

INTERPRETING WRITING OF CHILDREN WITH INTELLECTUAL DISABILITIES: A COMPARATIVE STUDY

RITA VIEIRA DE FIGUEIREDO

Universidade Federal do Ceara- Fortaleza- Bresil

Abstract. This article reports the results of developmental test analyses on literacy conducted with children with intellectual disabilities in Quebec and Brazil. Grounded on studies carried out in Argentina by Ferreiro and Teberosky (1986), with children without intellectual disabilities, we deal, comparatively, with three aspects in the development of literacy in children with intellectual disabilities: their interpretation of fragments of writing, the connection they establish between letters and numbers, and their knowledge of letters. The level of intellectual disability just as the stimulation to reading are taken into account in the analysis of data related to the three aspects previously mentioned. Children with intellectual disabilities develop, in many aspects, similarly to the children without intellectual disabilities during emergent literacy. Nevertheless, they are less consistent in the use of writing classifying criteria, as well as in their discriminating letters from numbers. Although, the level of intellectual disability influenced the children's progress greatly, the acquisition of the knowledge of letters differed mostly in accordance to the level of stimulation to reading.

Keywords: Emergent literacy, intellectual disability, compared studies in literacy.

Chinese

Translated by Shek Kam Tse

論文摘要：本文報道了一個在加拿大魁北克和巴西進行的研究結果，該研究對智障兒童的讀寫能力發展進行測試分析。以 Ferreiro 和 Teberosky(1986)在阿根廷對智力正常的兒童所進行的研究作基礎，本文的研究員嘗試比較智障兒童的讀寫能力發展的三個方向：受試兒童對寫作片段的理解；他們建立字母和數字的聯繫；還有他們對字母的知識。兒童智力障礙的程度，例如對閱讀的刺激，也會用作分析前述三個讀寫能力發展方向的數據。智障兒童在讀寫萌發階段的情況，在多個方向上，與智力正常的兒童的發展情況相似。總的來說，智障兒童在運用寫作分類標準和分辨字母和數字，表現較為不穩定。兒童智力障礙程度的深淺對兒童的進步影響很大，但兒童因應對閱讀的刺激，對字母知識的習得的差異最大。

關鍵詞：讀寫萌發、智力障礙、讀寫能力的比較研究

63

Vieira de Figueiredo, R. (2007). Interpreting writing of children with intellectual disabilities: A comparative study.

L1 – Educational Studies in Language and Literature, 7(3), p. 63-79.

© International Association for the Improvement of Mother Tongue Education

Correspondence to Rita Vieira de Figueiredo, Faculdade de Educação, Universidade Federal do Ceará, Rua Waldery Uchoa n. 01, Benfica, Fortaleza, Ceará, Brasil, Cep. 60.020.110. E-mail: Rvieira@ufc.br.

Dutch

Samenvatting [Translated by Tanja Janssen]

In dit artikel wordt verslag gedaan van een onderzoek naar de ontwikkeling in geletterdheid bij kinderen met een intellectuele handicap in Quebec en Brazilië. We baseren ons op onderzoeken die door Ferreiro en Teberosky (1986) in Argentinië zijn uitgevoerd, met kinderen zonder intellectuele handicap. We gaan vergelijkenderwijs in op drie aspecten in de geletterdheidsontwikkeling van kinderen: hun interpretatie van schrijffragmenten, het verband dat zij leggen tussen letters en getallen, en hun kennis van letters. In de analyse wordt rekening gehouden met de mate van intellectuele handicap en de leesbevordering. In veel opzichten ontwikkelen kinderen met een intellectuele handicap zich op dezelfde wijze als kinderen zonder intellectuele handicap in de fase van ontluikende geletterdheid. Niettemin zijn zij minder consistent in het gebruik van classificatiecriteria bij schrijven, en in het onderscheid maken tussen letters en getallen. Hoewel de vooruitgang van kinderen sterk werd bepaald door de mate van intellectuele handicap, hingen verschillen in de verwerving van letterkennis vooral samen met de mate van leesbevordering.

French

Résumé [Translated by Laurence Pasa]

Cet article rapporte les résultats des études développementales sur la littéracie conduites auprès d'enfants ayant un déficit intellectuel au Québec et au Brésil. A partir des recherches effectuées en Argentine par Ferreiro et Teberosky (1986), auprès d'enfants sans trouble cognitif, nous traitons, comparativement, trois aspects de l'entrée dans l'écrit chez les enfants ayant un déficit intellectuel : leur interprétation de segments écrits, le lien qu'ils établissent entre les lettres et les nombres, et leur connaissance des lettres. Pour chacun de ces aspects, le degré de déficience et de stimulation à l'égard de la lecture sont pris en considération dans l'analyse. Lorsqu'ils entrent dans l'écrit, les enfants ayant un déficit intellectuel et ceux qui n'en ont pas se développent de façon similaire, sur plusieurs points. Néanmoins, les premiers sont moins logiques dans leur analyse de l'écrit ainsi que dans la distinction entre lettres et nombres. Si le degré de déficience influence considérablement les progrès des enfants, l'acquisition de la connaissance des lettres varie, la plupart du temps, en fonction du degré de stimulation à l'égard de la lecture.

German

Zusammenfassung [Translated by Irene Pieper]

Der Beitrag stellt die Ergebnisse von Tests zur Literalitätsentwicklung von Kindern mit Lernstörungen in Quebec und Brasilien dar. Auf der Basis von Untersuchungen in Argentinien mit Kindern ohne Lernstörungen, die Ferreiro und Teberosky durchgeführt haben (1986), beschäftigen wir uns in vergleichender Perspektive mit drei Aspekten der Entwicklung von Literalität bei Kindern mit Lernstörungen: ihrer Interpretation von Schreibfragmenten, der Verbindung zwischen Buchstaben und Zahlen, die sie herstellen, und ihrer Kenntnis der Buchstaben. Der Grad der Lernstörung wie auch der Lesestimulus werden bei der Datenauswertung berücksichtigt. Kinder mit Lernstörungen entwickeln sich in vielerlei Hinsicht ähnlich wie Kinder ohne Lernstörungen im Bereich des frühen Schriftspracherwerbs. Ihre Anwendung von Schreibklassifikationskriterien ist allerdings weniger konsistent, ebenso ihre Unterscheidung von Buchstaben und Ziffern. Obwohl der Grad der Lernstörung den kindlichen Fortschritt stark beeinflusste, unterschied sich die Kenntnis der Schriftzeichen vor allem in Bezug auf den Lesestimulus.

Greek

Μεταφράση [Translated by Panatoya Papouliou-Tzelepi]

Αυτό το άρθρο αναφέρεται στα αποτελέσματα των αναλύσεων αναπτυξιακών τεστ για το γραμματισμό με παιδιά που είχαν νοητικές αναπηρίες στο Κεμπέκ και στη Βραζιλία. Με βάση τις μελέτες των Ferreiro και Teberosky στην Αργεντινή (1986) με παιδιά χωρίς νοητικές αναπηρίες, ασχολούμαστε με τρεις απόψεις στην ανάπτυξη του γραμματισμού παιδιών με νοητικές αναπηρίες. Την επεξεργασία τμημάτων γραπτού, τη σχέση που αναπτύσσουν μεταξύ γραμμάτων και αριθμών και τη γνώση των γραμμάτων. Το επίπεδο της νοητικής αναπηρίας καθώς και η πρόκληση για διάβασμα λαμβάνονται υπόψη στην ανάλυση των δεδομένων που αναφέρονται στις 3 όψεις που αναφέρθηκαν παραπάνω. Παιδιά με νοητικές αναπηρίες αναπτύσσονται, από πολλές απόψεις με παρόμοιο τρόπο με τα παιδιά χωρίς αναπηρίες στο στάδιο της ανάδυσης του γραμματισμού. Όμως είναι λιγότερο συνεπή στη χρήση κριτηρίων κατηγοριοποίησης της γραφής καθώς και στο ξεχώρισμα των γραμμάτων από τους αριθμούς. Παρά το ότι το επίπεδο της νοητικής αναπηρίας επιδρά πάρα πολύ στην πρόοδο των παιδιών, η απόκτηση της γνώσης των γραμμάτων διαφοροποιήθηκε πολύ από το επίπεδο πρόκλησης για διάβασμα.

Polish**Streszczenie** [translation Elżbieta Awramiuk]

Niniejszy artykuł prezentuje rezultaty prowadzonych w Quebecu i Brazylii testowych badań rozwojowych nad umiejętnością czytania i pisania dzieci upośledzonych umysłowo. Opierając się na realizowanych w Argentynie przez Ferreiro & Teberosky (1986) badaniach dzieci bez umysłowych zaburzeń, zajmujemy się porównawczo trzema aspektami rozwoju umiejętności czytania i pisania u dzieci upośledzonych umysłowo: ich interpretacją fragmentów pisma, ustalonymi przez nie związkami między literami a cyframi oraz ich wiedzą o literach. W analizie uzyskanych danych odnoszących się do wspomnianych wyżej aspektów pod uwagę brany jest zarówno poziom umysłowego upośledzenia, jak i stymulacja do czytania. Podczas nabywania wczesnych umiejętności czytania i pisania dzieci upośledzone umysłowo rozwijają się pod wieloma względami podobnie jak dzieci bez umysłowych zaburzeń, jednakże są one mniej konsekwentne w stosowaniu kryteriów klasyfikowania pisma, jak i w odróżnianiu liter od cyfr. Mimo że poziom upośledzenia umysłowego wpływał znacząco na postęp dzieci, przyswajanie wiedzy o literach różniło się mocno w zależności od poziomu stymulacji do czytania.

Słowa-klucze: wczesne umiejętności czytania i pisania, upośledzenie umysłowe, studia porównawcze nad umiejętnością czytania i pisania

Portuguese**Resumo** [Translated by Paulo Feytor Pinto]

Este artigo apresenta os resultados da análise de testes sobre o desenvolvimento da literacia em crianças com deficiência cognitiva, no Quebec e no Brasil. Baseados em estudos levados a cabo na Argentina, por Ferreiro & Teberosky (1986), junto de crianças sem deficiência cognitiva, analisamos comparativamente três aspectos do desenvolvimento da literacia em crianças deficientes: a sua interpretação de fragmentos de escrita, a relação que estabelecem entre letras e números e o seu conhecimento das letras. O grau de deficiência cognitiva e a estimulação da leitura são tidos em conta na análise dos dados relativos a três aspectos acima mencionados. Em muitos aspectos, o desenvolvimento da literacia emergente é idêntico em crianças sem e com deficiência cognitiva. No entanto, no último caso, o uso de critérios de classificação da escrita e a capacidade de distinguir letras e números são menos consistentes. Embora o grau de deficiência tenha influenciado enormemente o progresso das crianças, a aquisição do conhecimento das letras diferiu essencialmente de acordo com o nível de estimulação da leitura.

Palavras-chave: literacia emergente, deficiência cognitiva, estudos comparados sobre literacia.

1. INTRODUCTION

Although number of studies (Vieira de Figueiredo Boneti, 1995; Cousin, Aragon & Rojas, 1993; Katims, 1991, 1994, 2001; Klenk, 1994; Gomes & Vieira de Figueiredo, 2003; Vieira de Figueiredo, 2004) point at the benefits that children with intellectual disabilities can obtain from literacy, specially on the subject of their independence within their communities, the research on emergent reading among them seems rather scarce compared with research on reading among with children without intellectual disabilities.

Ferreiro and Teberosky (1986) studied emergent written language among children. Their work revealed the psychogenesis of written language in a socio-constructivist perspective (Piaget, 1957, Vygotsky, 1986, Doise & Mugny, 1981). The studies demonstrated the different stages children have to develop during written language acquisition. The development of those stages is related to the conceptual evolution of children in terms of written language, that is, the more they expand in their concepts, the more they can overcome the stages.

According to Ferreiro and Teberosky (1986), learning written language requires the constant intellectual effort of a cognitive dynamics which prompts the children to ask questions about the logic and functions of written language, involving them in

a cognitive conflict which forces them to select information, to conciliate contradictory facts and to seek a coherent system of interpretation of written language. They categorize, establish relations, construct hypotheses and seek rules in their attempt to understand the writing system. According to Ferreiro (1978), explorations on written language lead children to build original productions within a system governed by their own rules, referring to hypotheses developed by themselves from the relations they establish with written language and the writing system, and trying to interpret a text even before they can actually read, by using information from the social environment. Children do not remain passive when they face incoming data. In order to understand and handle new information, children transform its content and interpret it from their previous knowledge.

The studies of Ferreiro and Teberosky (1986) inspired many researches in the field of intellectual disabilities (Vieira de Figueiredo Boneti, 1995; Vieira de Figueiredo Boneti & Saint-Laurent, 1996; Vieira de Figueiredo, 2001, 2004). Those researches dealt with some aspects previously studied by the Ferreiro and Teberosky, but with children without intellectual disabilities. The aspects were: the relation between drawing and text (Vieira de Figueiredo, 1999a), the interpretation of their first names (Vieira de Figueiredo Boneti & Saint-Laurent, 1996), the relation between oral and written sentences (Vieira de Figueiredo, 1999b), the levels of written language acquisition as pre-syllabic, syllabic and alphabetic, and also the texts produced by children (Vieira de Figueiredo, 2004). The results of the studies demonstrated similarities in the process of written language acquisition with people with or without intellectual disabilities. They also proved the relations between the level of intellectual disability and children's progress in the written language acquisition.

Not only these studies, but also the one carried by Vieira de Figueiredo, (2001) that deals with the relation between written language learning and intellectual disabilities, allowed the observation of the phenomenon of thought oscillations, very common in the behavior of children with intellectual disabilities, as Inhelder (1963) proved in the research on operative development of people with intellectual disabilities.

A similar development of children with and without intellectual disabilities was observed by Fitzgerald, Roberts and Schuele (1991), Katims (1994, 2001) and Klenk (1994) in their papers whose content did not make any reference to the ones of Ferreiro and Teberosky (1986), in opposition to the previous studies.

Gomes and Vieira de Figueiredo (2003, 2004) and Salustiano, Vieira de Figueiredo and Fernandes (2004) also based their study on socio-constructivism, but focused on the pedagogical mediation. The study attests the relevance of stimulation in the development and in the learning of written language by students with intellectual disabilities.

Among the researches just previous cited, one was made in Québec (Canada) and others in Fortaleza (Brazil). The results of these researches suggest that children with intellectual disabilities from different linguistic environments present similar characteristics in terms of written language acquisition. It is extremely important, in a conceptual point of view, to examine this question, by means of systematic comparisons between the results of these researches carried out in such different linguistic environments. This paper compares, more specifically, the development of writ-

ten language in children with intellectual disabilities in two linguistic environments, taking into account three aspects of the development of written language: the interpretation of fragments of written language, the connection established between letters and numbers and the knowledge of letters.

The aspects of written language acquisition mentioned above were broadly studied in children without intellectual disabilities by Ferreiro and Teberosky (1986). Yet, there are many other possibilities of studies related to intellectual disabled children. It seems that the only work that consider the subject is the one of Vieira de Figueiredo Boneti (1995).

Research works conducted by Ferreiro and Teberosky (1986) with children without intellectual disabilities indicate that well before they are able to read in the conventional meaning of the word, these children establish relations with written language in their environment. According to Ferreiro and Teberosky (1986), even when a child cannot read, it is possible to have some ideas about the characteristics a written text should have so that there is an act of reading. The presence of letters alone does not constitute a sufficient condition for reading. During emergent literacy, children establish criteria to interpret writing. These criteria, in turn, become hypotheses, which direct their interpretation. According to Ferreiro and Teberosky (1986), children work out among others, two hypotheses. The first is named hypothesis of minimal quantity of characters. In order to read a word, a minimum quantity of letters is necessary. For the majority of children studied by Ferreiro and Teberosky, this minimal quantity is three letters. The second is named hypothesis of variation of characters. In order to read a word, the characters that make it up should be varied. For instance, the children studied by Ferreiro and Teberosky consider that the group of letters *TDL* constitutes a readable word because the letters that it is made up with are different, whereas the group *AAA* does not constitute a readable word because its letters are identical.

The presence of numbers has also been used as a classification criterion for this material. However, this criterion has been far less used than the two previous ones. According to Ferreiro and Teberosky (1986), the use of that criterion implies a clear distinction between the graphic representations for letters and for numbers. The connection the child establishes between letters and numbers and the recognition of letters constitute other themes of interest for research in the field of emergent literacy. According to Ferreiro and Teberosky (1986), the evolution of the connection between letters and numbers goes through three important steps. In the beginning, the letters and numbers are confused not because of their graphic similarity but because of the discrimination the child seeks to establish between the drawing and the writing. The second step occurs when the child makes a distinction between the letters that are good to read and the numbers that are used for counting. During that step, the child cannot imagine that letters and numbers may be mixed up, as, to him, they have separate functions. The third step is that when the beginning of schooling suddenly makes re-appear the conflict in the child. This initiation prompts the child to realize that he must read words made up of letters, and numbers made up of figures. The reading of a number, even though it is not made up of letters, constitutes a real problem for the child. The child will solve that problem only when he/she becomes

aware that numbers are written in a system that is different from the alphabetical system he uses to write words (Ferreiro & Teberosky, 1986).

Finally, in the child's conceptual development towards the learning of written language, Ferreiro and Teberosky (1986) defined five levels of knowledge of letters. In the first level, the child figures out the letter associated to his first name, but not being able to name that letter. In the second one, the child recognizes the name of a few letters, generally associated to people they know. The third level, the child knows a few letters without associating them to people. The fourth level, several letters are recognized. In the fifth level, the child knows the whole alphabet.

2. METHODOLOGY

We drew on the interactive methodology, inspired in the so-called *clinical* method used by the School of Geneva. Ferreiro and Teberosky (1986) used this *clinical* method to study the evolution of literacy in children.

2.1 *Subjects*

In 1995 we followed fifteen French speaking preschool children (aged 4 to 7) with intellectual disabilities in Quebec city (Canada). Their level of disability was determined by the Leiter International Performance Scale. Two children were borderline cases, seven had a mild intellectual disability, four had a moderate intellectual disability, and two had a severe intellectual disability. Ten children were in kindergarten. The others attended a daycare center. Five children came from families of underprivileged socio-economic environment, eight from middle-class families and two came from a privileged socio-economic environment.

Later on, in 2000, we carried out a similar study in Brazil among a group of 8 children. An IQ test (Binet-Simon-Terman) was done. We could verify that all children involved in the experiment had a moderate intellectual disability level. Their IQ varied from 43 to 47. The children were 9 to 16 years old, and issued from a low socio-economic level to the exception of one from middle socio-economic level. None of them, as was the case with the children from Quebec City, could read nor write, conventionally speaking.

It is the result of combined observations on both studies against the reference of Ferreiro and Teberosky (1986) that we are summing up here. It might be said that some of them are past the age of being called children, then, we opted for calling them *children* in this article, for simplification sake.

2.2 *Instruments*

2.2.1 *Observation from experimental situations*

Three experimental situations were carried out as tasks performed by the children. We focused on the children's behavior regarding classifying criteria on written material, identification and discrimination of letters and numbers, the function they attributed to these elements and their un/certainty in relation to the classification. Our

findings led us to classify the children into developmental steps within the different criteria that they established in connection to the tasks that we proposed. The tasks involved: a) interpreting the first name, where the children worked with the letters in their given names; b) connecting drawing and text, in which the children were shown a storybook with pictures and text; c) the task of classifying cards. In this article we are addressing only the latter, and the conclusions derived from it.

Cards with writing samples. In order to know how the children interpreted fragments of written language, they were shown 24 cards with writing samples. Each child was asked to classify the cards in two groups: the ones they considered “*good to read*” and the ones they did not, and asked to explain their choices. The cards featured sets of one, two, three to ten letters; low case and capital letters; script and cursive letters; sets including numbers; sets showing familiar and unfamiliar words regarding each child's personal background. So, some cards had long words like *butterfly* while others showed short words like *he* or a string of repeated letters like *ddd* or not repeated like *tdc*; there was also an empty card. The children were asked to identify the letters and the numbers and to explain their respective functions. This enabled us to know what characteristics a fragment of writing should have to be considered readable. It evinced the criteria used by children with intellectual disabilities to interpret fragments of writing. It also showed the children's connection between letters and numbers and their knowledge of both.

2.2.2 *The questionnaire on the stimulation to reading*

To establish the children's level of stimulation to reading in a family environment, we issued a questionnaire for the parents on their schooling, occupation, how often they read, the nature and variety of the activities related to literacy, and the exploration of writing in the children's background. Among the children in Quebec, two children had a weak stimulation to reading, six had an average stimulation and seven had a high stimulation. The two children who had a weak stimulation came from an underprivileged socio-economic environment. Of the six who benefited from an average stimulation, two came from an underprivileged socio-economic environment and four from a middle-class environment. Among the seven children whose stimulation was high, one came from an underprivileged environment, four from the middle-class and two from a privileged environment. Among the Brazilian children, three benefited from a fair stimulation to reading, while the others received poor stimulation. As the level of stimulation to reading proved a stronger influence on the acquisition of literacy than the socio-economic level in this study, it is to this first variable that we refer the most.

2.2.3 *Data analyses and treatment*

This research data that refers to Quebec's and Fortaleza's children were collected and analyzed by the author. The criteria applied to analyze children's conceptual evolution in reading were the same criteria used by Ferreiro and Teberosky (1986).

For each aspect examined in this research, it was initially established a comparison of the conceptual evolution among children in each group. In order to establish the comparison, different aspects were considered, such as the children's age, their level of intellectual disability and their reading stimulation. After a comparison was made between both groups. At last, the results were contrasted with the ones of children without intellectual disabilities studied by Ferreiro and Teberosky (1986).

3. RESULTS

3.1 *Criteria to interpretation of written language*

The use of classification criteria of written material is not mainly a result of the children's social background. In their relations with the children, no adult refers to these criteria. They imply the children's operative functioning. We can therefore suppose that the difficulty for children in performing the classification task of written material is linked to their ability for operative functioning. The operative functioning of children with intellectual disabilities and their development speed are the aspects that distinguish these children from the children without intellectual disabilities (Paour, 1988).

Most of the children we observed used no classification criterion. We classified them as being in stage 1. In this group, 9 children from Quebec and 3 from Brazil changed the cards from one stack to the other without looking at their characters. According to Ferreiro and Teberosky (1986), this behavior appears when the children are incapable of discriminating in a graphic world constituted only by letters and numbers, an infrequent inability in children without intellectual disabilities that are four years old or over. At that age, most children are able to classify writing samples coherently. When asked Joëlle, 5 years old, mild intellectual disability, why she had placed a card in the stack of cards she did not consider *good to read*, she picked it and put it on the *good to read* stack. She switched from one card to the next without paying any attention to the characters it contained. We noticed that her attention was never held by words, numbers or letters. For her, as for other children, these elements could not be interpreted. Even when the children knew a few letters and numbers, the cards composed only of these elements seemed meaningless, giving way for random classification. According to Ferreiro (1993), the child first conceptualizes writing as a set of arbitrary forms displayed in a linear manner. These forms are not used for representing figurative aspects of an object, a role generally attributed to drawing. During this first stage, written language can be interpreted only when contextual conditions make it possible, either because the child recognizes the object in its physical surrounding, or because it is next to a picture. As the ability to read is still connected to the presence of a context (i.e., a drawing), it doesn't make sense to sort out cards that are good to read from others that are not.

At the following stage, the child starts developing criteria for the interpretation of writing. According to Ferreiro (1993), in order to interpret writing, the fact that it has arbitrary forms displayed in a linear manner is not enough. Writing must also integrate two formal and specific conditions related to its interpretation, one being quantitative referring to the minimum amount of characters, while the other, qualita-

tive, refers to the variation of characters. However, we noticed that before the children are able to proceed to a classification of the graphic world by using these two conditions, they go through an intermediate stage. At that stage, the children do not yet use the formal conditions for the interpretation of written language, but they start showing some signs (the use of some criteria of classification but in a very unsystematic manner) that indicate they are getting ready to develop these conditions.

In our study, three children showed signs that they use some criteria for interpreting written language. These children started noticing some special characteristics on the cards. Steven, 6 years old, mild intellectual disability, selected a card with one single letter on it as readable, but immediately realizes that "it is not good to read": *Look, the letter is all alone*, he said. On the other hand, Vanessa, 7 years old, with a moderate intellectual disability, selects the cards by using criteria such as: *This* (card with three *L*), *is the letter for Louise*, *this* (card with three *m*), *is mother*, *this* (card with the number 340), *it is three, four, zero* (then she puts this card on the stack of cards she does not consider good to read). The third child, Nicolas, 5 years old with a moderate intellectual disability, accepts all the cards as good to read except for one. The child justifies the rejection of that card as follows: *we cannot read because it is a 1*.

From our analysis, we considered that the classification criteria used by the children were: signs linked to the presence of numbers (Vanessa and Nicolas) and signs linked to the number of characters on the card (Steven). Nicolas, for instance, refuses the card showing a single *1*, but he accepts all the other cards with numbers. Steven does not make remarks about the other cards with one single character. It is significant that even if these children are unable to establish their own criteria systematically, they show a certain sensitivity to some characteristics of written language. The fact that they already notice some aspects of written characters suggests that the children have notions, not yet accountable as a specific knowledge to establish the conditions for interpreting written language, but allowing them to construct these conditions. Ferreiro and Teberosky (1986) have also pointed at the unsteadiness of the classification criteria on written material in some of the children. Some children, in fact, have a behavior that stands between that of children that have well-defined classification criteria and that of children that have none. In the research done by Ferreiro and Teberosky (1986), the children at an intermediate level show signs of criteria linked to the type of print (cursive or script), to the presence of numbers and to the use of a few common signs such as *the letter for mom*, for *dad*, etc.

We found a difference between the children who show signs of some criteria and those who already have some criteria. The latter adopt a more constant behavior toward the task of selecting readable fragments. The criteria used by them are linked to the presence of numbers, the number of letters, the type of print and the variation of the letters. These children tried to justify their choice. For Pierre, 6 years old, mild intellectual disability, the card with a *C* is not good to read because *it is only a C*. For Keven, 6 years old, borderline intellectual development, the card with three *P* is not good to read because *it is three P*.

Although we may think that the criteria used by these children are linked to the presence of numbers, as well as to the quantity and variation of letters, these criteria

do not yet constitute a working hypothesis which directs the classification task as was the case for the children studied by Ferreiro and Teberosky (1986). We noted, in the children of our research, a determined certainty in their choices as well as a swing in their behavior, connected to the children's knowledge in relation to the task to perform. We shall talk about the children's criteria separately.

3.1.1 *Criteria linked to the presence of numbers.*

Mathieu, 4 years old, with a borderline level of intellectual disability, refused all the cards with numbers. When we asked him if he thought there was a word on the cards with numbers, he answered *No*, and added that *it is impossible to read these cards*. When we asked him to justify why these cards are not good to read, each time he answered that *It is not a word*. Likewise, for Pierre, 6 years old, mild intellectual disability, the cards with numbers are not words. When he was shown a card with a 4, he answered that it was a number. When we insisted to know why he thinks that the card (with a 4) is not good to read, he answered with strong assurance: *No! it is a four*. However, a little bit later in the course of the interview the child put a card with numbers on the stack of cards that are good to read. Except for that one card, Pierre classified all the cards with numbers as not good to read saying that they were numbers. A little bit later, he refused the card with the word *il* (he) saying that *it is not good because there is a 1(one)*. And, according to him, that is not a word. Among the 3 Brazilian children who used some classifying criteria, Janyce, 13 years old, refused cards with numbers, on the basis that it could not be read "*because the rest was missing*", while the other 2 focused on the quantity and variation of characters. Contrary to Janyce, Elisa, 15 years old, who already used classifying criteria of writing more systematically, justified her refusal mentioning the numbers: *You can't read this one, there is only a seven and an A*.

The use of the presence of numbers as a criterion to classify the cards indicates that the child already makes the distinction between the graphic representations peculiar to letters and those peculiar to numbers. According to Ferreiro and Teberosky (1986), the use of that criterion requires that we give up the criterion of minimum quantity of characters. It implies that the child considers the cards with several numbers as not readable. Both children who used the criterion linked to the presence of numbers also used the criterion linked to the number of letters.

3.1.2 *Criteria linked to the number of letters*

The same children who used the criterion linked to the presence of numbers also resort to criterion linked to the number of letters. This was the criterion that the children in Brazil resorted to most, and most consistently. Children justified their refusal: *You can't read this because there are few names in it. It's only a C. No, because it's only got one letter*. The limits they placed varied from one child to the next. It was one letter for 4 children, while one placed the limit between 3 and 4 characters contrary to what Ferreiro and Teberosky noticed in children without intellectual disabilities, the criterion of minimum amount was linked to letters only, and

not to any type of characters, in children with intellectual disabilities. Some of the children in our research, who used the criterion of minimum quantity of characters, would readily accept the cards with a minimum quantity of numbers as readable. So, these children use the criterion of minimum quantity of letters and the criterion linked to the presence-only of numbers. Thus, Mathieu, 4 years old, selected as non-readable the cards bearing a single letter or numbers, and considers as good to read all the cards bearing two letters or more. In order to justify the rejection of the cards, he answered that *it is not a word*. Pierre, 6 years old, refused also the cards bearing either numbers or a single letter. When asked to justify, he answered that *it is not a word* and, when we insisted, he said that *it is an A* or *it is only a C*. These two examples suggest that the use of criteria linked to the presence of numbers does not force the child to give up the criterion of minimum quantity, but perhaps it induces him to transform it. We can suppose that the coexistence of these two criteria is caused by the difficulty for the child to give up an established criterion (minimum quantity) and to replace it by a new one (linked to the presence of numbers). This supports the socio-constructivist conception that knowledge is not acquired by adding achievements but by transforming previous achievements. Transformations occur when the children attempt to behave sensibly in a world they are trying to understand and participate in. The following example might illustrate this.

Pierre, 6 years old, refused all the cards bearing a single letter, but, at a given moment, he hesitated in front of the card bearing a low case *a* and finally placed it on the readable stack. We asked him why he considered the small *a* as good to read and the capital *A* as not good to read. He changed his mind each time we asked, so we considered that, as he was unsure of his classification criterion, he was trying to adapt his behavior to what he thought would suit the researcher. Nevertheless, the fact that he eventually considered the low case *a* as readable may be linked to his experience with written material (story books) where low case letters are more frequent than capital letters. In other words, he selected the card with *a* not because it is the letter *a*, but because it is a low case character. When such is the case, the children sometimes also accepted the cards bearing other individual low case letters. Two Brazilian children who had already used the minimum amount criterion, although not consistently, also selected the single small *a* card as *good to read*. It is important to emphasize that with this criterion the children have started to lose the stability of the criterion of minimum quantity of letters which had guided them so far in their classification task. That criterion was stable as long as there was no card with a low case letter. This implies that the criterion of minimum quantity of letters no longer applies to any card. Other characteristics of written language, such as the type of print for instance, are beginning to draw their attention so that they question the use of the previous criterion. Doubts arise as to whether a card bearing a single letter cannot be read when it is a small letter. In that case, the instability and perhaps the transformation of the criterion of minimum quantity have been established by a new context (the presence of a single low case letter) and also by the children's ability to further discriminate fragments of written language. This discrimination induces the child to notice not only the presence of numbers and the quantity of letters on the cards, but also the type of print.

3.1.3 *Criteria linked to the type of print*

According to Ferreiro and Teberosky (1986), as a general use, there is no ambiguity as for the capital letters, but children faced a problem when they have to tell the end of a cursive letter from the beginning of the next. So, children rarely considered, pi (in cursive letters) as two letters, but rather as three or even four letters. The same happened when they met m (cursive letter), which was often identified as three characters.

In our study, the criterion linked to the type of print was only used by one child in Quebec and two in Brazil. Nor was it used systematically. Pierre, 6 years old, refused the card with a word *he* in capital letters and when we asked him to justify his refusal, he answered that *it is not good because the letters are not tied together*. Even when he was unable to justify his choice, he was quite positive about whether a card was readable, as we could see from his reaction toward the card with the word *mother*. He placed the card in the stack of readable cards and justified his choice by saying: *this is good*. Clearly, the children adopt criteria that allow them to have more certainty in relation to certain cards and to have more doubts in relation to others. For instance, when they used the criterion linked to the presence of numbers, they were always sure of their classifications. On the other hand, the criterion of minimum quantity of letters created problems when the children became aware of the fact that there is more than one type of print. The children found it difficult to apply the minimum amount criterion when the cards were written in cursive letters or in low case print. This situation is conflicting for the children as they start questioning the criterion they are currently using, and try to reformulate it to be more efficient in performing the requested task. We noticed similar behavior in relation to the other criteria.

3.1.4 *Criterion of variation of characters*

The presence of written characters does not guarantee the readability of the material. For some children, the presence of at least three letters guarantees the criterion of minimum quantity of characters. Yet, they considered that cards with the same letter repeated three times are not readable. Conversely, in the case of a string with various letters, even when the children did not recognize the letters, they claimed that they knew it was a word *good to read*, even if they did not know what it said. Pierre claimed that the word *papillon* (*butterfly*) was good to read. He knew all the letters in the word, but was unable to read the whole. Nevertheless, the children justified their choices differently from each other.

In the course of a task which consisted in separating the cards they considered good to read from those that were not, the two children in Quebec who used the criterion of variation of letters in this classification task, proceeded differently to justify their choice. Pierre, 6 years old, mild intellectual disability, refused the card with three *d* (small letters) saying it was not good to read, but changed his mind and considered it good to read when we asked him to explain. When we pointed out that he had already said that the card was not good to read, he changed his mind again and quickly placed it with the unreadable cards. Even when we urged him to make

up his mind whether the card was good to read or not, *he claimed that it is not good to read*. As for Keven, 6 years old, borderline level of disability, he refused the card with three *p* (small letters) saying that *we cannot read because it is three p*, but he accepted the card with three *m* (small letters). He explained his choice as follows:

Exp: Look at this card (card with three small p), you said that it is not good to read because it is three p. How about this one (card with three m)?

Exp: What is this letter?

Exp: We have three m.

Exp: Can we read?

Exp: And the other (card with three p)?

Exp: I still have not understood why you think that when there are three p we cannot read, but with three m we can read.

Exp: Why can't we read this card (empty card that the child also refused)?

Child: It is not the same.

Child: m.

Child: Yes.

Child: Yes.

Child: Because there are no words.

Child: Because it is three p: one, two, three.

Child: Because it is good (card with three m), it is not good (empty card) and it is not the same (card with three p).

The difference between the behavior of both children is that one was not sure he was using a good criterion, so that when the researcher insisted to get some justifications, he changed his mind and behaved hesitantly; while the other one was sure that the criterion he used was good, and the same letter repeated three times was not a word. Of the 4 children who used this criterion in Brazil, Janyce, 13 years old, proceeded like Keven, 6 years old, she refused the cards with repeated letters, but she accepted the card where the capital A is repeated 3 times, arguing that it is the word *Love* that is written on it. Ednardo (10 years old), Elisa (14 years old) and Manuel (16 years old) refused all the cards with repeated letters on the basis that you can't read because there's only 3a/ 3p/ 3m (showing clearly that they recognized the letters). Manuel, 16 years old, further explains: *You can't read because it's only 3m. If you added an i, then it would be all right*. Elisa, 14 years old, on the card showing *ppp*: *you can't read because it's missing...* Their classification and their comments show that they were sensitive to the properties of writing, even the need for vowels in the making of words. By the way, these two children discriminated letters from numbers and seemed more confident in advancing the hypotheses of variation and minimum amount of characters.

3.2 Connection between letters and numbers

We only identified two levels regarding the connection children establish between letters and numbers. Children who confused letters and numbers belong to the first level, which can be subdivided into two. Most children of the first sub-level did not know any letter or any number. For these children, one or several numbers constituted a readable word. The other sub-level comprised the children who knew some letters and some numbers, but who still confused both. Some of these children knew

all the letters in their first name and several numbers, while some only knew the initial letter of their first name and some numbers. The difference between the children of the two sub-levels had to do with the knowledge of letters and numbers and not with the connection they established between them. This difference influenced the children's answers when we asked them: *What is this* (by showing them a card with numbers)? The children based their answer on their knowledge of numbers. For cards with numbers, Cindy, 6 years old, answers: *Fifty-five*; Vanessa, 7 years old, answers: *Three, four, zero*; Keven, 6 years old, answers: *Six* and Joëlle, 5 years old, answers: *Five*. When we asked these children if they are words or letters, they merely answered that the card was "*good to read*".

The second level is characterized by the distinction the children make between letters and numbers. At that level, even when the children did not know any particular letter or number, they already knew that they had different functions. According to Ferreiro and Teberosky (1986), it is at that time that the children distinguish the letters that are good to read from the numbers that are used for counting. In our research two children from Québec and three from Brazil discriminated letters from numbers accurately. Mathieu, 4 years old, borderline intellectual disability did not accept that we mix up letters with numbers. He did not attribute a specific function to numbers, but he knew that they were not words. Pierre, 6 years old, mildly disabled also made the distinction between letters and numbers and said that the latter *are not good to read because they are numbers*. When we asked him to say why we cannot read cards with numbers, he pointed his index at the calendar hanged on the wall and said: *They are the same*. This answer shows that the child not only discriminated letters from numbers, but he also attributed a specific function to numbers, different from that of letters. Even when the children were unable to clarify these functions, they had a notion of the relation between letters and numbers and they knew that it is not with numbers that we can write. This result indicates that these children made a thorough discrimination of written material. We also noticed that the children who made the distinction between letters and numbers were those who were quite ahead regarding the classification criteria of written material. They benefited from a high level of stimulation to reading.

As the comprehension of the relation between the letters and the numbers is related to a type of knowledge that involves intellectual construction rather than explicit teaching, we can link this knowledge to the children's operative abilities. We noticed that it is the children whose disability is less severe who show this type of knowledge.

3.3 *Knowledge of letters*

We have classified the children in five levels in the knowledge of letters. The most elementary level corresponds to children who did not know any letter. Next come the children who knew only the initial letter in their first name, whether they could name the letter or merely recognize it without being able to name it. Then, there are the children who knew the initial letter of their first name plus a few other letters. These children knew the name of three to five letters and were able to name other

letters, rather inconsistently. At the fourth level are the children who knew all, or most letters in their first names plus a few others, often linked to the first names of other people. The highest level corresponds to the children who consistently name correctly all the letters in their first names and several others.

In this study six children from Québec and three from Brazil were at the most elementary level, nine others (six from Québec and three from Brazil) are divided up between three intermediate levels, two per level, and finally, five children (three from Québec and two from Brazil) were at the highest level. The children that were at the most elementary level were all among the youngest. The children in the three intermediate levels were either the oldest, or those who benefited from an average to high level of stimulation. The children from Québec whose level of knowledge of letters was the most advanced were those with a mild disability or with a borderline disability and who also had an average to high level of stimulation. The youngest was 6 years old. These two from Brazil were the oldest ones and had the best stimulation of lecture. We concluded that children with a mild disability can be at the intermediate levels in the knowledge of letters around the age of six or over, provided they benefit from an average to high level of stimulation. It seems that a combined effect of age, degree of disability and level of stimulation play a role in the acquisition of that type of knowledge.

4. CONCLUSIONS.

Children with intellectual disabilities develop, in many respects, like their counterparts without intellectual disabilities in the early stages of literacy acquisition. By observing the carrying out of tasks aiming at interpreting fragments of written language and the relationship between letters and numbers, we concluded that they differ mostly by their lack of consistency when interpreting written language. The fact that some children use, like their counterparts without intellectual disabilities, classification criteria of written material, indicates that they are able to make constructions by implementing their operative functioning. So, we are entitled to suppose that these children have developed cognitive tools that make them more efficient with regard to the requirements of the task. These classification criteria are not directly linked to the knowledge of letters. Actually, among the children having used these criteria, two have a good knowledge of letters, but one child does not even know his name's initial. Also, the differences cannot be attributed to the language spoken, Spanish, French or Portuguese, as all children used the same kinds of criteria, but rather to cognitive and age differences, as well as their opportunities to experience with writing. But we also found that age and stimulation to reading influenced the acquisition of the knowledge of letters.

Our findings, in spite of the specificities of our respective fields, coincide with Ferreiro and Teberosky (1986). As a matter of fact, our divergences do not contradict their findings and insights, but rather make up for a complementary, richer research across boundaries.

The difference in consistency using criteria for interpreting writing became more evident when we compared the children we observed in Quebec against the Normal

children in Argentina described by Ferreiro and Teberosky (1986). Brazilian children were more consistent in the use of their criteria than Quebec ones, although less consistent than their counterparts without intellectual disabilities.

Within groups, age had no bearing on the evolution of learning, but it was an important factor when we compared both groups with intellectual disability.

The difference between the children in Brazil and in Quebec could be related to age, and Brazilian children were then favored by their longer time in school, more literacy contact opportunities, and formal schooling. Classifying criteria disappears with the mastery of writing. Nevertheless, the opportunities of contact with writing experiences favor the development of these criteria.

Our findings also evince the relative slowness in the writing acquisition processes by the children with an intellectual disability. Although the children in Brazil had more than 3 years of schooling, they proceeded in ways that were similar to the preschool children without intellectual disabilities in their strategies towards literacy.

REFERENCES

- Cousin, P. I., Aragon, E., & Rojas, R. (1993). New conversations about literacy: working with special needs students in a middle-school classroom. *Learning Disability*, 16, p. 282-298.
- Doise, W & Mugny, G. (1981) *Le développement social de l'intelligence*. Paris: InterÉditions.
- Ferreiro, E. (1993). *Com todas as letras*. São Paulo: Cortez.
- Ferreiro, E. (1986). What is written in a written sentence? A developmental answer. *Journal of Education*, 160(4), p. 25-39.
- Ferreiro, E., & Teberosky, A (1986). *A Psicogênese da língua escrita*. Porto Alegre: Artes Médicas.
- Fitzgerald, J., Roberts, J., & Schuele, M. (1991). Emerging literacy development of preschool handicapped children. Paper presented at the 41st Conference of the National Reading Conference, California.
- Gomes, A., & Vieira de Figueiredo, R. V. (2004). Apprendre en dépit des appartenances sociales? In: Poizat, D. (Ed.), *Educacion et handicap*, v.01, p. 137-147. Lyon: Editions éres.
- Gomes, A., & Vieira de Figueiredo, R. (2003). L'apprentissage de la lecture d'élèves porteurs de retard intellectuel issus de classe moyenne ou défavorisée: étude comparative. Colloque international de l'AFEC. Lyon. In Compact Disc.
- Inhelder, B. (1963). *Le diagnostic du raisonnement chez les débiles mentaux* 2ième édition augmentée, Neuchâtel: Éditions Delachaux & Niestlé.
- Katims, D. (2001). Literacy assessment of students with mental retardation: An exploratory investigation. *Education and training in mental retardation and developmental disabilities*, 36(4), p.363-372.
- Katims, D. S. (1994). Emergency of literacy in preschool children with disabilities. *Learning Disability Quarterly*, 17, p.58-69.
- Katims, D. S. (1991). Emergent literacy in early childhood special education: curriculum and instruction. *Topics in Early Childhood Special Education*, 11(1), p.69-84.
- Klenk, L. (1994). Case study in reading disability: an emergent literacy perspective. *Learning Disability Quarterly*, 17, p.33-56.
- Paour, J. L. (1988). Retard mental et aides cognitives. In J.P. Caverni, C. Bastien, P.Mendelson et G. Tiberghien (Eds.). *Psychologie cognitive modèles et méthodes* [p.191-216]. Grenoble: Les Presses de l'université.
- Piaget, J. (1957). *Le jugement moral chez l'enfant*. Paris: Puf.
- Salustiano, D. A., Vieira de Figueiredo, R., & Fernandes, A. C. (2004). Mediações da aprendizagem da língua escrita por sujeitos com deficiência mental. In S. H. V. Cruz & M. Petralanda, *Linguagem e educação da criança* (p.317-329), Fortaleza: Editora da Universidade Federal do Ceará.

- Vieira de Figueiredo, R. (2004). El aprendizaje de la lengua escrita en sujetos con deficiencia mental. IV Congreso Internacional sobre adquisición de las lenguas del estado. Salamanca: Universidade de Salamanca. In Compact Disc.
- Vieira de Figueiredo, R. (2001). Leitura, Cognição e Deficiência Mental. XV Encontro de Pesquisa em Educação do Norte e Nordeste. São Luis, Ma. In Compact Disc.
- Vieira de Figueiredo, R. (1999a). Representação da escrita pela criança portadora de deficiência intelectual. *Revista Educação em Debate*, 1(37), p. 62-76.
- Vieira de Figueiredo, R. (1999b). O texto serve para ler, o desenho para olhar: a interpretação da criança com deficiência mental. *Revista Teoria e Prática da Educação*, 2(4), p.45 - 63.
- Vieira de Figueiredo Boneti, R. (1995). L'Emergence du langage écrit chez les enfants présentant une déficience intellectuelle. Doctoral thesis. Québec: Université Laval.
- Vieira de Figueiredo Boneti, R., & Saint-Laurent, L. (1996). Le développement du langage écrit chez les enfants présentant une déficience intellectuelle: L'interprétation du prénom. *Archives de Psychologie*, 64, p.139-158.
- Vygotsky, L. (1986). *A formação social da mente*. São Paulo: Martins Fontes.