INTERNATIONAL REPORTS ON LITERACY RESEARCH

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Canada

International research correspondents, Linda M. Phillips and Christian Beaulieu

Research correspondent Linda M. Phillips, in collaboration with Christian Beaulieu, reports on the Canadian Language and Literacy Research Network (CLLRNet). The CLLRNet is a member of the Networks of Centres of Excellence and is funded by the Canadian Government in the Medical, Natural, Engineering, and Social Sciences. Since its establishment in the fall of 2000, CLLRNet has grown to include 120 researchers and more than 175 students from 11 disciplines at 29 institutions across Canada. The vision of CLLRNet is to improve language and literacy skills in Canadian children, enabling them to contribute more effectively to the social and economic life of their communities. This vision beckons language and literacy educators to help understand and address these challenges. The research projects within CLLRNet are organized around five integrated themes: (1) biological factors underlying the development of language and literacy skills; (2) sensory processes and environment; (3) language development; (4) literacy acquisition and development; and (5) social, economic, and program influences (family, schools, and communities).

Although several major studies are presently being conducted at CLLRNet, this report focuses on three studies.

1. *Across themes 1 to 4: The use of magnetic resonance imaging (MRI) to investigate the neurodevelopment of children as ground-breaking research.* Reading is a complex cognitive skill that requires the coordination of multiple regions of the brain. Although functional activation studies highlight the cortical brain regions associated with cognitive tasks such as reading, they do not directly address the underlying neural connections necessary for efficient performance of this task. Adults with reading disabilities have demonstrated lower white matter connectivity, but it is not known whether this relationship between neuronal wiring and reading performance is also evident in younger readers. Thirty-two children between the ages of 9 and 12 years completed the Word Identification subtest of the Woodcock Reading Mastery Test with scores ranging from 72 to 129 and underwent a noninvasive MRI brain scan. An index of brain connectivity derived from diffusion tensor MRI (fractional anisotropy) was correlated, using SPM software, with reading ability. Preliminary findings suggested that there were correlations with regional brain structures over a wide range of reading ability even within a population of readers not evidencing problems in learning to read. A follow-up study on a well-defined

group of children categorized as dyslexic is in progress.

Functional neuroimaging studies of precursor skills for reading in dyslexic and nondyslexic adults have implicated a complex brain network that appears to be dominant in the left hemisphere around the peri-sylvian region. This temporal network yielded less activation in dyslexics presented with a demanding phonological task. A "disconnection syndrome," in which the functional connectivity of the relevant cortical networks in the left hemisphere is disrupted, has been proposed as a potential basis for reading difficulties. A more direct measure of brain connectivity, namely diffusion tensor magnetic resonance imaging (DTI), has demonstrated a correlation between the microstructural integrity of the left temporoparietal white matter and reading ability in dyslexic and control adults. However, it was not known whether these neural differences were present at an earlier age during neurodevelopment. Noninvasive functional MRI has made it possible to study children and, only in the last five years, has demonstrated a reduction of left temporoparietal activation in children with dyslexia, which suggests that this brain abnormality may be fundamentally related to early development of language and reading disorders.

The DTI study in Biomedical Engineering at the University of Alberta, Edmonton, showed the importance of regional connectivity in left temporoparietal white matter for enhanced performance in healthy children. In addition to functional and structural differences, alterations in brain chemistry have been shown by magnetic resonance spectroscopy in adult dyslexics. There have been encouraging reports that brain activation patterns and lactate levels in the left hemisphere were altered with intense therapy focused on improving reading skills. These noninvasive brain imaging studies motivate some researchers to speculate about how elements of brain structure and function may predispose some individuals to encounter difficulties with reading and how the brain can be modified by environmental intervention.

2. *Themes 4 and 5: Literacy acquisition and family literacy.* In Canada, family literacy has been referred to as a research diaspora. There has been a lack of consensus on fundamental elements in the state of knowledge in family literacy. Major reviews of family literacy and intergenerational literacy within families have concluded that existing research on family literacy is inadequate, but the reviews differed on fundamental presuppositions such as potential benefits of family literacy programs and concerns

that such programs detrimentally change the ways families interact with their children.

There has been a dearth of rigorous studies on the efficacy of family literacy programs. Researchers at the Centre for Research on Literacy at the University of Alberta are currently engaged in the fifth year of a longitudinal, quasi-experimental, cross-sectional, control-group study extending across six years of an intervention program. In addition to the traditional measures used in quantitative research, the group conducts extensive parent interviews on what parents say they want to learn in order to help their children. The specific objectives are to determine whether beneficial effects on (a) children's literacy development, (b) parents' literacy development, and (c) parents' ability to assist in the development of their children's literacy accrue from the use of and participation in the Learning Together: Read and Write With Your Child Program. Further concurrent objectives are to (d) document parents' engagement in responding to and scaffolding their children's language; (e) report what parents say about their literacy experiences and perceptions prior to, during, and after their participation in the program; and (f) report parents' literacy experiences and observations of their children now in school. Related and ongoing studies in themes 4 and 5 include a study at Memorial University of Newfoundland, St. John's, and the University of Calgary, Alberta, on how to foster preliteracy skills through parental interactions as well as a study on how to improve children's literacy levels through work with families at the University of Prince Edward Island, Charlottetown.

3. *Theme 4: Second-language cluster.* The third series of studies within theme 4 include the work of what is referred to as the second-language cluster. Cross-language research on syntactic awareness highlights the limitations of some of the peripheral aspects of syntax, such as knowledge of past-tense forms and choice of prepositions rather than the organization and distribution of syntactic units. Research at the University of Toronto in Ontario suggests that syntactic awareness plays a limited role in the literacy development of bilingual children. Researchers at Carleton University (Ottawa, Ontario), McMaster University (Hamilton, Ontario), the University of Moncton (New Brunswick), the University of Ottawa, Queen's University (Kingston, Ontario), the University of Toronto, Wilfrid Laurier University (Waterloo, Ontario), and the University of Western Ontario (London) are conducting studies that focus on the following areas:

- the early identification of children at risk for reading difficulty among students taught to read in their second language;
- the consequences for the development of fluency in reading two languages;
- how a bilingual person's two languages interact during reading;
- the importance of phonological processing in reading the second language (L2), regardless of the first language (L1); and
- the identification of universal and language-specific factors related to the similarity of L1 and L2 that influence the transfer of reading skills in bilingual children.

CLLRNet operates under a theory described as dealing with two classes of influences on language and literacy development: genetic and environmental. Researchers have partnered with community groups, governmental departments, and industry in order to bring science to bear on practice and intervention research. They bring a breadth and depth of understanding to Canadian research, policy, and practice that would not have been possible without the Canadian Language and Literacy Research Network. Visit http://www.cllrnet.ca to learn more about the language and literacy work of the network. For a complete set of references, see Snook, Paulson, Roy, Phillips, and Beaulieu (in press).

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France

International research correspondent, Jacques Fijalkow

Research correspondent Jacques Fijalkow reports on a January 2005 international colloquium in Angers, France, entitled Notation for Thinking: Developmental and Didactic Approaches. Summarized here are three representative papers presented by members of the organizational research group.

1. Iralde (2005) studied 8- to 10-year old children's capacity to produce spontaneously written notations while listening to a recorded text of 207 words. Students were asked to construct a spatial representation, such as an itinerary for going to

school, in a manner that would communicate the itinerary to another child. Paper and pencils were available on a table, but no suggestion was made to mark anything down. The students were first asked only to listen to the text once. After a second reading of the text, students were told they were free to do whatever they wanted in order to help another child, given the following situations: (a) Children were asked to give directions to an unknown child who doesn't know the way to his or her school; (b) students were asked to direct a child to the school but informed that they would actually meet the new student in two days' time. The findings revealed an effect of the context of production on the spontaneous use of notations: When children knew that they would meet a social partner in the near future, they made notations of the directions more frequently. With older children, however, the difference between contexts was not as large. Although the notations became more functional with age, the context of communication appeared to be a more important factor for spontaneous use of written notations with the younger children. These results supported the premise that providing authentic contexts for learning helped students better understand the pragmatic and cognitive functions of written tasks.

2. Another study analyzed the ability of children to use notational systems as tools to represent the construction of an object (Gaux, 2005). In order to understand how the functional nature of notations develops in children, four groups of children (36 per group) were asked to determine how to help children from another school gain information about how to construct an object or to retain this information and recover it later. Each of the 5- to 10-year-olds was first asked to construct an object, such as a deer, using interlocking building blocks of various colors in order to replicate an object previously assembled by an adult. Children were then asked to devise a way to (a) help children in another school who were unaware of the shape of the object to construct the same object (transmission) or (b) find a way to remember the construction a few days later (memorization). Sheets of paper, colored pencils, and erasers were made available. If children did not make notes spontaneously, an adult asked them to do so. The spontaneity of the notations, their usefulness, and the systems used (graphic or linguistic) were analyzed according to the age of the child and the purpose of the production (memorization or transmission). The number of children who produced spontaneous notations increased through kindergarten and first and second grades. Frequency declined through the fifth grade where 58% of these

children made notations. Whatever their age, most children used drawing, which was more suited to the figurative nature of the object, as opposed to a linguistic representation. However, the functionality of the notations increased with age. The context of production had an effect on the spontaneity of productions only in fifth grade and had no effect on their quality. Functionality of the productions was discussed in relation to the ability to understand the use of notations and the development of drawing.

3. The aim of another study (Gaux, Iralde, Weil-Barais, Douet, & Ferte, 2005) was to determine how 7- to 11-year-old children communicated a construction process to another child when they had no indication of the notational system they were to use. Children were initially asked to construct an object, such as an animal, from a photograph by using building blocks of various colors. They were then told that children from another school would have to construct the same object without a model, and the children participating in the study were asked to discover how to help the other children. Paper, colored pencils, and erasers were available on the table, and if the children did not make notes spontaneously they were prompted to do so. In a second session, children were asked to evaluate the functionality of notations produced by other children on a similar task and to evaluate the writing system used. The notational systems used, whether graphic or alphabetic, were analyzed as well as the usefulness of the production for an outsider. Results revealed that 45% of second-grade children spontaneously used notations to communicate the construction process. The number of spontaneous notations increased from the second to the fourth grades, but only 65% of fifth-grade children made notes. The notations were seen to be more functional with age and the evaluations of other productions to be more accurate. Regardless of the age, drawing was more frequently seen in the notations. However, with third- and fourth-grade students the notational systems were more varied and alphabetic productions increased, which was commensurate with greater emphasis on writing at school. Fifth-grade children may have preferred to use drawing as it seems to be a more appropriate mode to describe the figurative object. Finally, the quality of notations varied according to the children's skills in writing and numeric notations.

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Russia

International research correspondent, Sergey M. Borodin

Research correspondent Sergey Borodin presents a review of books and materials introduced in June 2002 at an international conference, Reading World and World of Reading, in St. Petersburg, Russia. These texts and materials were issued in late 2003 and early 2004, and many of them were published in St. Petersburg or were written by St. Petersburg authors.

The author of two of these books, Irina Tihomirova, is a senior lecturer of children's literature at St. Petersburg State University of Culture and Arts. *The School of Creative Reading* (Tihomirova, 2003) focuses on the emotional and moral development of children in two aspects. The first part of the book, The Reader Is an Artist Too, examines reader creativity and offers assessment measures for the appreciation and comprehension of literary works. It also offers a variety of games and other instructional activities designed to nurture young readers. The second part, An Emotional Training of Children Reading, is devoted to examining the role of emotions and feelings in reading. These ideas are elaborated through dialogues and games that can be carried out by teachers and reading tutors. This work by Tihomirova highlights the psychological, aesthetic, and moral influences of fiction and the deepened level of reader perception that can result from the skillful collaboration of children and adults.

A second book by Tihomirova (2004) combines a compendium of reference sources on methodology with a collection of research articles supported by practical experience. The book discusses pedagogical problems and methodological decisions associated with the psychological processes of reading. The 21 articles included provide a review of the literature of the psychological aspects of reading, including attention, cognition, memory, and reader perceptions such as association, imagination, and interest. The book was intended for librarians and

reading specialists but has been useful to classroom teachers, professors, and researchers as well.

Another featured book at the St. Petersburg conference, a work by Valentina Borodina (2003), was designed to assist educators in encouraging readers to make more connections with the world around them. Its author is a senior lecturer of Sociology and Psychology of Reading at the St. Petersburg State University of Culture and Arts. The material for this book was selected from a large collection of folklore and aphorisms. Borodina offers a multigeneric approach to books and readings, affording the reader an opportunity to become acquainted with proverbs, riddles, fairy tales, reflections, poetry, and humorous writings. There is a separate section for creative writings in the forms of lullabies, chastooshkas (short satirical chants or songs, usually four or eight lines long), and aphorisms. The author's impetus for arranging these works in one text was her belief that folklore was a treasure of popular wisdom. The book includes instructional suggestions for classifying proverbs and sayings into thematic units; reflecting on the writings; comparing proverbs and aphorisms; and creating a morphology of proverbs, such as antithesis, part/whole, and comparison. The riddles and fairy tales are offered as games that can be played. There is a section of exercises involving folklore and aphorisms that are designed to develop moral character and that may influence the culture of reading. The book was written with an eye toward getting teachers and parents interested in developing children's reading while connecting children to their culture.

Borodina (2004) also wrote a history of reading in Russia from the 9th to the 19th century, followed by a detailed description of the Soviet and subsequent periods. The manual contains an accounting of how libraries provided services to readers during the course of Russian history, as well as a de-scription of how reading education emerged amidst the social, psychological and pedagogical system of library service. Specifically, the author highlights the relationship between librarians and readers, the development of a typology of readers, methods of individual tutoring, and general research on readership. Resources for the practitioner include bibliographic lessons for younger schoolchildren (how to read and write a bibliography and organize information) and suggestions for developing a culture for reading based on poetry.

The proceedings of the 2002 St. Petersburg conference (Rudomino, 2003) include 190 articles by participants. Arranged in three sections, the proceedings present discussions about reading problems in different countries of the world as well as suggestions for overcoming these problems. The first section includes works that presented a multidimensional and detailed picture of the dynamics of reading interests, the priorities of reading in Russia during the previous decade, and reflections on how to effect positive changes in future Russian literacy education. The second section focuses on Russian and U.S. experts' views on the role of libraries in promoting reading. The third section is devoted to projects for promoting reading in schools and includes a discussion about the role of the family in developing a culture of reading.

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