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WRITTEN SPEECH DEVELOPMENT: A CULTURAL-HISTORICAL APPROACH TO THE PROCESS OF READING AND WRITING ABILITY ACQUISITION[1]

The author presents his own model of reading and writing ability development based on Lev S. Vygotsky's cultural-historical theory. The process of learning to read and write is regarded as a process of forming a new higher mental function. The function, termed "written speech", is the effect of building a relation between speech sounds and graphic signs of writing and meaning. Written speech is created during a complicated and long-term developmental process. Just as the structure of every higher mental function, psychological function organization activated during reading and writing (the written speech structure) is changed during its maturation. Observed quality changes of written speech structure are the basis for identifying four specific stages in written speech development: (1) the natural stage, (2) the "naive" stage, (3) the outer stage, and (4) the inner stage. The paper also presents the process of written speech development in the context of human psychological system development. From this perspective, written speech is always dominated by a central mental function, such as perception, memory or thinking.

Introduction

Contemporary experimental research demonstrates that apes are capable of learning and using a fairly complex sign system (Fouts & Mills, 1999). The use of implements and the social inheritance of behavior that sets specific groups of apes apart from others (Fouts & Mills, 1999, pp. 400-413) may be viewed as embryonic forms of human behavior (Vygotsky, 1971a, pp. 203-204), as *Homo sapiens* owes its existence to evolution towards broadening the scope of the use of signs. The process of gradually combining the perceptible world with ever larger areas of the "world of meaning", which has been observed in human phylogenesis, has been accompanied by changes in the mental system organization. New and typically human forms, termed

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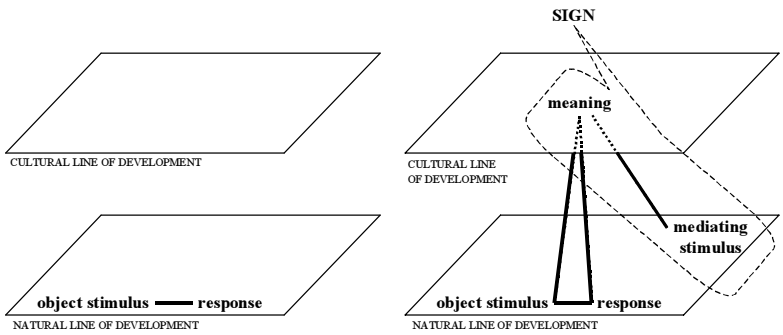
higher mental functions, started playing a dominant role within the system. These functions are manifested in sign-mediated forms of behavior (Vygotsky, 1978, pp. 13-26, 59, 99). The predominance of behavior directed by the meaning of a stimulus rather than by its objective features has made human action independent of perceived reality, and – as stated by Vygotsky – has placed the human in the position of an individual who consciously influences the form and the course of physical and social phenomena (1971b, pp. 100-111).

Higher mental functions as a manifestation of the cultural line of human development

In the course of human development, innate behavior is increasingly extended, evolving from simple reflexes to complex habits or self-assimilating action schemes (Piaget, 1966, pp. 14-17). Direct stimulus-response relations are the basic elements in constructing that behavior. The emergent relations are modified by an innate conditioning mechanism. Next to *natural* changes in behavior organization (i.e. those which are determined by innate mechanisms) there also exists another line in human development, termed the *cultural line* by Vygotsky (1971b). It introduces artificial (as opposed to natural) elements into behavior organization. According to Vygotsky (1978, p. 88), these elements are the achievement of a system broader than the system of individual functions; they are the part of the history of the social formation of child personality. Clearly, the elements referred to are cultural means, i.e. signs that break the direct stimulus-response relation. For an observer, mediated individual behavior does not differ from direct reactions. What changes significantly is the mental organization of the behavioral process, i.e. its structure. One associated relation (object stimulus-response) that occurs in direct reaction is replaced by two other relations (object stimulus-sign and sign-response) in a mediated reaction (Vygotsky 1971b, pp. 90-91) (see Fig. 1).

Mental organization of behavior in which there is no direct connection between stimulus and response is termed higher structure by Vygotsky (1971b, pp. 97-98). Its

Figure 1. Relations between elements of direct and mediated reaction (compiled by J.S., based on Vygotsky, 1971b, p. 90)



characteristic make-up offers a number of possibilities, including the mastery[2] of an individual's own behavioral process (Vygotsky, 1971, p. 99). Whereas the action of an organism is guided directly by object stimuli in natural forms of behavior (Leontiew, 1985, p. 11), in its higher forms the sign precedes response as a reaction to an object stimulus. It follows that action emerges in connection with the sign, i.e. that the subject acts first with a view to the sign rather than to the object. Hence, behavior based on a higher structure is liberated from the influence of the overall situational arrangement, and the subject becomes capable of an independent choice of how to react based on use of signs (Vygotsky, 1971, p. 100).

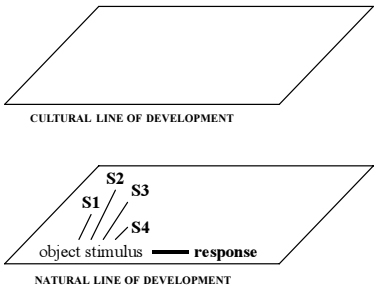
The developmental stages of higher mental functions

The mental system is constituted by two types of functions. The organization of elementary mental functions rests on a primitive, or natural, structure, whereas those developed on the basis of higher-order structures are referred to as *higher mental functions*. These develop out of elementary functions (Vygotsky, 1978, p. 107). The two types are separated by an area of numerous primitive transitional forms. This is because higher-order structures are not discovered by the child independently, nor do they result from a simple imitation of adults (Vygotsky, 1978, p. 105). Instead, they result from consecutive qualitative changes. For Vygotsky, the emergence of these changes is the prime criterion for distinguishing the characteristic stages in the development of higher mental functions (Vygotsky, 1978, p. 104).

The natural stage

According to Vygotsky (1978, p. 107), the sign is not differentiated from the stimulus in the natural stage of the development of higher mental functions. Instead, the two jointly constitute a *syncretic structure*. Hence, even the stimulus itself is not distinguished within the structure of stimuli with which it co-occurs. The occurrence of the stimulus provokes a natural reaction, based on a conditional or unconditional reflex (see Fig. 2.)

Figure 2. The higher mental function structure in the natural stage; S1, S2, S3, S4 – accompanying stimuli (compiled by J.S.)



[2] The original term used by Vygotsky (î âëŕäÍíčÍ) should be interpreted as "subjecting to the control of will". The English term "mastery" seems to be the closest in meaning.

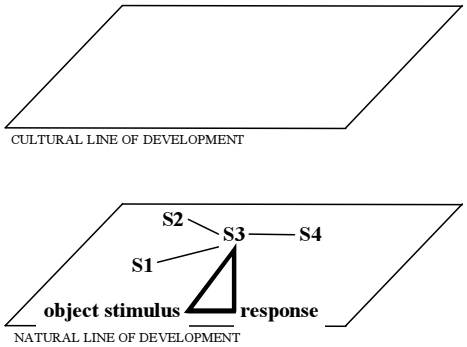


Figure 3. The higher mental function structure in the "naive" stage; S1, S2, S3, S4 – accompanying stimuli (compiled by J.S.)

The "naive" stage

The essential characteristic of the "naive" stage is that the sign is now perceived and distinguished as a significant element in the structure of stimuli, originally a syncretic one (Vygotsky, 1978, pp. 148-149). Secondly, although the sign becomes an element mediating between the stimulus and the response, understanding gained through the sign function only results from a naive interpretation of prior experience and rarely touches upon the essential function (Vygotsky, 1971b, pp. 148-152). This is because the response is directed by the meaning of the mediating stimulus, which arises out of its associative relations with other co-occurring stimuli (Vygotsky, 1971b, p. 149). "Naive" meaning is thus individual rather than social in origin (see Fig. 3.).

The outer stage

For Vygotsky, the use of external signs in the course of performing inner activities is symptomatic of the entry of the higher mental function into the outer stage of development (1971b, p. 152; 1971a, p. 201). In this stage, the individual attempts to channel his/her reactions into a specified course by relying on a suitable organization of external mediating stimuli (Vygotsky, 1971b, p. 152). Thus, which s/he understands the nature of the sign, s/he is incapable of using it outside real activity (Vygotsky, 1971b, pp. 152-153). For example, in the outer stage of development of numeracy when the child uses his/her own fingers (or e.g. the abacus) to solve arithmetical problems (Vygotsky, 1971b, p. 156).

The inner stage

The structure of behavior that is mediated by external signs is internalized in the inner stage. The subject stops relying on external signs for help and seems to be returning to direct behavior. However, a radical improvement in the effectiveness of his/her actions suggests that the return is merely illusory (Vygotsky, 1978, p. 114). The individual now uses mediated internal operations that have a completely new

structure. For example, a child applies memorization techniques. An internal system of mediating stimuli frees him/her of the need to rely on the mediation of objects in the process of memorization.

Learning to read and write as a process of developing a higher mental function

Reading and writing may be viewed as mediated behavior, since they involve a direct verbal message being replaced with a sequence of graphic signs. Under this interpretation, development of literacy is associated with the development of a new higher mental function, and – by the same token – is part of the process of forming an entire system of such functions peculiar to humans (see Dziurla's article in this issue). Drawing on Vygotsky's assumptions concerning human mental development, I here present my own proposal for identifying the stages of learning to read and write, viewed as developmental stages of a higher mental function.

In the natural stage, the graphic signs of the script are like the elements of a syncretic structure of diverse stimuli with which they co-occur, i.e. as incomprehensible pictures. Unable to recognize the true meaning of writing at this stage, the child only perceives its graphic features, and if s/he hits on the idea of "writing", s/he attempts to reflect those features on a picture. The communication of a verbal message is thus interpreted as that of a graphic image. However, the specific elements of the communication are not meaningful for the child as they are for the sender.

In the "naive" stage of reading and writing development, the child already knows that objects can have their written names and can match objects with their written names as well as utter the written names of objects. The child initially recognizes words based on contextual features (e.g. making out the names of the various products on the basis of the color of packaging or the color of the graphic design). Then, s/he uses such clues as graphic features of the words themselves (e.g. the shape of their outer perimeters, the length, the shape of the first letter, etc.) (Gough, 1996, p. 5; Clark & Uhry, 1995, p. 10; McGuinness, 1997, p. 119).

The "naive" approach to writing is manifested primarily by the fact that the child does not understand the essential relationship between the spoken and the written word and recognizes words solely on the basis of their appearance, without suspecting that there exists a graphic representation of individual phonemes (Clark & Uhry, 1995, p. 12; see also Dąbrowska, 1995, p. 329, Bielaczyc, 1999, p. 2). Consequently, "naive writing" consists in reproducing the complete image of a word, viewed as a property of the object that the word names. This stage in reading and writing development best fits the category of the logographic phase, which was identified by Uta Frith (1985; after Snowling, 2000, p. 64; see also Clark & Uhry, 1995, pp. 12, 15; Dąbrowska, 1995, p. 329; Bielaczyc, 1999, p. 2; Selikowitz, 1999, p. 60).

The characteristic feature of the outer stage is that the internal operation of formulating or receiving a written communication is mediated by external signs, i.e. speech sounds. Hence, the stage becomes highly complex in developing reading and writing abilities. Next to the evolution of the sign function of the script, it also covers

the process of acquiring the abilities to analyze, construct and recognize it as a graphic representation of oral speech. During that process, the child learns the nature of the relationship between oral speech and writing, and in its final stages s/he gains the ability to read out written texts and write spoken texts.

The literature on the development of reading and writing abilities contains detailed descriptions of the stages in which the child discovers the relationships between oral speech and writing. The first such stage is the alphabetic, or phonological, phase. In that phase, the child gets to know the links between letters and sounds, and learns to spell out words, and then to recognize them (Clark & Uhry, 1995, p. 13; Dąbrowska, 1995, p. 329). Due to breaking this sort of phonological code (hence the name of the phase) in the course of reading ability development, for the first time the child acquires the ability to read words that s/he has never seen before. According to Frith, in the alphabetic phase children first acquire the writing ability phonologically (i.e. based on the letter-phone relationship; see above), from left to right, writing down every letter separately, and only then they start reading using the alphabetic strategy (Frith, 1986; after Clark & Uhry, 1995, p. 16). This is confirmed in case descriptions in which children wrote down words that were spelled phonetically but could not read them afterwards.

The alphabetic phase is followed by the orthographic phase in which letter models and the associated sounds begin to play a critical role. When reading a word, the child does not analyze it phonologically letter by letter, but instead recognizes larger units of meaning, such as *-ness*, *co-* or *-ful* (Dąbrowska, 1995, p. 329; Bielaczyc, 1999, p. 2; Clark & Uhry, 1995, p. 13). The child is able to read lesser known or new words by using the strategy of analogy, that is comparing the new word, or part of it, with familiar letter sets. In this way, the child acquires the ability to read words in which there is no direct phone-letter correspondence. As in the earlier phases, the development of reading ability and writing ability is interdependent. Frith (1986; after Clark & Uhry, 1995, p. 17) points out that, in the period under study, children first begin applying the orthographic principle in reading and only then in writing.

In this way, the stage in literacy development, i.e. the stage in which the written sign as a speech mediator is constructed and recognized, is concluded, and the inner stage is initiated. Improving the reading and writing technique may be viewed as the first symptom of the "inward growth" of the operation of receiving and formulating written utterances. Within Jeanne Chall's (1983; after Clark & Uhry, 1995, p. 11) framework, this period is referred to as the confirmation stage, confirming what the child had acquired in the earlier decoding stage. The child becomes more assured of his/her new reading and writing abilities and of the ease and fluency of their use. Chall believes this stage to be critical for further development of literacy skills. She suggests that the "confirmation" stage is decisive for the content in reading and writing to become the figure for the child or whether the line of the development of the two abilities breaks down, leaving the child – to use Chall's words – "glued to writing". A similar critical moment in acquisition of reading and writing abilities by children was discovered experimentally in the 1930s by Daniel B. Elkonin, a Russian researcher and Lev S. Vygotsky's student.

Elkonin observed that, initially, reading aloud is "dead", as characterized by impoverished intonation (Elkonin, 1998, p. 17). He suggested that this was due to difficulties in

written text comprehension as well as the reader's need to subordinate the sounds to the rules of grammar rather than to those of oral speech. Elkonin's research demonstrates that a change of the dominant aspect of reading occurs between the 3rd and 4th school grade, when technique gives way to comprehension (Elkonin, 1998, pp. 18-21). Thus, the initiation of script internalization results in many significant qualitative changes in the course of reading and writing activities. Let us try to discover what the process is about.

Due to its special nature, the script forever remains an external sign in its graphic form. What is internalized in the last developmental stage of reading and writing are the rules of constructing and decoding the meanings of written utterances. They organize mental functions into an entirely new system, since use of the script requires: (1) a suitably developed abstracting ability needed in operations performed on symbols of speech sounds, whereby the sounds themselves are also symbols (so-called secondary symbolization) (Vygotsky 1971a, p. 345; Elkonin, 1998, p. 7); (2) imagining the recipient (or the sender) of the written utterance and the situation in which the child finds him/herself (Vygotsky 1971a, p. 344; Elkonin, 1998); (3) initiating a motive for formulating an utterance, in contrast to a conversational context in which the child's utterance is simply a reaction to the conversational partner's utterance (Vygotsky 1971a, p. 346); (4) initiating a new sensory-motor system, i.e. visual perception combined with precise hand movements (Elkonin, 1998) (for a more detailed exploration, see Jabłoński, 2000). The function which organizes the mental process in such a way is termed *written speech* by Vygotsky (1971a). It involves a new form of the reading and writing activity, whereby the individual is capable of reading and understanding texts without the need to translate them into the sound form, and of recording utterances without first formulating them orally.

Reading and writing as internalized sign operations undergo further development. For example, Jeanne Chall (1983; after Clark & Uhry, 1995, p. 11) whose work was already quoted above identifies three stages of development during the period when they are a learning tool. The first stage begins about the age of 9 and ends at about 14. In this stage, a new motivation to use the script appears: the child starts reading in order to obtain information and – we add – to write in order to convey information. The next stage is the adolescence period (14-18 years of age). The most distinctive feature of this period is the ability to account for various points of view in written utterances. In the third stage, the individual starts reading selectively, formulating his/her own opinions about the contents, and building a knowledge system based on the information gained during reading. S/he also acquires the ability to use the script to present his/her own selected views.

The position of the written speech in the structure of higher mental functions

According to Vygotsky, mental functions do not develop separately. At every stage of development they form a system with a characteristic structure (2002a, pp. 76-77). The central element of that structure is always the mental function which predominates in a given period. This means that all other mental functions play a subsidiary role with re-

spect to the dominant function and manifest themselves only "through" the central function (Vygotsky, 1971c, p. 522; see also Dziurla's article in this issue).

Because written speech has no predominance period in the structure of mental functions, it is always subordinated to some other function. In early childhood which – according to Vygotsky – covers the period from age one to three (Vygotsky, 2002a, p. 71), a central developmental formation, *perception*, emerges for the first time out of non-differentiated mental functions of the infancy period (Vygotsky, 1971a, pp. 322-323; 1971c, p. 522; 2002b, p. 124).

During this time, written speech undergoes the natural stage of development. Understanding script signs is not connected with the meaning that the culture allocates to those signs, but rather with their sense as elements of a syncretic structure of diverse stimuli. In this way, syncretic, or holistic, perception – which is characteristic of early childhood – is manifested (Vygotsky 1971a, p. 96). In other words, written speech in the natural stages consists in a non-differentiated perception of the graphic signs of the script.

Vygotsky (2002a, p. 71) defines the kindergarten age as approximately the period from 3 to 7 years of age. This period is associated with the central role of memory in the structure of higher mental functions (Vygotsky, 1971c, p. 523; 1971a, p. 323). During that period, written speech undergoes the "naive" stage of development. The subordination of that function to memory becomes obvious when we realize that reading and writing in the naive stage is about recalling by the child a suitably selected word meaning based on its graphic image or the graphic image of a word based on its meaning. The structure of written speech is formed by script signs that are related by meaning without the mediation of oral speech (see above).

Vygotsky (2002a, p. 71) believes that the crisis of age seven marks the beginning of the school period. The child entering the outer stage in the development of written speech is also approximately 7 years old. At this age, *voluntary attention* and *logical memory* predominate (Vygotsky, 1971a, p. 323). That is readily used by our culture, which subjects the child to a guided teaching process. Because script meaning is still available through the mediation of oral speech, reading (and writing) in the outer stage is primarily about the careful matching of speech sounds with graphic signs (or *vice versa*), combined with recalling the matching rules.

As suggested by a number of authors, at about 10 years of age children will usually have mastered the reading and writing technique, and an *understanding* of the meaning of the written text starts to play a dominant role in the use of written speech (e.g. Chall, 1983; after Clark & Uhry, 1995, p. 11; Elkonin, 1998, p. 17). Within Vygotsky's framework, the next developmental stage (adolescence), which is linked with the predominance of thinking (Marchow, 2000, pp. 55-56), starts only three years later. Hence, it is difficult to establish firmly which function written speech is subordinated to in the inner stage. The claim that inner speech is the central function in that stage should be approached with caution. Inner speech is a verbal aspect of thinking and can be treated as internalized oral speech. In its developed form, written speech would constitute a function responsible for translating inner speech into writing and *vice versa*.

Another consequence of presenting written speech as an element of a holistic structure of higher mental functions is the necessity to account for its developmental

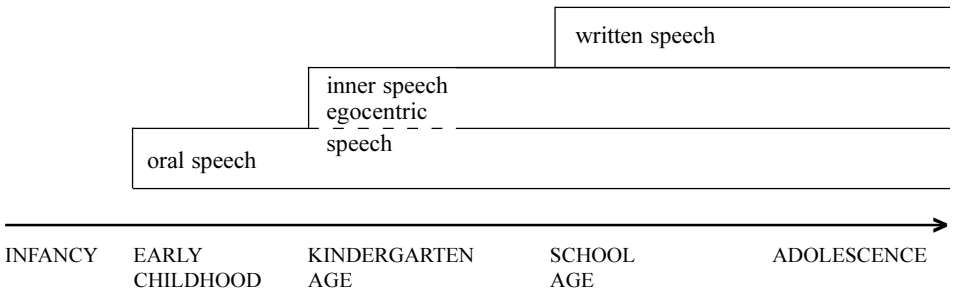


Figure 4. Levels of speech development (compiled by S.J.)

and structural link with oral speech. Viewed from the developmental perspective, written speech is the most advanced form of speech use (see Fig. 4.).

Its most basic form, i.e. oral speech, is first the child's tool of influencing the social environment (see Marchow, 2000). It requires the ability to use meaningful sounds involving the auditory and articulatory organs as well as understanding non-verbal messages in the form of intonation, stress or gesture (Jabłoński, 2000, pp. 78-79). Oral speech takes place in the presence of an interlocutor, and its development is initiated by unconscious sentence perception.

Inner speech (or verbal thinking) is a higher speech form. Firstly, it results from internalizing inner speech and "imposing" it on originally non-verbal thinking (Jabłoński, 2000, pp. 80). Secondly, compared with oral speech, it performs a more complex function, namely it organizes the actions of the subject (Vygotsky 1971a, p. 199). In contrast to oral speech, inner speech is characterized by a different structure: (1) it is maximally condensed due to its referential nature (e.g. it contains elliptical expressions), (2) its syntax is composed almost exclusively of predicative sentences, and (3) it uses idiomatic expressions and other expressions that are comprehensible only to the subject (Vygotsky 1971a, p. 347).

The subject starts realizing the make-up of speech and the course of his/her own speech through mastering the skill of using the script. Written speech as a tool for realizing one's own mental processes is the highest speech form. Next to the features that were listed above, it should also be more elaborate and complex, and thus more internal, than oral speech, in order to capture the entirety of the imaginary message context. The syntax of written speech must be elaborate and finished, and any content – due to the lack of possibilities of conveying a non-verbal message – must be encased in a specified grammatical and syntactic structure (Vygotsky 1971a, p. 347; see also Marchow, 2000).

The structural relationship of written and oral speech is manifested in the outer stage of the development of written speech. As mentioned above, the operation of formulating or receiving a written utterance is performed with the mediation of speech sounds. Before graphic script signs are directly linked with meaning, they first "borrow" meaning from oral speech (see Fig. 5.).

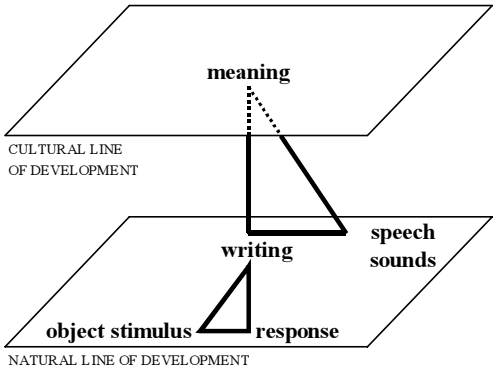


Figure 5. The written speech structure in the outer stage (compiled by J.S.)

Conclusion

The concept of higher mental function development is derived from one of Vygotsky's earlier periods in constructing a theory of consciousness based on word meaning (Czub, 2000, p. 72). Yet its application is promising in constructing a developmental model of the reading and writing ability as presented above.

First, the model approaches reading and writing as two aspects of the same mental function, and hence encompassing them in one theoretical framework. Such an approach is rare in the literature. The few researchers who do describe the development of the reading ability as closely related to the development of the writing ability include Uta Frith (1985; see also Snowling, 2000). On the Polish scene, Anna Brzezińska (1992, pp. 138-143) describes reading and writing as abilities that are mastered by the child in conjunction.

Secondly, the model approaches reading and writing comprehensively. It jointly accounts for the development of the child's use of graphic sound representations, the development of written text comprehension and the understanding of the very activity of reading and writing. Even though Philip B. Gough's framework (1996, p. 4) identifies two aspects of reading, i.e. decoding and comprehension, Margaret J. Snowling (2000, p. 86) claims that most of the reading ability development models ignore the role of understanding the meaning of the words that are being read. We note that learning to write is not mentioned even there.

Thirdly, the criteria of distinguishing reading and writing ability in the developmental model described above are the qualitative changes in the structure of functions involved in the two activities. This permits explanation (rather than mere description) of diverse reading and writing strategies adopted by children in a given stage of the development of these abilities. Also, it becomes possible to approach the development of reading and writing as a continuous process, in which the changes that occur follow from previous changes.

Fourthly, the literacy function has been presented against the background of the entire mental system, which permits a better understanding of its inner conditions, particu-

larly in cases where the development of the function has been disturbed. Viewed from this perspective, it is no surprise to see the link between correct reading and writing development on the one hand, and correct speech development on the other. And yet the link has only recently been explicitly highlighted in the literature, since it has been recognized as one of the main causes of the dyslexia of language deficits (e.g. Goldsworthy, 1998).

The cultural-historical approach to the development of the reading and writing ability, which was outlined in this article, accounts for many aspects of literacy which have been omitted in the frameworks cited in the literature. It therefore seems to be an attractive proposal, but awaiting much further theoretical research and empirical verification.

(*translated from Polish by Piotr Kwieciński*)

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