The Conflict and the Cognitive Bias. The Outcome and Sistematic Error Between Pleasure and Anguish, in the Variant of Kahneman

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Abstract— **Statement of the Problem: Up to now we have recorded cognitive dissonances and uncertainties in computing to the extent of the two standard deviations compared to the national standard value, but have opened some cues for further research: the mind and brain adapt to distortion? Is uncertainty in answering, whether it is a semantic or syntactic sphere, always involves an emotional engagement? The delay in response to dissonant stimuli, latency of the brain that activates areas adjacent to those expected, the presence of different activation patterns induce to think that when the subject experiences uncertainty activates the area near the frontal cortex. This process is superimposable when the same subject faces emotional stimuli such as conflict management, math error detection, and cognitive interference between discordant stimuli. Our most far-reaching consideration is to believe that an interchange of functions between seemingly distinct brain areas for skills is plausible. The methodological starting point of our study was to compare two groups with common characteristics of typical functioning and good verbal skills to differentiate them according to the dysfunctional characteristics of both; A group identified and classified according to severity (F81.2 - ICD-10-CM), on the other hand an unidentified and unclassified but present group, whose evidence can be traced mainly to its manifestations compatible with Other disorders and still unknown to the treatment.**

Index Terms — **Brain areas, error in calculation, ERP, non verbal learning disabilities NLD, semantic and lessical disorder.**

I. Introduction

What we know about interrelations of the hemispheres (Rizzolati, 2007), of the emotional intelligence (Goleman, 1997) of the zone of / or proximal development (Vygotsky, 1962) of the cognitive prerequisites (Tretti et al., 2002), of the cerebral evolution, (Oliviero, 2008), (Bownds, 1999), and about the physical movement as boost to the quantitative and qualitative brain development (Bownds), and about the innate abilities, all this support the main basic research hypothesis that is good to work in integrated and interdisciplinary way with a child who has difficulties.

Later we will discuss clustering in order to highlight how mental disorder in general and neuro-development disorders in particular would behave within the clinical-diagnostic classification.

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Exiting from the Axial Classification Scheme of the previous version of the manual has allowed to embrace more aspects of the disorder and to collect – at least about the dysfunctional calculation area – even the smaller elements, once listed as no better described aspects.

The disorder moves in fact from one axis to another, tends to group and the diagnosis align with the treatment, or as it is preferred to say in this study self model according to the intervention strategies.

Why then during school education that recall to automatism, often stops? I would cautiously take my distance. We took distance from Piaget's evolutionary psychology model. Piagietian theory according to which typical requirements of operative thinking, like conservation of the abstraction of perceptual properties where showing; calculation and the numeracy idea was appearing in a child about 5 – 6 years old. Such hypothesis is justified by the fact that typical requirements of operative thinking such quantity conservation, abstraction of perceptual properties, where showing – according to Piaget' s evolutionary psychology model – just at that age.

To talk about development work in a broader sense , given that – as mentioned – at birth, the newborn is sensitive to the quantity (Wynn K., 1992), and soon the Child will make one of his first cognitive experiences, sensitivity to numerosity (Vallortigara and Panciera, 2014).

Although still far from the number of cardinality orders, activity requiring the activation of the pre-frontal cortex area (Wynn, 1990; Lipton and Spelke, 2006; Fuson, 1988), the infant is able to focus of targets of different medium size.

For the actual recognition of sets in terms of numbers we have to wait seven months of life (Starkey, Spelke, Gelman, 1983). And for some reason that we will investigate, we will try to understand why this natural skill tends to decline with schooling and with the competence awareness (Tversky and Kahneman, 1974).

Examples of subitizing already appear in the early days of life; At three months, a child has a rudimentary cerebral area for calculation, located in the pre-frontal area, which works on visual memory not related to cardinality (Wynn, 1990; Lipton and Spelke, 2006, Fuson, 1988); At seven months the child's ability to identify equality in the two-to-three-element sets (Starkey, Spelke, Gelman, 1983).

The activity of connection with quantities occurs later with the use of the fingers first associated with small sets of balls and then with more and more universal and extensive concepts.

Remaining in a typical functional context, typical for development stages and still within functional cognitive context, the mind of a child can more easily recognize small

amounts of groupings and struggle more with same amounts of the same dots that are not grouped (Dehaene, 2010); Growing up and thereafter subsequently the adult mind is incremental when comes to counting skills, As it benefits the approximation and value of the estimate, however, in which the error of judgement is insinuated.

When we try to give the right answer, we use the numeric values we can refer to at that time, anchored to our pre-requisite knowledge. The wrong outcome undergoes changes and rounds in our mind only subsequently.

In the various growth cycles leading the child to greater awareness and knowledge stages he naturally evolves his abilities and adapts himself to the educational and relational norms of his social age, which does not always match the developmental one. This is because - still in the counting and numeracy field – our innate and spontaneous abilities become sensitive to the context and to cope with the difficulties of the size, over dimensional estimates apply, especially in cases where we have ordered and well-arranged quantities on the page of work.

In the famous Uta and Frith solitary illusory study of 1972, resumed by Dehaene (Dehaene, 2010), which we find in the appendix to this paper, (appendix 78), we are brought to assign to the cross with white balls, a higher number Of elements. In case of irregular sets, the tendency of our mind is to underestimate the same quantities.

We feel we need to count as soon as 5 units appear, while our sensitivity to numbers is considered effective when visual discrimination concerns units from 2 to 3.

II. Methodology & Theoretical Orientation

We rely on non illusory cognitive capabilities of the subject. When the sets are ungrouped, the trend is to consider the smaller number of balls from the grouped aggregate, which, in most cases, receives an overestimation of the quantity.

We take in consideration the results of this research for situations of of typical development learning and those with dysfunctional pathological characteristics.

The error case, which we will see widely discussed in this text is the fatigue disorder followed by poor school performance, will support the thesis in the present study, namely how a child performs mathematical calculations more or less effectively in relation to factors that coexist with a number of interesting, sometimes intelligent and metacognitive errors; no unimportant aspects such as the presentation context, visual memory, forgotten memory of subitizing, illusory perception, anchorage to reference number, estimate, area movement, cardinality, immediated response ability.

The verbal fluency, the ansiogenic dimension related to the unresolved number. What is actually the immediatization and what psychic process it is based on, remain a difficult element to be fully defined.

However, we can say that this is not a pre-attentive skill based on approximation and that the quantity scanning is not automatic.

What happens within intricate brain functions has to do to what Atkinson, Campbell and Francis in 1976 called immediatization, that is, to present a counting ability without counting, inherent quality of the infant which at six months of age put in action a series of connections and skills, supposed to be interpreted as innate. This skill is not a prerequisite for subsequent computing skills.

The basic components that contribute to the overall calculation abilities are an integrated set of semantic processes, with which we understand the quantities; Are lexical processes to name the number and syntactic or pre-syntactic processes to give structure to the number.

Given the multitude of constituent aspects of the basic learning process, the Child diagnosed with a specific disorder can benefit from an integrated approach to treatment that takes into account, in clinical, pedagogical, psychological, neurophysiological, of the fact that Visual identification areas, speech output and number writing are distinguished from those of the categories of words.

A specific obstacle such as calculation can concern the area of the disorder in two distinct ways, on the one hand a type of evolutionary dis-calculus where the number is meaningless, is said as be blind to the number (Butterword, 1999) and that creates important problems with mathematical knowledge, and on the other hand a procedural discolouration, where the number exists, but it is not always manageable to carry out very simple exercises like counting - meant as counting skills here - and the comparison of quantities.

Based on the recommendations issued by the 2007 Consensus Conference and following the publication of the international IARLD data for 2005, which accounted for 0.5-1% of the number of diagnosed cases of evolutionary dis-calculculus in Europe; The research carried out in Italy (Lucangeli et al., 2006) seems to contrast with the general statistics.

In our classes, 20% of children are struggling with the number and this opens many considerations on diagnostic protocols, on false positives, but above all on the issue of early identification for treatment purposes.

In 2012, a study on the increase in dyslexia (Tressoldi et al., 2012) carried out in Friuli Venezia Giulia also revealed the data of certified cases of learning disabilities in general, that includes all four disorders.

III. The various meta-cognitive components

The overall diagnosis rate is 2%. Based on the evidence of my study, which does not aim to calibrate the diagnostic population, but to assess, among other things, the aspects of the child's actual fatigue, the feeling of difficulty has prevalence on the statistic data projection.

The primary school population manifests symptoms of a disorder that is growing and changing the habits of special education and requires us to make further reflections on diagnostic and treatment protocols. In the projects of the training offer of many schools, we often find the expectations we have for the Child: we expect them to repeat the lesson, to know, to elaborate, socialize, and to carry out a path of skills to validate learning.

For this reason, it is subsequently evaluated, through various tests, of various difficulty level. The process of memorizing didactic content and procedural skills, however, has nothing to do with real learning (Lucangeli, 2006) and with the knowledge experience. Yet this is what the school today expects from our children: transferring written information, keeping away from analogue learning, bypassing oral experience in favour of writing.

The overlapping of the two methodological plans, real learning, and knowledge transfer, highlights the metaphor of the competent Child, who in fact knows by heart a number of

application processes without ever having direct experience. The suggestion by the Commission for National Scientific Enforcement on DSA Guidelines (Lucangeli, 2013) is to respond to the needs of Children and Families, as an ethical and scientific premise.

The aim of this paper - encouraged by the results of the current advanced scientific research (LIRi.PAC, Department of General Psychology of Padua) - is to take into account the functional diagnosis and the neurobiological involvement that underlies in this Neuro-development disorder, and then to face an integrated talk on correlations between cognitive, motivational and metacognitive aspects applied to the treatment of rehabilitation and pedagogical re-education (Cornoldi, 2005).

We are far from the a-prioristic concept of computation (Kant, 1790), according to which the algebraic operation belongs to synthetic judgements unconnected with experience, since in this study the data is always connected to the experience of learning and the conception of knowledge influenced by Constructivist paradigms of intelligence, such as recovery of functions, but also by experimenting with new ways of thinking about the number and manipulation thereof to favour the normalization of the disorder.

According to what emerges from the considerations that experts make of the difficulty of generic learning and the errors in the calculation, in a specific way, it can not be remembered here that belonging to a classification does not exclude - as fact - that other related and collateral factors, can coexisting with LD (ie learning disabilities), such as cultural, school, social, family and educational influences (Hammill, 1990), Better identified as extrinsic influences that will be interpreted as concomitant with clinical diagnosis, in a passage from inside out, indispensable in order to prepare a work that balances the capacity to understand the reciprocity of numbers, with meta-cognitive structures such as the concept of relationship between quantity and representation of the moements from one category to another.

The functional differentiation between elementary quantitative properties, of the early learning moments and advanced arithmetic skills, recursive concept often found in Dehaene, leads to conclusions on the art status in terms of literature - certainly not exhaustive - on the MLD (ie mathematical learning disabilities). To complete the above, we also need to take into account that the approaches so far considered have explained the mistakes made when starting from the observation of typical dysfunctional developmental behavior (McCloskey, Sokol and Goodman, 1986; McCloskey and Caramazza, 1987), with such objective evidence of error - inability to recognize semantically the number, errors in the split of the digit, errors of substituting a word in function of another, simple or double dissociative errors, or a number of and a more detailed series of sub-classifications. We know, and we will see it later in the chapter on neuro-physiological aspects, that there are areas that are particularly stimulated and active, but here we adhere only in part to the localization of phrenology (Santo Di Nuovo, 2014).

IV. HOLISTIC VIEW OF THE MIND

In favour of a holistic view of the mind that integrates - in fact - the cognitive functions with logic and the various meta-cognitive components with executive functions and with the real number, a precious concept to cognitive psychology, for which the number not always correspond to a finite whole set but may belong to the category of irrational, rational, negative, infinite number (Vallortigara et al., 2014). Our heterogeneous sample of subjects faced with a mixed trial field, made by computational tests and mental skill management, has acted as follows. Children are more accurate in single-digit operations, M = .54 vs. F = .46, while girls are more effective in the two-figure two-digit M = .23 vs. F = .25, but always point out that, beyond the diagnosis, the brain fits and lends itself to functionally modifying plastic and modular recovery activities (Konorski, 1948).

Children in general struggle a lot in these stages of learning because the functioning of the mind is not always in line with school proposals and neuronal adaptation to the task, stimulates mental functions by also activating areas known to be more plastic - lobbies Frontal - where the consciousness resides. A long and tiring task for the mind.

For example, learning multiplication tables is about the multiple links between complex information, the different activation of the verbal expression zone as the final act of a braided process with visual identification (words and figures), the Representation of quantities, arithmetic memory skills, with the involvement of the thalamus and the lower parietal cortex.

In this simple operation, there is a subtle complexity and energy-consuming sub-skill: remembering, crossing, overlaying and then disassembling, colonizing, non-homogeneous, non-symmetrical, non-tangible quantities, magnitude-abstraction abstractions. Hence fatigue and error, and consequent unwellness.

The difficulty - a topic widely discussed in the third part of this study - lies in the fatigue that the mind performs to interact with the two separate memory basins where additions and multiplications are placed and the use of verbal memory for basic statements, such as 2x3 = 6 and 4x8 = 32, also known as numerical facts, in the typical development process.

We will work on mind behaviour when verbal memory is useless, and when the learning path does not progress for development stages (Gattico, 2014).

Given that that dis-calculation condition is in the sphere of neuro-developmental affections, with early onset in the early stages of schooling, with diagnostic evidence - based on recommendations and health protocols - around the eighth year of life, it goes without saying that Personal and social difficulties are related to the functional tasks of the brain modules.

The re-call to transform the difficulties arising from the acquisition of the concept of cardinality of numbers, their ordinality, understanding of mathematical operations and so on, and the bad feelings that often intervene, correlate with the disorder - such as depression, fear of Lack of schooling and feelings of inadequacy - is interesting for the evolutionary aspect of pedagogy of good educational practice, developmental psychology, and family psychology in relation to the report from the triad - mother, father, son - compared to the peers group (Hulshoff, 2015).

In front of a clear and severe diagnosis, it is important to keep in mind that, in line with the DSM-5 recommendations and treatment, any aspect of development and any contribution of this chapter will guide you to the satisfaction of the methodological plant of this study, which primary target remains the pursuit of the individual, school, mental, psychic and relational well-being of the child.

V. Evaluation and approximation

The mathematical context has some affinities with the lexical-semantic. Verbal-linguistic intelligence is based on multiple brain areas, and is activated by the temporal and frontal cortex.

Regarding the criterion of choosing the correct mathematical result, the brain acts with the same uncertainty that manifests itself in the face of complex linguistic information. Discernment and choice of result trigger an area - that of the prefrontal cortex - that interacts in terms of plasticity with the frontal and emotional sphere, the amygdala, the gland known as the place of emotional production and also home to what Laurent Cohen calls the visceral and automatic reactivation of fear (Cohen L., 2014).

During giving the calculations test infact, many children engaged in carrying out one or two digit operations have drawn my attention, referring to some emotional symptoms, such as accidental sweating in the hands, mild headaches, self-perceived sensation accelerated heart beats ("my heart is beating fast"), etc.

During the administration of verbal evidence, although brain activity presupposed an important involvement of the prefrontal cortex, in order to obtain the congruence between the grammar and the phrase to be searched and the frontal area to look for its congruity between names, verbs and words, My assistance was not required.

The most accredited consideration, also validated by recent studies of experimental psychology, is to believe that it is plausible the interchange functions between apparently distinct brain areas for skills and to imagine a brain able to evaluate quantities and sensitive to approximation and error (Dehaene, 2010).

We have already referred to the recognition of quantities within a set, rather than within a set of un-grouped quantities. The distinction does not concern the pure mathematical matter, with the macro categories of homogeneity and heterogeneity of the sets, but the cerebral localization of an area responsible for the recognition and organization of the quantities (Pinel, Dehaene, Riviere and LeBihan, 2001)

What happens within our brain when we are in the presence of sequences grouped by quantities and sequences not grouped by the same amount, is an immediate work on the grouping by estimation and approximation; Only later we resort to more expensive activities in terms of complexity and energy used.

The surprising results of this mental operation often contradict slow and rational thought; It often happens that responding based on instinct - not mediated by definition - ends up focusing the exact answer (see page 48).

The first type skills - estimate and approximation - are familiar to our brain because they are attributable to our innate ability (Atkinson, Campbell and Francis, 1976), mentioned above.

In the case of children who are not diagnosed, but who have difficulty with the number, an increasingly recurring condition in our classes, we must also take into account other aspects of nothing but secondary: the complex relationship between individual emotions and emotional exhaustion of teachers discouraged by the situation of failure.

Both relational components produce effects on the learning child and the teacher who engages in the educational relationship (Fiorilli et al., 2008)

Educational protocols should be encouraged in schools not only to evaluate skills and to train the difficulty, but to take full account of general school well-being.

Recent studies of positive psychology (Fianco et al., 2015) have developed projects aimed at promoting the wellbeing of teachers, linked to the improvement of school pupils' performance and burnout interventions (Albanese et al, 2014), referred to in this Reference for full information in respect to the educational sphere.

To return to our speech, we must remember that when we talk about approximation or estimation we can't forget that this is about a non-mediated ability from adult culture.
Literature helps us in this way to support the position that our brain estimates for a rough approximation the large number of objects (Siegler and Opfer, 2003).

In numerical intelligence tests (Lucangeli et al., 2007) we can observe how the construction of the BIN observation battery for children aged 4 to 6 benefits from the concept of immediacy, here referred to as the synonym of subitizing according to the definition of functionality Atkinson's brain, recalled in the text on p. 22.

The experimental research of the teacher from Oxford help us to highlight and validate this position that the child not only is able to discriminate groups for differences, but is also able to advance expectations on the arithmetic result of numeracy.

Do we perceive the number in a clear way or do we recognize it within a metacognitive context, or how can we say with reference to the number syntax, within a meta-grammatic context?

To answer these questions and to formulate some hypothesis of treatment to specific disorders to solve a specific problem, I took into consideration the recent intentions of a part of cognitive psychology and neuro-pedagogy of the mind (Houdé and Mazoyer, 2003) to look that they see in the conflict within the long process of calculation, the existence of the conflict, (Ie understood as a cognitive conflict), as a possible explanation of logical error, (Stroop, 1935 - Kahneman variant, 2000) and I still look for them in illusion, numbers, illusion of quantity, as an experience comparable to that of the illusion borrowed from the visual illusion of the segments (Muller-Lyer, 1889 date).

The result of these arguments that I could call heuristic based on intuition and validated by outcomes (Gigerenzer, 2009) open the field to a series of fascinating perspectives on the knowledge prejudice, the fallibility of the mathematical mind and the a priori apolitical beliefs of intelligence.
In my study, I also hypothesize that at the basis of these situations meta cognitive process may be the reasons for the pleasure and the anguish of the child in the face of the importance of the experiential value task and its effects mediated by the emotions; effects here referred to as performance accuracy (i.e. accuracy in the result).

When executing a calculation I've spoken here of classical development models for the scope of calculation and brain spheres involved and came to the conclusion that - we now know which mental model and what cerebral sphere are involved - An eight-year-old boy faced with a mathematical operation first performs an exclusion work. Exclusion of absurd, impossible answers, far from the mental image that the child gets at first glance.

Horizontal calculation work, used as a methodological premise during the trial, provided some arrangements to

facilitate the flow of cognitive ability, but also affected the cerebral sphere which benefited from it.

The saccadic movements of the eye, in fact, have undoubtedly benefited from the horizontal line, rather than the vertical one, at least in terms of speed. Not to mention the energy consumed by the boy, who became more and more experienced, has diminished his operational fatigue. At this point, our eight-year-old child will only have to perform the calculation, then begin to think (Kaheman, system 2) in a slower and less impulsive manner and to recover from memory what might become the ale method it must be the most effective program to solve the calculation.

A logical, thoughtful thought that belongs to a system of slow thinking, what Kahneman means as a system 2 as opposed to the system of fast thinking, intuitive, system 1, in this study is effective only with regard to simple operations, with minimal memory efforts (Kahneman, 2012).

Despite the great work done here, in this cognitive operation the little boy is still far from the certainty of the result. Beginning at this point the busy work tireless work of resolution, or attempt to solve this calculation; at the end of this operation.

After producing – an other cognitive operation - a result, not yet validated by the test, so doubtful, our doubt about the correctness of reasoning has not yet been revealed. There is a possibility that we have to start all over again.

Now the boy must resort again to the memory to temporarily store the number thought, in this process, an act of effort and concentration, it is natural to come across the systematic error.

When we achieve a result without performing the slow steps of the rational path, besides indicating that we are working on the intuition plan, we let our cognitive competence to favour us in that rapid and economic leap that the mind does when using the intuition, approximation. We could also say, but also and I would say, above all, that we are willing to commit systematic mistakes, which intervene in those areas where the cognitive bias can be easily simulated; in other words we allow a risk of calculation – the one of make mistakes - on the path of our mathematical intuition. When this is possible.

In the observed cases diagnosis, generally indicated by the school with H, is re-considable, in our cases, the sphere of mental disorder, dysfunctional attention disorder and learning with a percentage of 1.3 children in the third grade and 13.2 children in the fourth grade. The increase in diagnosis (13.2 fourth grade) is in line with the Clinical Guidelines of the Mental Disorders Manual that traces the first significant debut deficits on the calculation around the end of the third school year of primary school and establishes as a line of Demarcation, to perform the diagnosis, the completion of the eight year old age.

In our 24 cases, the children had an interesting behaviour from the point of view of performance, which partly contradicted the predictions, speaking of a child who, although in difficulty, has shown positive responsiveness in condition of stress, that surely deserve further investigations.

TABLE I: FREQUENCY DIAGNOSIS BY CLASSES

Genere		Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
M	1	,451	,011	,429	,472
	2	,284	,010	,265	,303
F	1	,429	,012	,406	,453
	2	,316	,011	,295	,337

VI. CONCLUSION

The present study concludes with a critical reflection on the study itself, which wanted to find the reasons for the error at the base of the disorder, and instead came to reconsider, in according of the empirical results of how educational activity should be a good practice to keep in evidence the happiness of positive thoughts, to make the completion of the development effective process.

The empirical and clinical data indicates a method that it's not sufficient to explain the context in which the educational relationship takes place. Starting to write the final act of this long study path has irretrievably put me in touch with everything I have just considered a scientific work of evidence and numbers, and the specialty had to be in the skill or not to relate it to measure its effects and inferences and if possible to find new truths. It went so only partially.

I have learned to think empirically and look for the significance of the data.

The child I thought of finding trouble, with a disorder comorable with other lesser-known disorders, was actually there in a class of many, mixed with other children, in turn with other difficulties, more or less disguised.

I was thinking of scolding the preconceived judgment that the Girls would be more in trouble than the Children with Mathematics and that in this connection they felt more anxious. Today I can say that the children of my observatory have been more effective in complex computation than males and have been able to manage operational stress. This too was done.

That there was a relationship between speed and the imperceptible eye movement that could benefit the reading we already knew, and I could record how, even in calculation, when it is favored by horizontal run, it can greatly change the outcome of the tests.

The certified child does not miss a job only because it has a disorder and at the same time we can no longer legitimize the mistake as a necessary consequence of the disorder. We are adults in error ab origin.

As we have tried to demonstrate in the study, the Certified Child with Clinical Diagnosis, in the individual relationship with the Administrator and in the face of unknown evidence, was sufficiently competent. I wondered why and the answer I found in those books by Maria Montessori, who animated my youth studies, which led me to this point, not being able to legitimize theory with what Regni calls the paradigm Educational (Regni, 2006).

But it's just reflecting on the fatigue of those 20 children who have come back to words about the beauty of the origins

and the sense of the anticipation of the Child's times, through the re-readings of those who are trying to make today's thinking a Montessori thinking paraphrasing the words of Kingdoms, inactive from birth (Ibidem).

If I wanted to measure formal abilities, I chose not to see the primary ones, I would say juvenile like when we are about to say a novice author. Because the schoolload required is already far from the carefree of the first moments of life. Through the child I have seen the projective ritual of the adult educator.

Despite the personal contamination of Lotta Uusitalo-Malmivaara's teachings, which came to our Department in 2014, at a seminary of child psychology directly from the University of Helsinki, and the dear subjects of positive psychology, in spite of lessons on Camus and on the ' childhood, despite the readings on empathy as the ability to accord the energies with the interlocutor, despite the encounter with Michael Imberty and the idea of the proto-narrative casing, despite my training.

Nevertheless, I chose not to see the educational rituals and I accepted as the most deceptive of the rites of schooling and school success.

We have traveled from small to our rites, unknowing as we do it, but confident that to lead us in the very game of reading and writing, we are not alone. So let's repeat, in a real ritual, the teachings of adults, which for this reason become true.

Even the error becomes ritual on the basis of this assumption, which has become a belief in the writer that according to the epistemological attempt of the search for truth, the educational components linked to the relationship and expression of individual individualities are neglected, and this does not sediment within the mind, which we kept great in mind during the study.

While it is true that white matter in the brain increases gray links during the early stages of reading learning (Wandel, 2012), it is also true that children who learn to count with the Montessori balls do not experience any aversion to math, when they reveal to them the hidden secrecy of the calculation.

The simplicity of this practice, linked to a great preparation of the teacher, does not require the explication of the theory of calculation; the child provides the instrument, to be filled with experience and therefore content.

A kind of dense container of small facts that soon become meaningful in representing significant arithmetic, counting logic and abstract problem solving strategies I was often asked during the long run of my study whether this montessorian practice was unveiled or if the child was unaware of the task.

The answer I have found in the traditional school, where mathematical significants are not only a priori aprioristic to the recipients as basic assumptions, but filled up by the adults of those meanings, the didactic goals that make it difficult and far to get familiar with the mathematics. In a typical developmental child, having to learn an algebraic calculation procedure can seem a simple simplification exercise, namely those he knows when playing with the imaginary, and which remains in the predestinated inactivity of an abstract and purely mnemonic task . It does not happen the same in the Child with a specific deficit in that area.

If we ask - and with our work we have done it - to overwhelm the task and see the number in a new relationship with ourselves and space, then the typical Norma Child also falls in difficulty; as it has been.

During the phases of the administration I asked them to think about calculating without thinking of the rule, that is, to trust the instinct of response, and here is the pride of this study: the child with a mental disorder has played the new rule with no memory of the data, and let himself be guided by the familiarity to the number, pre-requisite ability (no Child encountered was really blind to the number) and he could experiment with us the pleasure of simple answer, linking the number with the space and its rotation, he could lighten the memory task and was no longer afraid.

The result was effective, it worked.

How can we compress the mind of a nine-year-old child into understanding a non-existent dimension and force him to understand the positional value on the line of numbers, for example zero, when there is no match in this summation not mediated by metacognitive reasoning; zero has no capacity, in the sense of expansion, is not inside any container. Yet in our classes it starts to count just from scratch.

Teachers often put into practice, in absolute good faith, the simplification of the learning process, carrying out the process on behalf of the Child, summarizing and planning the way for the outcome.

But who pays the account of this heuristic activity?

More than half of our observation sample was in trouble with words and verbal meanings. Is not this an alarming thing?

We provided the training shortcuts, without going through the streets of the educational relationship, and for this reason the children have fallen in the face of a synonym. We ask them to exercise the well-known memory of work, the useful short term activity that we call when needed. To think that the Child should keep in mind all the passages, with the numbers reported, then not written, we would say non-existent, but then count, because they must be added again for other complicated mental passages.

I have been able to test, with the diagnosed and in great difficulty even for the low attentive ability, that using a more individual memory retrieval strategy - autobiographical memory for example - can favor fluency work, which can be found in correlation between number and space and between number and time (Church et al., 1983).

Each of them was solely asked to carry out the task of computing horizontally, putting into effect a break with the known didactic scheme and with the mental habit of resorting to all those passages of memory. Mathematical intuitions and their decisions were silent in the minds of each of them.

Starting from the results of multivariate analyzes carried out and considering that mental rotation and spatial visualization have long been known as mathematical reasoning skills (Linn et al., 1985) (Langrock et al., 1999) (Middlebrook et al., 2004), I would like to develop a neuro-pedagogical protocol based on error and its reasoned use, using test-training mode, with test variables, given by spatial and verbal skills, as variables of training to verify the learning from time to time, all favored by a work on the expertise and open to the various metacognitive indications (Cornoldi et al., 2001).

If I wanted to think about further research after the present

study, I would like to continue the study of fluidity, positive thinking, psychological well-being, and relapses in terms of lack of effort in handling the number.

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