CHAPTER 15
EVALUATING INTELLIGENCE

1. INTRODUCTORY ORIENTATION

A search for ways to make a decisive, certain, indubitable judgment in a reliable manner and in an exact form about a person's intelligence, as a potentiality has already led many people to wonder and speculate about the matter, without first having considered the nature of a person.

With the rise of the natural sciences, their methods, which do not differentiate between **persons** and natural objects, were very quickly seized to attain what seems to be impossible and, thus, began the largescale practice of **measuring** intelligence.

Proceeding from a naturalistically oriented psychology and philosophical anthropology (see 174, 62; 243, 46), different researchers emphasize specific aspects of intelligence, and held various theories about it, without first inquiring into the essentials of intelligence as a phenomenon.

2. A NATURALISTIC PERSPECTIVE ON INTELLIGENCE

In accordance with the psychology of elements of the previous century (see 174, 121), which holds that the "psychic" consists of “functions”, various researcher tried to isolate those specific functions on which "intelligence" is assumed to be built. On the one hand, they isolated intelligence as an independent unity and, on the other hand, they viewed intellectual achievements as a series of small, separate components (227, 202), each being a separate "ability, capacity, factor, disposition, talent” (236, 46) detached from the person as a functioning totality (see 129; 33).

Thus, for example, Binet believes intelligence, as a "function", is a compilation of other **functions,** and he views different aspects of thinking as belonging to their essence (see 283, 101). Spearman's view is based on the theory that intelligence is built up from

different "factors". He advances his "general factor theory", and "two-factor theory" (see also
241; 229; 259, 46; 164, 382; 263, 97; 32, 129; 70, 182; 1, 69; 174, 62; 136, 237; 236, 46). Thurstone proposes a **multiple factor theory,** according to which he distinguishes eight primary factors (264; 1, 68).

Thomson (261; see also 236, 46; 136, 239) arrives at his **sampling theory,** or **group factor theory,** and for Ebbinghaus, intelligence is equivalent to the ability to combine different factors (see 287, 101). Subsequently, Vernon proposes a **hierarchical group factor theory**. Alexander (3) distinguishes a **general, a practical,** and a **verbal factor.** Consequently, it seems that the point of departure is a particular theory, and, intelligence is primarily defined according to the theory advocated; for most, intelligence is the **ability** of an individual to **adjust** better to his/her environment (see 236, 46; 246, 194, 55; 263, 95; 308, 28; 136, 233; 182, 309-310). There are large scale attempts to isolate **factors** or **abilities**, to **measure** them and, thus, to show differences among people's intelligence.

3. INTELLIGENCE MEDIA

3.1 General

Francis Galton, and Weber and Fechner (see 174, 62), for example, **isolated** and **measured** different senses. Then there were attempts to design **tests** to "measure" intelligence. According to Sonnekus (236, 45), such tests are viewed as **measuring instruments** which are administered to children, and the quantitative scores obtained from them are then interpreted statistically.

Measures of intelligence have been in use since they were inaugurated in France by Binet. During the final years of the nineteenth century, Binet reflected on investigating intelligence, and then he was given the task of determining how intelligent or "dumb" a child is (see 232, 80), with the aim of identifying intellectually retarded children, In collaboration with Simon, a psychiatrist, during 1904-1905. He devised a series of items* which he ordered in terms of level of difficulty after they were responded to by a variety of children. The difficulty level increased corresponding

* Initially he had hoped to "distill" intelligence out of elementary **functions** and to arrive at a totality of functions (see 230, 202).

with the chronological age of the child, beginning with a third-year level of difficulty.

In 1908, a revised scale by Binet and Simon appeared, and the concept of **mental age (MA)** was introduced (see 1, 23), in addition to **chronological age (CA).** Today, such an intelligence scale is known as an **age scale.** The MA is obtained from tables compiled in connection with items which correlate with a particular CA.

In 1911, the Binet-Simon scale was published in its final form (130, 261), and it had special significance, in the sense that a series of standardized items were established in reference to different age groups which, even today, are used as norms (averages) for judging the **performances** of a child (see 232, 80).

Soon it was found that individual differences between the MA and the CA were not constant, and to overcome this problem, in 1912 Stern introduced the calculation of an **intelligence quotient** as the ratio MA/CA. Later the ratio was multiplied by 100 to eliminate the decimal point (see 1, 24), and since then, an IQ has been determined by the formula: MA/CA x 100.

During 1908, Goddard introduced the Binet-Simon scale to the United States, and the first American edition appeared in 1910, and was followed by further editions in 1912, and 1922 (see 1, 23).

Also, others such as Terman and Merrill (260), Thorndike (262), Thurstone (264; 265), and Goddard and Kuhlman (see 1, 23) busied themselves with adapting the Binet-Simon scale. In Belgium, Decroly and Degaud, in Germany, Meumann and Bobertag, and in England, Cyril Burt experimented with the Binet-Simon scale.

Especially the revision by Terman (260) in 1916 at Stanford University (known as the Stanford Binet) found wide application in practice. Emphasis is placed on **vocabulary, reasoning, defining,** and **verbal expression** and, thus, it involves so-called "verbal tests" (see 55, 141).

At the same time, there is a deviation from predominantly "verbal tests". The first such tests are those of Yerkes, Bridges, and Hardwick in 1916 (see 174, 122), the "Pintner-Patterson Performance Scale" in 1917 (see 1, 24), which consist of puzzles, and are non-verbal in nature. Also, the "Snijder-Oomen Non-Verbal

Scale" (228), the "Arthur Point Scale, or Performance Test", and the "Cornell-Coxe Performance Ability Scale" are noted (see 1, 24). An additional variation also gradually arose, which was implemented especially with preschool children. One of the best known of these is the "Merrill-Palmer Scale".

In 1939 the Wechsler-Bellevue Scale appeared for adolescents and adults (314) and in 1949 was followed by the publication of the **Wechsler Intelligence Scale for Children (WISC)** (315) that was standardized on children between five and fifteen by Wechsler who was with Bellevue Hospital in New York (see 1, 27). In 1955 a revised version of the original scale appeared as the **Wechsler Adult Intelligence Scale (WAIS)** (see 110, 73). This scale differs from Terman's in that the MA and CA were eliminated and there is a **point scale.** Also, a distinction is made among a **non-verbal** or practical intelligence, **a verbal** or theoretical intelligence **and a total** IQ (see 54, 142).

In South Africa, a revision and adaptation of the Terman-Merrill 1916 Stanford-Binet was undertaken in 1925 by Grey. In 1927 it was followed by the "Official, Psychological Hygiene Individual Scale" that also in large part is an elaboration of the Stanford-Binet. In 1939 an improved version of this scale appeared as "The Individual Scale of the Bureau for Educational Research", although it is better known as the **Frick Scale** or also the **Old Individual Scale** (see 44, 4).

Effective in 1945, the **New South African Individual Scale (NSAIS),** patterned after the WISC, by the National Bureau for Educational and Social Research, was used (202). At present, the Human Science Research Council has progressed far regarding the standardization of a **Junior South African Individual Scale (JSAIS)** that can be administered especially to preschool children.

3.2 The New South African Individual Scale (NSAIS)

With respect to this scale, mental age is replaced with standard scores (based on the statistical method of a standard deviation). Since there are not different items for different age levels, all children do each individual problem to the extent that they can manage the items that appear in terms of their level of difficulty.

The computed IQ is based on the normal distribution where the mean achievement of each age group is set at 100 and each standard deviation is set at 15. According to this procedure precisely 50% of the population falls between an IQ of 90 and 110 (see 244, 85; 4, 85-86, 319).

There are nine subscales of similar items ordered from easy to difficult. Three scores are computed, namely, **Verbal, Non-Verbal** and **Total.** There are **five verbal** and **four non-verbal** subscales classified under the following headings:

a) **Verbal**
   i) **Vocabulary**
      This consists of five cards, each with four pictures on it. In saying a particular word, each time the child must indicate the picture that best fits the word. For a qualitative-pedagogical analysis, after the **formal** implementation is **completed**, the child is asked for a definition of the words he correctly indicated.
   ii) **Comprehension**
      In response to questions, the child must explain some everyday situations (Why do we use a stove?)
   iii) **Verbal Reasoning**
      The child is expected to indicate **correspondences** among objects or concepts.
   (iv) **Problems**
      Here, the child is confronted with arithmetic word problems.
   v) **Memory**
      A meaningful story is read and the child must repeat as many facts as he/she can remember.
b) **Non-Verbal**
   i) **Pattern Completion**
      As with **Raven's Progressive Matrices**, the child must complete half completed patterns by means of free pencil responses.
   ii) **Block Designs**
      This subtest is like the **Kohs Blocks.** The child is requested to construct geometric figures with blocks, whose sides are colored white or red in particular ways, according to examples on cards. The first three patterns serve as practice, with concrete demonstrations, and assistance, if needed, and each of the remaining is

constructed according to an example on a card.

iii) **Absurdities**

This subtest corresponds with the **Picture Completion** subscale of the WISC (see 202, 4). A series of pictures is shown, and the child must indicate the absurdities. There are two examples, and fifteen pictures where he/she must indicate what is "odd" or "strange", and say why.

iv) **Form Board**

This is a revision of the **Leake-Smith Form Board,** and consists of two boards (approximately 12" x 10"). The child must place 21 colored, multi-formrd wooden blocks (17 triangles and 4 rectangles) in six other forms of different colors (3 triangles, 2 rectangles, one parallelogram) engraved into the board placed next to him/her.

Regarding the use of the NSAIS, the instructions contained in the **Manual** (Number II) must be followed scrupulously. Computing an IQ is done by converting the **raw scores** into scale scores with the aid of a table (see **Manual** (Number III). The child can also earn a **time bonus** (see Manual II).

3.3 Group Scales

The intelligence media referred to so far are **individual scales**. The desire to use media for evaluating intelligence by simultaneously involving large groups of persons quickly gave rise to designing **group scales.** The first arose during 1914-1918 when the United States Army deemed it necessary for selecting recruits. These tests are known as the **Army Alpha** (verbal) and the **Army Beta** (non-verbal) **tests,** and were a result of the research of Otis, Terman, Thorndike, and Yerkes (see 236, 52).

In South Africa, the first group scale was standardized under the leadership of R. W. Wilcocks in 1924 for the Bureau of Educational and Social Research, and is known as the **South African Group Test.** It is appropriate for use with pupils between 10 and 16, and was used by schools until the **New South African Group Test** (201) became available.

4. THE RESULTS OF THE PRACTICE OF TESTING

The practice of measuring intelligence is found world-wide. Sonnekus (236, 45) says that, by means of obtained IQ scores, among others, children re classified into so-called homogeneous groups, placed in courses, channeled into special schools and classes, excluded from ordinary schools, often forced into particular majors and occupations because a particular IQs, viewed as the lowest limit for attaining particular academic levels. Thus, for example, an IQ of 110-120, for some, is stated as an absolute minimum for university matriculation, and an IQ of 120 is viewed as a safe limit in this respect. That findings based on evaluating intelligence can be successfully used for these and other matters cannot be denied, but too often the IQ is the only criterion used for placing a child in a particular group or major.

Since the first media were developed without a fundamental penetration of the phenomenon of intelligence being done, criticism of the theoretical explanation of intelligence, as well as the practice of its measurement, was quickly brought forth. This has gradually led to the evaluation of intelligence being placed on a more accountable basis.

There is an awareness that an IQ is nothing more than the mere expression of a person's intellectual achievement at a particular time. Wechsler (see 236, 47) also emphasizes that, if a child's scholastic achievement differs greatly from his/her IQ, the correctness of his/her IQ, as an indication of his/her intellectual potentialities must be doubted.

The measurement of intelligence is based on the belief that, as a potentiality, it remains constant. However, it was quickly found that the same person does not always earn the same score, even when the same "test" is administered. Steenkamp (244, 63) shows that 20% of IQ's differ from 10 to 19 points on retesting, and 1% by 20 or more points (see 1, 75; 132, 454). With respect to group scales, there are differences of 30 and more points shown between the ages of 6 and 16 (244, 63). Gordon (see 263, 122; 5, 547) also finds that the IQ decreases with age if teaching is not received.

Various researchers have also involved themselves with the phenomenon of changing achievements by the same person (see 230, 200; 182, 316; 225; 102, 349; 38, 132); Selz (225), and Kohnstamm (102, 349) have shown that a person can improve his/her performance by 12 points, and that the milieu exercises a

decisive influence on performance on intelligence media. Kohnstamm concluded that the level of ability can be **metastable** from inadequate teaching (102, 107 and 119).

Other problems regarding the phenomenon of intelligence also are experienced. Stern (see 132, 217-219), for example, is one of the first to view intelligence as, not a mere compilation of separate functions, but as related to the solution of **new problems,** that it enables a person to **comprehend** something. Also, Wechsler (314, 3) views intelligence as a person's **total** capacity to act purposefully, to think rationally, and to deal successfully with his/her environment. However, they do not indicate how intelligence is related to the person, as a **totality** (see 134, 217-219), and an idea still of importance is, such that it remains nothing more than a total of "functions", where the "individual" "reacts" intelligently to "stimuli".

It has become evident that evaluating intelligence involves much more than a mere **quantification** of functions.

5. A QUALITATIVE ANALYSIS OF INTELLIGENCE

5.1 Introduction

Langeveld (129, 124) rejects estimating intelligence as if it were "an exteriorized measurable performance of a thing", because this prevents the nature of the relationships among the different psychic functions from appearing. He develops the idea that intelligence is related to **solving problems,** and to **insight** which **breaks through** those problems. In addition, he emphasizes that it is the total person who becomes goal-directed by being involved in these acts of solving and breaking through problems (130, 244), that intelligence has to do with their quality, and that these acts also deal with life demands confronting a person (136, 195). Langeveld says that being human has to do with the **relationship between person and world,** during which he/she continually faces new situations with which he/she must deal.

With reference to Bijl (20, 95), Gouws (77, 42) says that approaching intelligence on phenomenological grounds brings it into relationship with a human being's eccentric positionality, i.e., his/her potentiality to experience the world as "opposition", by which it becomes possible to experience "objects". In agreement

with Langeveld (133), Sonnekus (232, 78) says that in and through his/her intelligence, a child goes out to the world and, by actualizing it, he/she **breaks through** (to insights), and transforms it into a world-for-me.

Kotze (107, 101) also indicates that, by means of his/her intelligence, as a totality, a child simultaneously is present in different ways in his/her being-in-the-world (and, particularly lived experiences it on pathic-affective and on gnostic-cognitive levels). Thus, by means of his/her intelligence, a child can distance him/herself to a gnostic-cognitive level and, thus, to design relationships. **Within the totality of the psychic life, intelligence, which is an essential of it, cannot be fathomed as such, without continually viewing a person as a totality-in-communication with reality.** It cannot be isolated as a cognitive entity and then be measured and merely expressed as a number (IQ) (Also see 278, 11).

Within a person, as totality, intelligence is a potentiality to break through his/her "surrounding world" whenever he/she is confronted with new situations (see 182, 311; 130, 244; 136, 195). As a **potentiality** for breaking through new situations in his/her world, intelligence is always at the child's disposal, and it must first be **actualized** by him/her. Further, this actualization is always subject to the child's intentional directedness, which, in turn, is supported by his/her **emotions** (also see 232, 78).

The different modes of actualizing the psychic life are reciprocally interrelated, and are always at the child's disposal, precisely for breaking through new situations. As a person (as a totality-in-dialogue with reality), the child, by actualizing his/her intelligence, breaks through and establishes new situations by giving sense and meaning to reality; in this way, he/she broadens his/her experiential world, and actualizes his/her becoming adult. This actualization of intelligence also implies a continual exploration, emancipation, distancing, differentiation, and objectification. Thus, a child's adequate becoming adult also is dependent on him/her adequately actualizing his/her intelligence in **responsible** ways. Furthermore, such responsible actualization must be awakened through educating. According to Sonnekus (230, 224), by actualizing his/her becoming adult, the child continually breaks through to mastering new situations, and to constituting an

experiential world, i.e., he/she broadens his/her landscape, his/her horizon, and creates a new world for him/herself.
A topic also deserving attention is the importance of **language,** as an aid for actualizing intelligence, i.e., the importance of language for implementing this/her potentialities (236, 48). Piaget (308, 34, 35) emphasizes the importance of language as an aid for thinking. Also, Terman (259, 143) and Vernon (308, 35) refer to the close connection between linguistic and intellectual development.

In breaking through a situation on a cognitive level, the child is directly supported by language acquisition, otherwise, intelligence stagnates on a concrete level, or, according to Kotze (107, 101), on a pathic-affective level of lived experiencing. Language serves as the bedrock, or primary precondition for the continued forming of thoughts. Nel (176) says there is a developmental parallel between language and thought, where language is the **carrier** of thoughts, and a stagnation in language development will lead to a stagnation in thinking.

Kotze (107, 101) indicates that language, as an aid for actualizing intelligence, also is subject to the same gnostic-pathic (cognitive-affective) lived experiencing of the child, and that understanding language is only possible by actualizing intelligence (see 50, 24). According to Sonnekus (234), language is a means of constituting and establishing something and remains in the service both of intelligence and of the child as a person. Hence, if his/her language is inferior, his/her intelligence will be qualitatively weak, because then, he/she is deprived of a means for breaking through his/jer surrounding world (see 230, 225).

Because a person's intelligence cannot be isolated to measure it (e.g., as someone's temperature can be measured, or as one can stick out his/her tongue so the doctor can look at the condition of his/her tonsils), a **qualitative** evaluation must also be done so the **nature** and **essence** of his/jer intelligence can be determined. Even Thorndike (262, 14) refers to the fact that all "responses" which are correct (or incorrect) are not equally so. Furthermore, one of the first critical contributions to the **measurement of intelligence** is made by Kohnstamm (102), who pointed out the untenability of relying solely on numerical results (see 230, 119). He distinguishes "theoretical" and "practical" intelligence, and he especially emphasizes the differences in the structure of intelligence of different children, even when they attained the same IQ (102, 208-

210). Finally, in the U.S.A., persons such as Carter and Bowles (36, 139), Strauss and Werner (248, 5), and Sarason (217, 59-60) have expressed misgivings about merely quantifying research on intelligence.

5.2 Chorus' qualitative analysis

Chorus (37, 15-16), who views intelligence as a "capacity" for thinking about situations to order them, advocates a qualitative analysis and evaluation of intelligence with reference to the Netherlands version of the Stanford Binet, which lends itself well to such an analysis (see 55, 141), and he shows how it should be done. A description also is given of **how** a child arrives at his/her performance, and the quantitative result is further explicated.

Chorus proposes a four-fold qualitative analysis: an analysis of **level,** of **structure,** of **individual items,** and a **characterological** or **observation** analysis.

a) **Analysis of level** (37, 112-117)

Here, an analysis is made, and a description given of the **scatter** of the results over the different age levels to determine how widely the performances are scattered over all ages, or how concentrated they are around the child's chronological age (CA). For example, a 12-year-old child whose performances are more concentrated at an age level (figure A) shows greater stability than one whose performances are scattered (figure B).

b) **The analysis of structure (**37, 117-128)

Here, an analysis is made of the types of items passed above the child's average level, and those below failed. From this good and poor qualities regarding the structure of his/her intelligence are highlighted. In this way, it is determined if, e.g., he lags primarily on language or on memory items.

c) **The analysis of individual items** (37, 128-132)

The way a child arrives at a particular response to each of the individual problems (items) are reflected on. Also, the incorrect answers are analyzed to determine the nature of

the problem he/she is experiencing, and the kinds of errors he/she makes. During the implementation of the medium, accurate notes must be taken of the "manner" in which he/she "searches"

for answers.

d) The characterological or observation analysis
Here the investigator observes the child while he is involved, and he especially notices how he concentrates, if he is uncertain, if he is self-critical, etc.

A Age		B Age	
6		6 ++++++++	
7		7 ++++++	
8		8 +++o++	+ = item passed
9		9 +++o+	o = item failed
10	++++++	10 o+oo+o	
11	++++++	11 +oo+o+	
12	++o+	**12** o++o	**C A**
13	+++o+	13 o+o+o	
14	oooo	14 +o++	
15	ooooo	15 +o++o	
16		16 +o+o	
17		17 oo+	
18		18 oooo	
19		19 oooo	
20		20	
MA = 151 months		MA = 151 months	
IQ = MA/CA x 100		IQ = MA/CA x 100	
= 151/144 x 100 = 105		= 151/144 x 100 = 105	

5.3 Some other contributions

In Belgium Hendriks (87) also has done work in the qualitative analysis of intelligence. However, he still relies heavily on a statistical point of view. Also persons such as Dijkhuis (52), Kouwer (110), Van Gelder (287) and Busemann (33) are involved in the qualitative evaluation of intelligence. Moreover, some media are designed with the aim of a more qualitative analysis, especially

for answers.

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Here the investigator observes the child while he is involved, and he especially notices how he concentrates, if he is uncertain, if he is self-critical, etc.

A		B	
Age		Age	
6		6 ++++++++	
7		7 ++++++	
8		8 +++o++	+ = item passed
9		9 +++o+	o = item failed
10 ++++++		10 o+oo+o	
11 ++++++		11 +oo+o+	
12 ++o+		12 o++o	CA
13 +++o+		13 o+o+o	
14 oooo		14 +o++	
15 ooooo		15 +o++o	
16		16 +o+o	
17		17 oo+	
18		18 oooo	
19		19 oooo	
20		20	
MA = 151 months		MA = 151 months	
IQ = MA/CA x 100		IQ = MA/CA x 100	
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regarding the elucidation of particular proficiencies. However, the relationship of these proficiencies with the psychic life, as a totality-in-function, are not always considered.

Stellwag (245, Ch 10) investigates silent reading in a qualitative study of intelligence because, according to her, it more closely approximates the school situation (245, 199), and which demands sustained thinking and constructiveness (245, 212). However, she emphasizes that an investigation of silent reading is a study of **functioning** intelligence, and not of it as a potential (245, 201). Then, she differentiates an **intelligent** and **unintelligent grasp.** For her, an intelligent solution, or grasp is characterized by, e.g., insight into more complex relations, the breadth of view, the quality, and suppleness of solutions, a quickly operating intuition, originality, efficiency, and objectivity. An unintelligent solution is vague, confused, hazy, and obvious aspects are not fathomed (245, 216-217).

Regarding the Wechsler-Bellevue scale, she also demonstrates how structural differences in intelligence are observed with the help of an ordinary intelligence medium, if it is analyzed more closely (245, 218). Also, Saunders (220), and Raven (205) have designed special media for investigating intelligence qualitatively. With respect to the Raven **Colored Progressive Matrices,** there is reasoning with concrete, factual data, e.g., "If _____ is, then _____ must be." It is especially suited for analyzing the relations noticed by the child (see 55, 145).

With reference to the analysis of intelligence, Sonnekus (182, 319-325) states that the quantitative evaluation must be supplemented with an **analysis** of **language,** of **thought,** of **affectivity,** and of **intentionality,** as basic aspects of a qualitative analysis.

5.4 A qualitative analysis according to Swart

Swart (255) describes fully how a qualitative analysis of intelligence can be made using the **Fick Scale** (Stanford Binet revision), the **Wiggly Blocks**, a **dictation task**, and a **paragraph** to be written on a specific topic. She sees Chorus' method as incomplete, and supplements it with **analyses** of **language, thought, intentionality, memory, affectivity, perception, attentive concentration, intelligence tempo,** and **projection** (255, 28).

5,4.1 Language analysis

She refers to the close connection between language and thought, to the fact that language is an aid for thinking, and a foundation for it.

5.4.1.1 Vocabulary: the concern here is not only with the number of correct or incorrect responses out of the fifty, but it is also noted whether the definition is **concrete-visual** or **abstract.**
5.4.1.2 Sentence construction: here, the general impression created by the sentence construction is noticed: awkward, weak, well organized.
5.4.1.3 Language disturbances: attention is given to **reading** and **writing work,** and it is determined what language disturbances are present.

5.4.2 Arithmetic analysis

Next to language, **arithmetic** is viewed as an aid for allowing the child to think. The foundation of arithmetic is not in the numbers themselves but in implementing and ordering quantities. It is determined if the child can read and understand the assignment, if mechanical computation is mastered, and if he/she implements learned or self-discovered methods of solution, if there is evidence of confusing algorithms, etc.

5.4.3 Thought analysis

An analysis is made of the course of the child's thinking, to try to determine on what level (perceptual, schematic, abstract) it occurs, and if it proceeds logically or illogically. In addition, attention is given to the structure of the methods of solution in terms of planning and insight, or trial-and-error.

5.4.4 Analysis of intentionality

While responding to the questions, the child is closely observed, and his/her involvement in the tasks is evaluated in terms of the: a) state of affectivity; b) degree of concentration; c) work tempo; d) quickness of breaking through to insight; e) ways of handling the task, involvement, and persistence.

5.4.5 Analysis of memory

Here, particular attention is paid to the recall of numbers, syllables etc., and to the memory of passages read in context. The **nature** of memory is determined in terms of its "receptive", or "reproductive" quality.

5.4.6 Analysis of affectivity

The description of pictures (e.g., T.A.T.), and the child's use of language, especially via the written paragraph, are involved here. Special attention is given to the affective use of language, i.e., with how language is lived experienced emotionally. Further, it is determined whether the emotional is under intellectual control or not.

5.4.7 Analysis of perceiving

Here, special attention is given to the child's copying a diamond ( ) and his/her structuring of the Wiggly Blocks, particularly whether he/she perceives the whole, or concentrates more on the details.

5.4.8 Analysis of attending

There is a continued focus on whether there is a conspicuous fluctuation in or subsiding of concentration. Use is made of **memory items**, the **Healy and Fernald**, and the **Wiggly Blocks.**

5.4.9 Analysis of intellectual tempo

Here, special attention is paid to tasks where a stopwatch is used, e.g., arithmetic problems, paragraph reading, and naming words. Also, it is noted how quickly the child gets from the question to the answer and particularly if he maintains a good tempo, along with good achievement.

5.4.10 Analysis of projections

During the entire investigation, attention is paid to possible projections, with the aim of gauging the child's relationship with his/her world, and the significance of his/her intelligence in this regard.

5.5 A qualitative analysis according to Steenkamp

Steenkamp (244) built further on the thoughts of Sonnekus and Swart (244, 113), and presents a method for performing a qualitative analysis of intelligence based on the **New South African Individual Scale (NSAIS).** In addition to the usual ways of administering and evaluating the "tests", the following supplementary analyses are made (244, 108-131): a) language analysis; b) arithmetic analysis; c) memory analysis; d) global perception, where attention is given to intentionality, to affectivity, to attending, to tempo, to possible projections, and to giving assistance. An important contribution by Steenkamp is the incorporation of a **pedagogical evaluation** resulting from and as a complementing the quantitative and qualitative analysis of intelligence.

5.6 Synthesis

Especially since World War II, the qualitative investigation of intelligence of the person, viewed as a totality, has found wide application (130, 267). However, several questions regarding the concept of intelligence remain unanswered and, in trying to answer them, the investigator's point of departure, and his/her answers to these questions are determined by the specific theory of human nature he/she subscribes to.

For example, Sonnekus (236, 45) mentions the following questions about intelligence which have remained unanswered: the influence of **hereditary** and **environmental factors** on it; the **consistency** or **stability** of intellectual performances; the difference between the so-called verbal and nonverbal intelligence quotient, and what **verbal** and **nonverbal** precisely include.

Much of the data available regarding these matters provide more confusion than clarity. Following Sonnekus (236, 46), each of these problems is considered.

Regarding the role of heredity in intelligence, the current view is that intelligence is mainly inherited, and that the **environment** can exert an influence, but heredity is the decisive factor. For these reasons, intelligence should be **constant** or **stable.**

According to Langeveld (131), there is a fundamental biological process of maturation (heredity) underlying the development of

intelligence. However, this intellectual maturation is already teachable at an early age.

A variety of researchers have investigated the significance of environmental influences, more specifically educating, for the intellectual performance of children, and they indicate that a child also must be **educated** to adequately actualize his/her intelligence, as a potentiality. For example, he/she must be educated affectively to emotional stability as a **readiness** to actualize his/her intelligence. Also, he/she must be supported if he/she under actualizes his/her intelligence because he/she lived experiences this under actualization itself, and this can restrain still further, or even block its actualization.

Further, the child must be educated to actualize his/her intelligence in **responsible** ways, and this depends on whether he/she receives such guidance.

These matters regarding the evaluation of intelligence are still too readily misunderstood.

The following is an attempt to present an accountable approach to evaluating intelligence, which links up with the work of Sonnekus, Swart, Steenkamp, Gouws, and Kotze.

6. A PEDAGOGIC-QUALITATIVE ANALYSIS OF INTELLIGENCE

6.1 Introduction

From the above, the evaluation of intelligence generally has more to do with studying it as an isolated substance than as the intelligence of a particular child-as-**person.** In no way does this means a quantitative evaluation should be eliminated. This can still be done by administering the "test" and calculating the IQ precisely in accordance with the instructions from the formal manual. However, the IQ should be considered as secondary information because attention is not only paid to **what** the child actualizes, but **how** he/she actualizes it; in other words, attention is given to how his/her course of becoming progresses, which also is a question about the adequacy of him/her actualizing his/her intelligence responsibly.

Thus, his/her intelligence must also be fathomed **pedagogically, qualitatively**. In the first place, this involves a descriptive analysis of the actualization of his/her psychic life-in-education because, as a functioning totality, he/she also is busy actualizing his/her intelligence. Sonnekus (230, 209) says such a study is concerned with the role and significance of intelligence in the dialogic person-world relationship; according to Gouws (77, 43), the concern is with the ways a person can place him/herself opposite the external world, and him/herself, i.e., the ways he/she actualizes his/her "positionalities" in a concrete situation (see 287, 103), as an integral part of the dialogue of a particular person in a particular, unique situation. This also involves gauging the child's becoming adult, including a description of the quality of the modes of actualizing his/her psychic life, by which he/she tries to break through situations, and which, thus, are his/her modes of becoming adult. This amounts to a descriptive analysis of **how** he/she goes to meet reality by means of his/her differentiated intentionalities (e.g., experiencing, willing, lived experiencing, knowing, and behaving). By determining **how** he/she is **involved** with reality, one gets an image of his/her intelligence, among other things. More particularly, this also involves gauging his/her **emotionality** in terms of a stable, labile, or impulsive sensing, which will impede or promote his/her use of his/jer intelligence.

Since actualizing intelligence implies a gnostic-cognitive attunement to the contents of reality, the analysis also must gauge the gnostic-cognitive modes of actualizing the psychic life such as sensing, attending, perceiving, thinking in terms of their order or disorder. Thus, by a pedagogical-qualitative analysis of intelligence is meant a descriptive analysis of it as a person's potentiality for being-in-education, as this is embodied in the items of a particular intelligence medium, and as a supplement to and elucidation of the obtained intelligence quotient.

Thus, there is a description of **how** the child has arrived at a particular answer. This implies describing the quality of the ways he/she tries to break through his/her situations, and on what level this is done. Hence, e.g., he/she can give a "better" answer than the minimum required to obtain the maximum points (If the similarity between a pear and a peach is to be indicated, the answer that both are "fruit" is evidence of a poorer quality than that both are "pulpy fruit"). Also, a child who doesn't provide an answer to a problem (and earns no points) is qualitatively weaker than one who also

earns no points because the correct answer was given after the time limit had elapsed. And, a child who willingly solves difficult problems shows a better quality of achievement than one who solves only the "easy" ones. Thus, a qualitative judgment about a child's intelligence does not merely concern a high or a low score, although naturally it always occurs in relation to the quantitative.

The quality of intelligence can be good for a child who is quantitatively low, and one who is quantitatively high can be qualitatively weak. In short, e.g., an IQ of 110 can be based on achievements of good or weak quality. With a pedagogical-qualitative analysis, specific attention must also be given to the child actualizing his/her psychic life as such.

6.2 Analysis of actualizing the psychic life

6.2.1 Analysis of emotionality

Here, the experience and intuition of the investigator are also necessary, and a thorough pedagogical observation is required (see 236, 54; 244, 66). This always involves evaluating the nature and directedness of intentionality. There is an attempt to gauge the child's actualization of **sensing** during his/her exploring, emancipating, distancing, differentiating, and objectifying in terms of experiencing, willing, lived experiencing, knowing, and behaving.

6.2.2 Analysis of attending

In his/her turning to the contents of the medium, the child must continually remain **concerned** (see 294) with them, and it is precisely this **attending** which enables him/her to distance him/herself to a gnostic-cognitive level and break through new situations.

6.2.3 Analysis of intellectuality

To be able to break through new situations, the child must **perceive** new landscapes, solve problems by **thinking, imagining,** and **fantasizing** absent realities, and **remembering** experiences by re-lived experiencing the past, while being confronted with a new situation.

Whenever a child comes before a new situation, he/she is confronted with **problems** which must be broken through by means of thinking. Since **language** and **computing** are so essential to actualizing intelligence, an impoverished language, or a weakness in arithmetic lead to impoverished thinking, and his/her intelligence cannot be actualized adequately.

There is especially an analysis of the child's gnostic-cognitive structure in terms of the degree of order in perceiving, and the level on which thinking figures, e.g., concrete-perceptual, or abstract. For example, to what extent does he/she loosen him/herself from the concrete and functional to readily move to an abstract level of thinking?

A child who efficiently controls his/her language, and who expresses the intangible and the figurative in his/her language, also can efficiently actualize his/her intelligence. Where this is not the case, intelligence stagnates on the level of concrete, pathic lived experiencing. Then, the score (IQ) also is an invalid image of intelligence, as a potentiality to break through new situations. Where there are language problems, their nature must be thoroughly investigated.

Even though a unique number system has been developed, as a symbol system, it flows from language. According to Van Gelder (287), arithmetic requires a higher level of abstraction than language because numbers are not concrete objects which happen to have a name but rather are written symbols which refer to concrete quantities. Different activities of thinking (implemented by language and numbers) come into play, and different methods of solution than anticipated become possible. In a computational solution, language comprehension, number manipulations, logic, abstracting, and attending all work together in thinking through to a solution to the problem.

With respect to an arithmetic analysis, a study is made of the methods of solution by which the answers are obtained; this is done by attending to how the algorithms are applied, if there is a confusion of "mental" (head) work, and if there is good control of them.

6.2.4 Analysis of the educative situation

Since a child always actualizes his/her intelligence him/herself, but also under the guidance of adults, its evaluation **simultaneously** includes a **pedagogical** evaluation. A judgment about his/her actualizing his/her intelligence also necessarily is a pedagogical judgment because this involves the quality of a particular child's being educated to actualize it. With the aim of specialized assistance, such a judgment is indispensable, especially regarding the child restrained in becoming adult.

Also, there must be a penetration into the structure of the child's **educating**, specifically by determining the quality of his/her affective and normative-moral guidance. with the aim of establishing his/her willingness to actualize his/her intelligence. The degree of responsibility he/she takes in this respect, as well as whether it is meaningful for him/her to **adequately** actualize his/jer intelligence also must be determined. For example, the nature of his/her attitude toward work, and his/her future perspective must be established by what is held before or exemplified to him/her; these are matters which can only be evaluated in terms of pedagogical criteria.

The structure of affective educating must be fathomed, and indications of deficiencies in it, such as possible inadequate support in overcoming helplessness, in discovering security, and in an affective willingness to actualize his/her intelligence, to explore, to emancipate, etc. must be corrected.

The question now is how such an image can be obtained in practice; more specifically, by what methods can this be done?

6.3 The practice of the pedagogical-qualitative evaluation of intelligence

6.3.1 Introduction

With respect to evaluating intelligence, the reality of educating can be the point of departure, and it is critical to take note that such an investigation itself occurs in a pedagogical situation. Therefore, the adequate implementation of the pedagogical structures is of particular importance, and part of the investigation itself includes guiding the child on his/her way to adulthood (244, 67), and the aim of educating is also to support him/her to adequately actualize his/her intelligence (see 230, 207). Gouws (77, 43) says this

involves fathoming how he/she, as an initiator of relationships, as a field of value tensions, constitutes, and lived experiences his/her world as a meaningful world.

In this fathoming, pedagogic al observation and intuition continually occupy a prominent place. The formal instructions for administering the media must be known well, so an "unobtrusive" observation of the child will not be impeded. The investigator must unobtrusively write down what he/she observes. Especially, he/she must notice **what** the child does, **how** he/she does it, and **why**. Next, secondary use is made of formal intelligence media to facilitate the use of the fundamental exploratory methods (e.g., observation).

All the media are viewed as "pieces of reality", "new situations" to which the child attributes sense and meaning, and which are systematically placed (according to the corresponding instructions) between the investigator and him/her.

Since a pedagogical-qualitative analysis always implies an individual investigation, use is made of individually administered media, such as the NSAIS. **Moreover, the entire orthopedagogic evaluative study is also viewed as integrated by the investigation of intelligence** and, thus, use also is made of other media, e.g., the **Guide-It, Wiggly Blocks, Rorschach,** graphic expression (drawings), and projective media, and of specific language media, such as completing sentences (Rotter), writing a paragraph, and the historicity conversation.

6.3.2 The pedagogical-qualitative aspects

Attaining an image of the child's actualization of intelligence, more particularly of his/her becoming adult, via intelligence, is presented next.

In terms of the **individual item analysis,** and the correlated **language** and arithmetic **analyses,** attention is given to any matter which can shed light on the quality of the child's intelligence, such as his/her insights, playfulness, and expressions. Then, one proceeds to analyze the distinguishable modes of actualizing the psychic life in their mutual relations with intelligence, but they are distinguished merely for the purpose of analyzing and evaluating them.

In the first place, the scale point (IQ) obtained by the child is looked at in terms of the different subscales. It is misleading to only look globally at the different achievements, and to compare them with each other because the maximum points attainable differ from part to part [The use of scaled or standard scores overcomes this latter problem--G.Y.]. Therefore, it is recommended that it be established to what extent the child's achievement deviates from the maximum possible on each part, and that this be indicated [Not necessary with standard scores--G.Y.].

6.3.2.1 Analysis of the NSAIS in terms of the following evaluative criteria:

a) Achievement compared with potential achievement

b) Time bonus

c) Intentionality
   - i) work tempo
   - ii) enthusiasm
   - iii) responsibility
   - iv) general

d) Emotionality
   - i) pathic
   - ii) affective
   - iii) impulsive
   - iv) labile
   - v) stable

e) Attending

f) Intellectuality
   - i) gnostic
   - ii) cognitive
   - iii) ordered
   - iv) disordered
   - v) perceiving
   - vi) thinking*

* In evaluating thinking, the results of the Cologne School of the Psychology of Thought (Lindworsky and colleagues) are used to

vii) imagining, fantasizing
viii) remembering
ix) comments

g) Normativeness
i) self-image

6.3.2.1. Verbal Items

6.3.2.1 (a) VOCABULARY

Good achievement: enthusiasm; affective, stable; attending attuned to cognitive level; cognitive, ordered; good visual perception, good thinking (If the child passes only those items on which he/she can see via concrete perception the relationship between the words and the representations, this is evidence of thinking on a **concrete-visual** level; reliable indication that he/she is attuned to a cognitive level).

Poor achievement: pathic emotionality; concrete-visual perception.

Only tries "easy" problems: unfavorable intentionality; (Possible unwillingness to venture with the more difficult. Possible underestimation of own ability).

Words must continually be repeated: emotionality could be pathic-impulsive, pathic-labile; possible problems attending; possible auditory perception problems.

Responses successively correct: general intentionality favorable; emotionality stable; favorable attending.

Responses alternatively correct; general intentionality unfavorable; labile emotionality; possible attending problems.

Conspicuous fluctuations of correct and incorrect responses: unfavorable work tempo; possible attending problems; (Possible habitual "effortless" attitude toward life).

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gauge three levels of thinking; **Concrete level:** individual, separate images (visual representation of what perceived); everything bound to the concrete-visual = image-memory of **the particular yacht I saw on the bay yesterday. Schematic level:** the original images are assimilated into a general scheme [not yet a concept]. Relationships are grasped--there is **a general image of "boat" in contrast to the individual image of the particular yacht noted above. Abstract level:** abstract concepts arranged into categories. Concept "ship" subordinated to the general concept "sailing vessel".

"Hasty" choice of pictures: emotionality pathic-unstable, uncertainty;

Careful, planned, and calm search for correct pictures: emotionality affective-stable; favorable attending.

"Stares" indecisively at the pictures: general intentionality unfavorable; emotionality pathic-labile.

Successful "open" meaning coupled with the word: emotionality stable; favorable attending; cognitive order; favorable perceiving (Cognitively adequate because experienced meanings are adequately re-lived experienced)

Level of language mastery: this does not have to do with the vocabulary at the child's disposal as indicated by what he/she got right or wrong, but also the extent to which language is available, and how he/she has mastered its meanings on a pathic-affective, a gnostic-cognitive level. Although most words relate to concrete objects in the pictures, e.g., pillow, palm tree, there also are some which refer to the abstract, and involve metaphorical understanding, e.g., symbolic, courteous. The level on which he/she establishes relationships with things and with others via language, thus, is analyzed to investigate the level on which language is available to him/her.

With reference to word definitions, and linguistic formulations:

Concrete-visual (sees only relationships between concrete objects): emotionality pathic; intellectuality gnostic; thinking, imagining, fantasizing all concrete-visual

Definitions awkward and formulations disconnected: emotionality pathic-impulsive, pathic-labile; intellectuality gnostic-disorder.

Abstract-metaphorical; formulations connected and ordered: emotionality affective-stable; emotionality and attending favorable; intellectuality cognitive-ordered; thinking, imagining, fantasizing on abstract level.

6.3.2.1 (b) COMPREHENSION

The formulation of answers is closely analyzed. Regarding emotionality: the child's formulations give an indication of his/her predominant level of emotionality; they give an indication of the quality of his/her attending. The level on which language is used to formulate responses is an indication of the level of thinking. The

degree of order or disorder gives an indication of the structure of his/jer gnostic-cognitive attunement.

In terms of content, thoughts are poor, and insight is absent. Linguistic expressions are meager in scope and formulations disconnected: emotionality pathic-impulsive, pathic-labile; possible problems attending; intellectuality gnostic-disordered, thinking is pathically flooded.

Ordered and connected responses: emotionality affective-stable; attending favorable; intellectuality cognitive-ordered.

Hasty, helter-skelter ways of attack: emotionality pathic-impulsive, pathic-labile, emotional uncertainty; attending unfavorable; intellectuality gnostic-disordered; restrained thinking.

Signs of abstract comprehension: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered; thinking favorable; attuned to cognitive level because abstract, ordered thinking is implied.

6.3.2.1 (c) VERBAL REASONING

Regarding the first seven problems, the child is expected to subsume pairs of named concrete objects such as "spade" and "pickax" under one concept. Regarding the last three items, the pairs of words are abstract, such as "rich", "poor", and must be categorized under abstract concepts. Points earned depend on whether the answers are abstract, functional, concrete, or incorrect.

Poor performance: emotionality pathic; thinking concrete.

Struggle with first three items that are in the form of analogies: emotionality pathic-impulsive, pathic-labile.

Successful on 1-7: intellectuality gnostic, thinking schematic.

Successful on all: emotionality affective-stable; attending favorable; intellectuality cognitive-ordered, thinking abstract.

Stagnates on the concrete: emotionality pathic; thinking concrete.

Leans only on the functional: intellectuality gnostic, thinking concrete.

Successful also with the abstract pairs: emotionality affective-stable; favorable attending; attending favorable; intellectuality cognitive-ordered, thinking abstract-conceptual; Language is available on an abstract level. Attuned on distanced, cognitive level.

Responses are abstract: emotionality affective-stable; intellectuality cognitive-ordered.

Level of language mastery:

Concrete-visual: emotionality pathic-labile; intellectuality thinking concrete.

Abstract-metaphorical: emotionality affective-stable; intellectuality cognitive-ordered, thinking abstract.

6.3.2.1 (d) PROBLEMS

Time bonus possible. Requires: emotionality affective-stable, willingness; sustained attending; intellectuality cognitive-ordered.

Good performance: emotionality affective-stable; intellectuality cognitive-ordered, thinking: insights and understanding good.

Poor performance: intellectuality deficient thinking.

Problems immediately understood: emotionality affective-stable; favorable attending; intellectuality cognitive-stable, thinking abstract. Understanding the word problems indicates a cognitive attunement.

Problem must be continually restated: emotionality pathic-impulsive, pathic-labile, possible pathic flooding; possible problems attending; intellectuality gnostic unordered, possible auditory perception problems.

Analysis of calculations

Good mastery of main algorithms: emotionality affective-stable; attuned to cognitive level; intellectuality favorable memory.

Confidence with using algorithms: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered.

Confusion about main algorithms: emotionality pathic-labile, pathic-impulsive; possible problems attending.

The child succeeds in organizing the data (especially the last problem) into an insightful unity (where the relationship is not at all obvious): emotionality affective-stable; favorable attending; intellectuality cognitive-ordered, favorable relationships are thoughtfully discovered. With respect to this problem, the child can distance him/herself to a cognitive level.

(The entire progression from a concrete association of numbers to an abstract understanding of computation is a matter of language because language makes available schematized rules of computing, and to compute requires an interpretation of the meaning of the system of arithmetic symbols. Consequently, there also is close

attention given to language mastery). Because here the child is presented with a verbal problem regarding a variety of data, he/she must organize these data into an insightful unity and, thus, must assume a cognitive level of relating to the problem.

Level of understanding: concrete-visual: emotionality pathic; intellectuality concrete thinking.

Abstract-metaphorical (formulations coherent and sharp): emotionality affective-stable; intellectuality cognitive-ordered, thinking abstract.

6.3.2.1 (e) MEMORY

Good performance: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered, favorable auditory perception, evidence of adequate thinking, schematizing, and ordering. Indication of adequate memory as a mode of learning and mode of establishing an experiential world.

Poor performance: emotionality pathic-labile; possible attending problems; intellectuality gnostic-disordered, possible auditory perception problems, indicates possible serious memory problems; indicates inability to distance to cognitive level because of pathic flooding.

(A distinction must be made between remembering as a **mode of learning** and remembering as a **mode of establishing an experiential world.** As a mode of learning remembering includes, e.g., ordering, synthesizing, systematizing in the present with the aim of recalling in the future. As a mode of establishing an experiential world remembering is recalling in the present contents known in the past. Here, on the one hand, it is expected that the child anticipates the given contents while the investigator "tells" him to order them, etc., and on the other hand, as soon as he/she has clearly **listened**, to re-lived experience again what he/dhe has memorized [learned]).

Series where facts are given and repeated back (It is necessary that the/she series of facts be numbered as the child repeats them).

Preserves sequence: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered, abstract thinking, good quality of memory, refers to a distanced cognitive remembering.

Sequence mixed up: emotionality pathic-impulsive, pathic-labile; intellectuality gnostic-disorder.

First part remembered better: intentionality possible problems; intellectuality possible memory problems.

Last part remembered better: intellectuality possible memory problems.

Insertion of facts: possible attending problems; intellectuality problems.

Level of language mastery

disconnected, awkward: emotionality pathic-labile

concrete-visual: intellectuality thinking concrete-visual

abstract-metaphorical: emotionality affective-stable; attending favorable; intellectuality cognitive-ordered, abstract thinking.

6.3.2.2 Non-Verbal Items

6.3.2.2 (a) PATTERN COMPLETION

Bonus point possible. At the end of administering the subset, let the child explain how he/she arrived at a solution. Requires/indicates willingness to accept task, sustained attending, fast work tempo, enthusiasm.

Sequence of correct solutions:

Little success with practice example and first six tasks: emotionality pathic-impulsive, pathic-labile; intellectuality gnostic-disorder.

Succeeds on practice example and first six tasks: emotionality affective-stable; favorable attending; intellectuality gnostic-cognitive-ordered, indicates correct visual perception, concrete thinking because relations seen, favorable remembering, evidence of gnostic-cognitive level.

Also succeeds on the last six tasks: emotionality affective-stable; adequate attending; intellectuality cognitive-ordered, indicates correct visual perception, thinking on abstract level because solutions rest on conceptualizing and reasoning logically about the data, remembering favorable, indicates cognitive level.

Nature of methods of solution:

Variety of methods: emotionality affective-stable; intellectuality gnostic-cognitive-ordered, favorable thinking, imagining, fantasizing.

Perseveration with same method (e.g., trial-and-error, reliance on concrete functional): emotionality pathic-impulsive,

pathic-labile; intellectuality gnostic unordered, possible problems with perceiving, thinking, imagining, fantasizing, remembering.

Little success with synthesizing: intellectuality gnostic-disorder, possible problems with perceiving, thinking, imagining, fantasizing, remembering.

Signs of successful concept formation, understanding, analyzing, synthesizing: emotionality affective-stable; adequate attending; intellectuality cognitive-ordered, favorable perceiving and thinking.

6.3.2.2 (b) BLOCK DESIGNS

Here the child must perceive subtleties, solve problems of spatial relationships and answer the appeal by combining and analyzing. Also, at the least, he/she must "visualize" the complete pattern, analyze it into parts and determine how it can be synthesized. Time bonus possible; requires good work tempo; willingness; favorable perceiving and thinking.
(The first three patterns are concretely demonstrated. With No. 4, a design must be constructed from a pattern of the same size. From 5 on, nine blocks must be used and the representation is much smaller than the design which must be constructed)

Problems with 1-4: emotionality pathic; possible visual problems.

Success with 1-4: intellectuality thinking concrete schematic.

Success with No. 5 and above: emotionality affective-stable; attending favorable; intellectuality gnostic-cognitive-ordered, thinking abstract, favorable imagining.

Child's approach:

Repeats errors: emotionality pathic-impulsive, pathic-labile; unfavorable attending; intellectuality gnostic-disorder.

Asks for help: dependent.

Refuses help: emotionality pathic-labile; rebellious.

Solution methods:

Persists with trial-and-error: emotionality pathic-impulsive, pathic-labile, indicates pathic flooding; intellectuality thinking on concrete level, pathic flooding hinders distancing to the gnostic-cognitive.

Perseverations: emotionality pathic-impulsive, pathic-labile.

Insightful handling, schematizing, ordering: emotionality affective-stable; favorable attending; intellectuality gnostic-cognitive-ordered, adequate visual perception, favorable thinking.
Good achievement: favorable attending; favorable perceiving.
Poor achievement: possible perceptual problems.

6.3.2.2 (c) ABSURDITIES

(Here ordinary, everyday situations are presented to the child and he/she is expected, by perceiving and thinking, to notice and point to what is **strange** or **wrong**) Time bonus possible. Refers to willingness to communicate; requires emotionality to be affective-stable; good attending because he/she must look carefully; intellectuality gnostic-cognitive-order, adequate visual perception, favorable thinking. Since this has to do with giving "open" meaning, it gives evidence of distancing to a gnostic-cognitive attunement to the factual by means of perceiving and thinking.

Good achievement: emotionality affective-stable; adequate attending to everyday life situations; intellectuality cognitive-ordered, good visual perception and adequate imagining.
Poor achievement: emotionality pathic-impulsive, pathic-labile; intellectuality gnostic-disorder, possible perceptual problems, unfavorable imagining.
The verbal response: The formulation will give an indication of whether a more concrete or abstract level figures in.
Doesn't discover the factual: weak intentional direction; emotionality pathic-impulsive, pathic-labile; possible problems attending; possible perceptual problems.
"Guesses": unfavorable intentionality; emotionality pathic-impulsive, pathic-labile.

6.3.2.2 (d) FORM BOARD

Because here the child can obtain a higher score by trial-and-error, his/her modes of attack must be carefully observed.

Good achievement: intentionality possibly good work tempo, readiness to communicate; favorable attending; intellectuality good perceiving and thinking.

Poor achievement: Intentionality work tempo questionable, possibly unwilling to communicate; attending questionable; intellectuality possible perceptual and thinking problems.

Methods:

"Helter-skelter": emotionality pathic-impulsive, uncertain.

Persists with trial-and-error methods: intentionality evidence of unwillingness to venture with the task; emotionality pathic-impulsive, pathic-labile, possible pathic flooding; intellectuality gnostic-disorder, not in a state to distance to the gnostic-cognitive level.

Perseveration of the same type of error: emotionality pathic-impulsive, pathic-labile, indicates being bound to the pathic; intellectuality gnostic-disorder, unable to distance to the cognitive.

Planning and variation of methods: intentionality evidence of readiness to venture with the task; emotionality affective-stable; favorable attending; intellectuality gnostic-cognitive-order, adequate perceiving, favorable thinking.

Transfer of methods of solution (one solution leads to insight into the solution of another problem): emotionality affective-stable; intellectuality cognitive-ordered, adequate perceiving, good thinking, adequate memory.

6.3.2.3 Comparisons of achievements

6.3.2.3.1 Scale points

A conspicuous difference between V and NV compels a search for a reason:

NV>V: possible interests; emotionality pathic-labile, pathic-unstable; with the elimination of other possible reasons, possible auditory problems.

V>NV: possible interests; possible visual-motor problems.

With respect to each subtest

Pass or fail successive items of equal level of difficulty: intentionality problematic; emotionality

pathic-impulsive, pathic-labile; possible problems attending.

Succeeds on a sequence of tasks: emotionality affective-stable; attending favorable; intellectuality cognitive-ordered.

6.3.2.3.2 Best and poorest achievements

Best and poorest two subtests and their implications re the various criteria (e.g., emotionality).

Conspicuous differences among the V and NV subtests: problems with intentionality; emotionality pathic-affective-impulsivity, lability, possible indications of anxiety, tension, insecurity, lability.

6.3.2.4 Performance media

(Such as the Wiggly Blocks, Guide-It)

Work attitude:

Interested:

Active:

Passive:

Planful: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered.

Judiciously counteracts problems: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered.

Variety of solution methods: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered.

Without plan: emotionality pathic-impulsive, pathic-labile.

Trial-and-error: emotionality pathic-impulsive, pathic-labile; thinking concrete.

Enthusiastic: intentionality enthusiastic; favorable attending.

Work level:

Analyzes and synthesizes: emotionality affective-stable; intellectuality cognitive-ordered, perceiving and thinking favorable.

"Helter-skelter": emotionality pathic-impulsive, pathic-labile, insecure.

Improves after encouragement: Possible indication of habitual dependence on adults to support him/her in everything.

No improvement after encouragement: This might mean an accentuation of his/her lived experience of inadequacy.

Worsens after encouragement: Perhaps help means an accentuation of lived experience of inadequacy.

Perseverations (with the same types of mistakes): emotionality pathic-impulsive, pathic-labile, insecure.

6.3.2.5 Graphic expression and projective media
(A readiness to project indicates a willingness to actualize intelligence to communicate with the world).

6.3.2.5 (a) NSAIS (Look for possible projections; e.g., regarding picture 5, part B of Vocabulary subtest, "This is a mean father").

6.3.2.5 (b) The Wartegg (see Ch 11)

Perseverations: emotionality pathic-impulsive, pathic-labile.

Quality of drawings:

6.3.2.5 (c) Other drawings:

Person (see Ch 9)

Tree (see Ch 10)

Bodily lived experiences: emotionality pathic-labile.

Quality of interpretations:

Own comments on his drawings:

6.3.2.5 (d) Four Picture Test (see Ch 13).

6.3.2.5 (e) Columbus (see Ch 13).

6.3.2.5 (f) T.A.T. etc. (see Ch 13).

6.3.2.5 (g) Rorschach Inkblot Medium (see Ch 12)

Response time: (long or short) emotionality impulsive, labile.

Number of responses:

W>D more theoretical

D>W more practical

High Dd: emotionality pathic-impulsive, pathic-labile, presence of anxiety, insecurity; intellectuality good **F+%**

= good visual perception. Details are clearly differentiated from background.
S emotionality impulsive, labile, aggressive.
High W, DW with F+% = good imagining and fantasizing.
Succession:
Ordered: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered.
Loose: labile emotionality
Form responses:
F+% high: favorable attending, perceiving.
F+% low:
Movement+: emotional stability; abstract thinking, intellectual control of feelings.
Movement-:
Color responses:
FC: emotionality stable; attending favorable; intellectual control of feelings.
CF: emotionality labile.
C: emotionality impulsive.
Shaded responses:
High Y shading: emotionality labile, impulsive, presence of anxiety.
Content:
H:A:
H>Hd
Hd>H
A>Ad
Ad>A: restrained thinking.
A% high: emotional lability, restraint.
Other:
P% very high: emotional impulsivity, lability, constrained.
P% very low:
O+: abstract thinking, good imagining/fantasizing.
Refusals: emotionality impulsive, labile, presence of anxiety
Shock: emotionality impulsive, labile, presence of anxiety.
Criticism: emotional lability, insecurity.

6.3.2.6 Language media

With language media there is an attempt to find indications of the level on which language is available, the sorts of deficiencies

manifested, etc. With the NSAIS, after the standardized procedure, one can proceed, if necessary, to formulate the problem more clearly to determine if the child then understands it better. Note the child's usual language proficiency.

Defining and formulating words:

Bound to concrete-visual: emotionality pathic-impulsive, pathic-labile.

Disconnected and awkward: emotionality pathic-impulsive, pathic-labile; thinking awkward.

Connected and sharp: emotionality affective-stable; intellectuality cognitive-ordered, results of clear thinking.

Incomplete Sentences (see Ch 14). The level on which language is available also gives an indication of the level of thinking.

Level of language mastery:

Concrete-visual: thinking concrete.

Abstract-metaphorical: emotionality affective-stable; favorable attending; thinking abstract.

Concept formation and understanding good: emotionality affective-stable; intellectuality cognitive-ordered, thinking favorable.

Sees relations between words and the metaphorical: emotionality affective-stable; favorable attending; intellectuality cognitive-ordered, thinking abstract.

Perseverations: emotionality pathic-impulsive, pathic-labile.

Themes:

Writing paragraph (see Ch 14)

Level of writing:

Good: perception good.

Inaccurate: intellectuality disordered.

Reading a selection

Level of reading ability:

Reading problems:

Inaccuracies: emotionality pathic-impulsive, pathic-labile.

Omissions: ditto.
Inversions: ditto.
Reversals: ditto.
Perseverations: ditto.
Loses place: emotionality pathic-impulsive, pathic-labile; insecure; attending unfavorable.
Clear articulation: auditory perception good.

6.3.2.7 Observation analysis

Child understands verbal instructions immediately: favorable attending; good perceiving.
Each time instructions are repeated: possible hearing problems.
Hears without effort: attending favorable; perceiving favorable.
Sees without effort: perceiving favorable.
Speed of responding:
"Reluctant": intentionality not much enthusiasm, unwilling to venture with tasks.
Too quick: pathic-lability.
Calm and planned: emotionality affective-stable.
Does the best he can: general intentionality favorable.
Perseverations: emotionality pathic-impulsive, pathic-labile.
Providing help: (necessary, none, little, lots, acceptance, available, refuses, unavailable)
Poorer achievement with incidental interferences: Problem with attending.
Bodily attunement:
Sensory
Vision
Hearing

6.4 Summary of a pedagogical-qualitative image of intelligence

The judgments "adequate" and "inadequate" are made in the light of the child's chronological age, and the median age for his/her grade level in school (240, 114). (R) refers to the Rorschach Inkblot

test. Everything below is focused on actualizing various aspects of intelligence.

Actualizing intelligence as a potentiality:

Quantitative: High scores = adequate
Verbal
Non-Verbal Low scores = inadequate
Total (Possible causes: heredity, brain damage, under achievement)

Qualitative
Adequate: F+% above 75 (R).
Inadequate: Low F+% (R)

More theoretical: V>NV, W>D (R)
More practical: NV>V, D>W (R)

Actualization
Adequate: well-directed intentionality: low W% (R), H>A, H>Hd, A>Ad, O+ responses (all on R), enthusiastic, accurate.
Inadequate: poorly directed intentionality: High A%, A>H, Hd>H, Ad>A, O- responses (all on R). Attention quickly wanes, quits easily, enthusiastic only on "easy" or only on "difficult" tasks, careless. (Possible causes: poorly directed, poor sense of responsibility, feelings of inadequacy, not directed to real success).

Body-ness

Health: adequate: equal levels of performance, can persevere, good work tempo.
inadequate: performance decreases near end of the study, unequal levels of performance, fatigable, quickly discouraged. (Possible causes: sickly, affective lability)
Sight: adequate: sees well.
inadequate: low NV and high V (Possible cause: defective vision).
Hearing: adequate: hears well.
inadequate: instructions must be repeated, NV>V. (Possible cause: hearing problems).

Emotionality:

adequate: affective disposed to stability, attuned to succeeding, good work tempo, ordered work level, interested in work, language formulations coherent and ordered, judicious compensation for the problematic, passes most of the "Verbal Reasoning" items, good insight into and understanding of "Problems", good achievement on "Memory" and recalling sequence of facts acquired originally, low A%, FC and M+ responses as well as ordered succession on (R), plans on "Form Board", and variety of solution methods, especially on "Wiggly Blocks", ready to participate, passes successive problems.

inadequate: pathic lability and impulsiveness, high A% (R), difficulty with first two "Verbal Reasoning" items, slow work tempo, chaotic work level, "helter-skelter" approach to problems, uninterested attitude toward work, level of language control is concrete-visual, language formulations bound to concrete-visual, perseverations on "Pattern Completion", "Block Designs" and "Form Board", inadequate synthesizing with "Pattern Completion", doesn't "get" the factual in "Absurdities", trial-and-error methods, reading problems, thinking disconnected, complete blocking on "Memory", instructions must be repeated, the same type of error is repeated, conspicuously different levels of performance on subtests, on the Rorschach the following: high A%, low A%, CF and C high, , Y shading and Y shading F high, S (large white space) high, very high P%, refusals, shock, very short responses. (Possible cause: problematic educative situation).

Attending:

adequate: signs that the gnostic-cognitive modes are actualized adequately, sustained passing of successive tasks to the end of the study, sustained attending observed.

inadequate: any signs the gnostic-cognitive modes are under actualized, doesn't succeed on successive tasks, unordered formulations, fluctuations observed, performance decreases because of random intrusion, conspicuous decline in performance from beginning to end of study. (Possible causes: "functional defects", affective lability, hasn't learned to **look, listen,** etc.).

Intellectuality:

adequate: attack ordered, systematic, planned, calm, abstract command of language, language formulations coherent and sharp, success with "Verbal Reasoning" items, good insight and understanding of "Problems", high "Memory" score, and on facts acquired sequentially, success with most of the first 6 items on "Pattern Completion", most of "Block Designs", and "Absurdities", successful concept formation, understanding, analyzing, and synthesizing regarding language and arithmetic, confident use of algorithms and "head-work", on the Rorschach: high F+%, good W responses, low A%.

inadequate: attack chaotic, unordered, too quick, global-diffuse, without plan, word definitions vague, language formulations vague and unconnected, language mastery bound to concrete-visual level, fails on first items of "Verbal Reasoning", perseverations on "Pattern Completion", "Block Designs", "Form Board", inadequate synthesizing on "Pattern Completion", doesn't "get" the factual in "Absurdities", uses trial-and-error methods, deficient reading such as elisions, inversions, reversals, on the Rorschach: low F+%, high A%. (Possible causes: pathic disposition, inadequate confrontation with the factual in the primary (home) educative situation).

Perceiving

Visual:

adequate: no eye "strain" during reading and writing, high score on "Absurdities", "Form Board", legible handwriting, little or no deterioration on the form-perception media.

inadequate: low NV and high V, deficient analysis and synthesis on the form-perception tasks, difficulty with "Pattern Completion" items, deterioration on form-perception media. (Possible causes: visual problems, pathic disposition, brain damage, inattentive).

Auditory:

adequate: understands presentation of problem the first time, doesn't "turn" head to hear better, good articulation, high performance on "Memory".

inadequate: instructions must be repeated, head is "turned" to hear better, low V and high NV, poor achievement on "Memory". (Possible causes: hearing problems, pathic disposition, brain damage, inattentive).

In everyday life situations:

adequate: good performance on "Absurdities", on the Rorschach: high D and Dd paired with high F+%.

inadequate: poor performance on "Absurdities", on the Rorschach: high Dd paired with low F+%. (Possible causes: "Overcome" by demands of educative situation, inattentive).

Thinking:

adequate: sees connections between words and the metaphorical, language formulations ordered, schematizing logical, planned, insight observed, with "Wiggly Blocks" gradually identifies the individual blocks, succeeds at "Verbal Reasoning" and answers are abstract, succeeds with "Problems", good analysis, and concept formation with "Pattern Completion" and "Wiggly Blocks", changes methods of solution with "Form Board", on Rorschach: high O+ and M+ responses, low A%.

inadequate: illogical, disordered thinking, deficient insight, no success with first three items of "Pattern Completion" and "Block Designs", notices relations only with concrete objects, trial-and-error methods with "Vocabulary" and "Verbal Reasoning", difficulty with first two items on "Verbal Reasoning" and also with items 1-7, fails first six items on "Pattern Completion", relies on concrete and functional examples on "Pattern Completion", on the Rorschach: high A%. (Possible causes: limited potentiality, problematic educative situation).

Imagining and fantasizing:

adequate: success with "Block Designs" from item 4 on, sees relations among abstract concepts and "absent" objects, succeeds on "Block Designs", systematic, methodical on "Wiggly Blocks", readily projects.

inadequate: can't see connections among objects unless they are pointed out to him/her, stagnates with "Block Designs", uses trial-and -error methods on "Wiggly Blocks", "Form Board", etc., doesn't project on the (thematic) projection media. (Possible causes: limited potentiality, problematic educative situation).

Remembering

adequate: good performance on "Memory", sequence of facts remembered correctly, correct "open" meaningful connections with the "Vocabulary" pictures.

inadequate: sequence of facts confused with each other on "Memory". (Possible causes: labile affect, insecurity, uncertainty, anxiety, functional defects, problematic educative situation).

Normativeness

adequate: motivated to successfully complete **all** the tasks, self-confident.

inadequate: fluctuations at the start, "discriminates" between "easy" and "difficult" and chooses the "easy", attuned only to the "difficulties", underactualized thinking, rebellious, unwilling, etc. (Possible causes: inadequate normative-moral educating, weak willed, insufficient demands, too many demands, no opportunity to accept responsibility, too little effort, etc.

6.5 A practical example

The example offered below is Andrew Peterson [pseudonym] whose personal image is discussed in the Orthopedagogic Report presented in Chapter 16.

Analysis:

Motor ability:
Scholastic progress:

Age: 15:8 **Grade** 10

V = 93	**Best:** Form Board, Comprehension
NV = 101	**Worst:** Absurdities, Vocabulary,
T = 96	Memory, Pattern Completion

Time bonus: none

Intentionality, slow work tempo

Qualitative:

NV>V = practical

On Rorschach way of interpretation D = practical

VOCABULARY (Difference between achieved and possible = -10)

emotionality: pathic; **intellectuality:** favorable visual **perception**, **thinking** concrete-visual.

Successively correct: good general **intentionality**; **emotionality** stable; **attending** favorable.

Definitions concrete: emotionality pathic; **intellectuality** gnostic, **thinking** concrete-visual.

COMPREHENSION (Difference between achieved and possible = -5).

Formulations concrete-visual: emotionality pathic; **intellectuality** gnostic, **thinking** concrete-visual.

VERBAL REASONING (Difference between achieved and possible = -7)

Fails abstract tasks: emotionality pathic, **thinking** concrete-visual.

Relies on functional: emotionality pathic, **intellectuality** gnostic, **thinking** concrete-visual.

PROBLEMS (Difference between achieved and possible = -9)

Time bonus = -1; **intentionality** slow work tempo **thinking** deficient.

Stating problem must be repeated: problem with general **intentionality**; **emotionality,** pathic-impulsive, pathic-labile, pathic flooded-ness; possible problems with **attending; intellectuality** gnostic-disordered, possible auditory problems.

Uncertain about algorithms: emotionality pathic-labile; **intellectuality** gnostic-disordered, **thinking** problems.

Fails later [more difficult] items: thinking concrete-visual.

MEMORY (Difference between achieved and possible = -10)

Poor achievement: emotionality pathic-labile; problems attending; intellectuality gnostic-disordered, possible auditory perception problems, problems remembering, inadequate distancing to gnostic-cognitive.

PATTERN COMPLETION (Difference between achieved and possible = -10); time bonus =-1 (slow).

Representations erroneous; succeeds in beginning:
affectivity pathic-impulsive, pathic-labile; intellectuality gnostic-disordered, bound to the concrete.

Unsuccessful on later items: thinking concrete-visual.

Relies on concrete-functional: emotionality pathic-labile; intellectuality thinking concrete-visual.

BLOCK DESIGNS (Difference between achieved and possible = -8).

Trial-and-error: emotionality pathic-impulsive, pathic-labile; thinking concrete.

Work tempo slow.

ABSURDITIES (Difference between achieved and possible = -15).
intentionality weak; emotionality pathic-impulsive, pathic-labile; intellectuality problems with everyday situations.

Doesn't discover the factual: intentionality generally weak; emotionality pathic-impulsive, pathic-labile; possible attending problems; perceptual problems.

FORM BOARD (Difference between achieved and possible = -4).
favorable attending.

Trial-and-error: intentionality generally weak; **emotionality** pathic-impulsive, pathic labile, pathic flooding; **intellectuality** gnostic-disordered.

WIGGLY BLOCKS ("cautious", "without plan", "trial-and-error")
intentionality weak; **emotionality** pathic-impulsive, pathic-labile, uncertainty.

Perseverations: emotionality pathic-impulsivity, pathic-lability, bound to pathic.

No improvement with help: experiences help as accentuation of feeling inadequate.

WARTEGG

Perseverations: emotionality pathic-impulsive, pathic-labile, bound to pathic; **intellectuality thinking** concrete-visual, weak **imagining, fantasizing, remembering.**

Infantile:

Objects:

FOUR PICTURE TEST (van Lennep)

Integrated into a story: intellectuality gnostic.

Language errors: emotionality pathic-impulsive, pathic-labile; **memory** problems.

Concrete-bound: emotionality pathic; **thinking** concrete-visual.

OTHER DRAWINGS

Caricatures, stereotypic, heavy use of lines, crossed arms: emotionality labile, anxious, tense, insecure, rejected, infantile, feels inadequate.

RORSCHACH

High Dd: emotionality pathic-impulsive, pathic-labile, anxious.
F+% = 65 **perceptual** problems.
A% = 66 **emotionality** pathic-impulsive, pathic-labile, emotional restraint; **thinking** restrained.
No M responses and 3 CF responses: emotionality Pathic-affective-labile; inadequate intellectual control over feelings.
2 Y shading F responses: emotionality pathic-labile, anxiety.
A>H: insecurity, restrained **thinking.**
Refusals: emotionality pathic-impulsive, pathic-labile, anxiety.

LANGUAGE MEDIA

Formulations bound to the concrete-visual: emotionality pathic-labile; **thinking** concrete-visual.

SUMMARY

Time bonus = -2

Intentionality
Work tempo slow (3)
Enthusiastic
Fatigable
General weak (4)

Emotionality
Pathic (25)
Affective (2)
Impulsive (12)
Labile (20)
Stable (1)
Anxiety, tension, insecurity, emotional flooding.

Attending (Problems = 4)

Intellectuality
Gnostic (9)
Cognitive (0)
Disordered (5)
Ordered (0)
Perceiving ?
Thinking concrete-visual, restrained.
Memory problems
Inadequate, infantile, rejected, problematic educative situation

SUMMARY INTELLIGENCE IMAGE

Quantitative

V = 93
NV = 101
T = 96

Qualitative

Andrew's best achievement was on the Non-Verbal **Form Board** and his poorest was on Non-Verbal **Absurdities, Pattern Completion** and on Verbal **Vocabulary** and **Memory.** His intelligence appears to be more practically directed. Its quality is less than good because of an inadequate mobility to a gnostic-cognitive level and an abiding concern with the landscape on a predominantly concrete-visual level, and a leisurely work tempo.

He does not adequately actualize his intelligence as a potentiality because of affective lability and an apparently habitual pathic attunement to things. The momentary occurrences of emotional lability are detrimental to sustaining a concentrated attending.

It appears that there are no sensory problems, but cognitive order is deficient, especially because of a preponderant concern with the concrete-visual and a reliance on the functional. His use of language is also primarily connected with the concrete and seldom is there a shift to using abstract concepts.

With respect to arithmetic, he lived-experiences problems with algorithms that encourages him to fall back on trial-and-error methods. The presence of anxiety, tension and insecurity give rise

to pathic flooding and contribute to an immobility regarding breaking through new situations (i.e., actualizing his intelligence).