivocal score of intelligence is a topic that is often debated and contested. This advice sheet provides a guide to parents who are seeking a cognitive ability assessment for their child. The main intelligence assessments currently administered in the UK are listed and a clear explanation of the methods and test scores of each of these is given. Information on Potential Plus UK's High Learning Potential Assessment service is also provided.

## Introduction

There are many cognitive ability assessments available; please be aware that not all intelligence assessments are reliable and, despite sometimes being very expensive, not all intelligence tests are recognised by schools, local authorities, or organisations such as Mensa.

Recognised assessments of cognitive ability are standardised and norm-based. Standardised means that the testing conditions and procedures are the same for all individuals taking the test. This consistency allows for fair and objective comparisons of the performance of different individuals. Norm-based means the individual is being compared to a representative sample of the population (that is, people their age and similar cultural background). The purpose of these assessments is to determine how the cognitive abilities, skills, or performance of an individual compares to the average or 'norm' for their age group.

Standardised and norm-based tests can be a useful for:

- identifying specific areas of high ability or areas of need.
- creating an individual education plan if there are specific differences linking lack of appropriate challenge, boredom, and/or disruption at school.
- identification of Dual or Multiple Exceptionality (high cognitive ability alongside a Special Educational Need).

## Potential Plus UK's Stance on Intelligence Testing

Parents often ask Potential Plus UK about intelligence testing. Our response is that this is not always necessary unless there are existing issues or problems relating to the child's education, such as:

- Early, rapid, and sustained development of intellectual ability not in line with peers, showing need for extra and appropriate challenge or guided support in areas of need.
- School/nursery/tutor reluctance to identify and provide for intellectual potential.
- Marked differences between work that is done at school and at home.
- Significant strengths in some areas, with poorer or possibly below average signs in others.
- Deterioration in behaviour showing links to boredom or lack of stimulation.
- Specific issues such as emotionally-based school avoidance, reluctance to write or issues with peer integration.


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Under these circumstances, an in-depth assessment, carried out by a trained and experienced assessor, can provide parents with vital information to enable them to provide their child with the support they need to reach their high learning potential.

However, it is important to note that an IQ composite score and achievement levels should not be considered on their own but in relation to the whole individual. Whilst high ability and achievement can clearly help, neither guarantee future success regarding school, examinations, and life. Other factors such as processing speed, working memory ability, motivation, mindset, persistence, resilience, self-concept, and opportunity can be as, or even more, important to the future success of our young people.

Potential Plus UK recognises that not all children with high learning potential will score highly on standardised intelligence tests. That is why our **High Learning Potential Assessment Plus** uses tailored tests alongside crucial background information about your child to provide a comprehensive and holistic understanding of your child's diverse abilities, strengths, and areas of need. The assessment tests offered in the High Learning Potential Assessment Plus service cover the following:

- A cognitive ability or IQ test, which includes verbal and nonverbal ability.
- Academic achievement tests in reading, writing and maths.
- A sensory screening tool to identify possible sensory differences that may be affecting the child's day to day life.
- A working memory test, measuring the ability to concurrently store and manipulate information.
- A processing speed test, measuring how quickly information can be processed.
- Together with an assessment of phonological processing, the scores are used as a dyslexia screener.

After the assessment, parents receive a detailed report of their child's scores as well as recommendations. Results are presented in four forms:

- standardised (raw score converted into a score taking into consideration how other children of the same age scored),
- percentile (the percentage of children who your child outperformed),
- composite scores (overall score comprising the relevant subtests added together),
- a descriptive category range, and confidence intervals for all scores.

**Are all intelligence tests the same?**

No, not at all. Whilst they all test similar constructs of ability, the actual tasks may differ considerably. In addition, standard scores from differing tests cannot be directly compared. For example, an IQ score of 139 on a Culture Fair test does not equate to a score of 139 on the WISC or the KBIT2 Revised. Instead, percentile scores are the best way to compare general overall performance between tests.

A brief description of the content of some of the commonly administered cognitive ability

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assessments in the UK is included below. This list is not exhaustive:

- Verbal Reasoning (reading, vocabulary, general knowledge)
- Nonverbal Reasoning (problem solving, spatial imagery, abstract reasoning, sequencing, patterns)
- Working memory tasks
- Processing Speed (of verbal and/or nonverbal input)

In the UK, some common formal intelligence assessments for children administered by psychologists are:

- WISC-V (Wechsler Intelligence Scale for Children, Fifth Edition)
- Stanford Binet, Fifth Edition
- BAS3 (British Abilities Scale, Third Edition)
- Cattell Culture Fair III Intelligence Test (CCF-III)
- Raven's Advanced Progressive Matrices (RAPM)

Children over the age of 10.5 can also sit the Supervised Mensa IQ test which is based on the Cattell III B and the Culture Fair test.

**Wechsler Intelligence Scale for Children, Fifth Edition UK (WISC-V)**

- Age Range: 6 years to 16 years, 11 months
- Length: 65-80 minutes
- WISC-V UK edition is based on a standardisation sample of 780 children between the ages of 6 and 16.
- Scores can range from 40-160, the average being 100.

The WISC-V is by far the most used form of intelligence assessment for children today and is an excellent tool to measure a child's cognitive development. The WISC-V has an updated version which should be used for evaluating high learning potential as it includes extended norms for those with an IQ beyond the 98$^{th}$ percentile.

WISC-V consists of 16 subtests and can result in a total of 5 composite scores:

1. Verbal Comprehension (VCI)
2. Visual Spatial (VSI)
3. Fluid Reasoning (FRI)
4. Working Memory (WMI)
5. Processing Speed (PSI)

In addition, 5 ancillary index scales can be derived from the subtests:

1. Quantitative Reasoning (QRI)
2. Auditory Working Memory (AWMI)
3. Nonverbal (NVI)
4. General Ability (GAI)
5. Cognitive Proficiency (CPI)

**WISC-V consists of 16 subtests which fall under 4 main categories:**

| Verbal Comprehension | Visual Spatial | Fluid Reasoning | Working Memory | Processing Speed |
|---|---|---|---|---|
| Similarities | Block Design | Matrix Reasoning | Digit Span | Coding |
| Vocabulary | Visual Puzzles | Figure Weights | Picture Span | Symbol Search |
| Comprehension | | Picture Concepts | Letter-Number Sequencing | Cancellation |
| Information | | Arithmetic | | |

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The WISC-V Range for the Full-Scale IQ (FSIQ) score is as follows:

- 130 and above Extremely High
- 120-129 Very High
- 110-119 High Average
- 90-110 Average
- 80-89 Low Average
- 70-79 Very Low
- 69 and below Extremely Low

The WISC-V is also used as a diagnostic tool for additional needs, such as ADHD. The assessment of children with Dual or Multiple Exceptionality using this method is considered to be highly effective for recognising both high cognitive ability as well as special educational needs.

**Stanford-Binet Intelligence Scales, Fifth Edition (SB-5)**

- Age Range: 2 years to 85 years
- Length: 45-90 minutes
- Based on a standardisation sample of 4,800 individuals
- Average score of 100

The Stanford Binet Intelligence Scale Fifth Edition measures 6 main areas of cognitive ability:

1. General Intelligence
2. Verbal Reasoning
3. Knowledge
4. Quantitative Reasoning
5. Abstract/Visual Reasoning
6. Working Memory

The Stanford Binet IQ Range is as follows:

- 145-160 Highly Advanced
- 130-144 Very Advanced
- 120-129 Superior
- 110-119 High Average
- 90-109 Average
- 80-89 Low Average
- 70-79 Borderline Delayed
- 55-69 Mildly Delayed
- 40-54 Moderately Delayed

**The subtests of SB-5 are categorised as follows:**

| FACTORS | NONVERBAL (NV) | VERBAL (V) |
|---|---|---|
| Fluid Reasoning (FR) | Nonverbal Fluid Reasoning Activities: Object Series/Matrices (Routing) | Verbal Fluid Reasoning Activities: Early Reasoning, Verbal Absurdities, Verbal Analogies |
| Knowledge (KN) | Nonverbal Knowledge Activities: Procedural Knowledge, Picture Absurdities | Verbal Knowledge Activities: Vocabulary (Routing) |
| Quantitative Reasoning (QR) | Nonverbal Quantitative Reasoning Activities: Quantitative Reasoning | Verbal Quantitative Reasoning Activities: Quantitative Reasoning |
| Visual-Spatial Processing (VS) | Nonverbal Visual-Spatial Processing Activities: Form Board, Form Patterns | Verbal Visual-Spatial Processing Activities: Position and Direction |
| Working Memory (WM) | Nonverbal Working Memory Activities: Delayed Response, Block Span | Verbal Working Memory Activities: Memory for Sentences, Last Word |

The Stanford Binet Intelligence Scales bases the results of these 5 main areas by using 10 subtests. Different age ranges will sit different subtests of Stanford Binet 5. This is to allow for the testing of varied abilities and to also give allowance to very young children whose verbal abilities are still developing.

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**The British Abilities Scale, Third Edition (BAS3)**
There are two versions of the British Abilities Scale: An Early Years Battery and a School Age Battery. This method is a useful tool to gauge 'General Ability' from a number of subtests that measure basic abilities and mental processes.

A final score of 'General Conceptual Ability' following the BAS3 can be presented in a variety of ways:

1. T-Score: a scaled score of between 1 and 100, the average being 43-56.
2. Percentile: the number of children out of 100 that the child would have performed as well as or better than.
3. Age Equivalent: the age at which 50% of children will achieve at this level.
4. Ability Scores: these are standardised scores, the average being 100.

The content of the two batteries of the BAS3 is as follows:

**Early Years BAS3**
Age Range: 3 years, 0 months – 7 years, 11 months
The tasks are divided into the following categories:

- Verbal Skills
- Pictorial Reasoning Ability
- Spatial Ability
- Diagnostic Skills

**School Age BAS3**
Age Range: 6 years, 0 Months – 17 years, 11 months
The tasks are divided into the following categories:

- Verbal Reasoning
- Non-Verbal Reasoning
- Spatial Skills
- Diagnostic Skills

**Cattell Culture Fair III Intelligence Test (CCF-III)**
This is a nonverbal intelligence test designed to minimise cultural, educational and language biases in assessing cognitive abilities through nonverbal reasoning skills, spatial abilities, and problem-solving capabilities.

Early Years tests involve the use of objects to create or fill in patterns (i.e. shapes, blocks, etc.), whilst tests for children and adults aged 8 and above mostly consist of questions involving classification, patterns and filling in incomplete designs with the use of pen and paper.

The Cattell Culture Fair III Intelligence Test is a widely recognised method of intelligence assessment and high percentile scores are commonly accepted for entrance to high IQ societies.

**Raven's Advanced Progressive Matrices (RAPM)**
This is a nonverbal multiple-choice test for adolescents and adults with high cognitive abilities that

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requires identification of a missing element to form a pattern; it becomes increasingly difficult as the test progresses.

Like the CCF-III, the RAPM is known for its ability to measure abstract reasoning skills whilst minimising the influence of language and cultural factors, and high percentile scores allow for entrance into some high IQ societies.

**Finally…**

It is interesting to note that the original creators of the most famous intelligence tests, Wechsler and Binet, warned that intelligence tests should not be considered on their own, explaining that intelligence cannot be measured solely by the results of a test. Both these eminent psychologists urged future users of their tests to consider the results in conjunction with other characteristics within the individuals and their environment.

Potential Plus UK has always focused on supporting the family to support the child; it does not ask for IQ scores as a pre-requisite to membership. This is because we fully recognise creativity, emotional intelligence, motivation, memory, and processing speed as important factors to consider alongside high cognitive ability.

All these factors together make up a child's unique profile of high learning potential, which remains our focus of support and the basis of our Assessment Service.

**Further Information**

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| PA202 Educational Psychologists – Advice for Parents | This advice sheet provides a useful introductory guide to parents who are interested in having their child assessed by an Educational Psychologist. |
| www.bps.org.uk | British Psychological Society website, where you can search for an Educational Psychologist. |
| *Differentiating Giftedness from Talent: The DMGT Perspective on Talent Development* by Françoys Gagne | Addressing the diversity of gifts, the contributions of nature and nurture, the power of outside agents and the role of chance in development of talent. |
| *Emotional Intelligence: Why It Can Matter More Than IQ* by Daniel Goleman | In the 25th Anniversary Edition of this book the author makes a strong case for why Emotional Intelligence is a far stronger indicator for success than IQ. |

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