Few studies have looked at working memory (WM) and primary language impairment (PLI) simultaneously. Even fewer studies have examined linguistic minority children with PLI within a bilingual community. In the present study, bilingual (French-English; English-French) children and monolingual French-speaking children from a linguistic minority community were grouped according to their linguistic development, being either typically developing (TD) or having PLI. The goals of this study were to look at the differences between monolingual and bilingual children as well as between TD children and those with PLI with regards to linguistic skills, WM skills and non-linguistic cognitive skills (NLCS) in order to determine if difficulties within these areas could predict the presence of PLI.

**METHOD**

**Participants**

<table>
<thead>
<tr>
<th>TIB</th>
<th>M.</th>
<th>F.</th>
<th>N.</th>
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<td>10</td>
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<td>59.94</td>
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**Gender**

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<th>F.</th>
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<th>M:</th>
<th>25</th>
<th>F.</th>
<th>33</th>
<th>M</th>
<th>5</th>
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<th>6</th>
<th>F.</th>
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</table>

**Procedure**

Language evaluations of verbal WM

**Tasks**

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonword Repetition (NWR)</td>
<td>The Children's Test of Nonword Repetition</td>
<td>Gathercole &amp; Baddeley, 1996</td>
</tr>
<tr>
<td>Repetition des non-mots (RNM)</td>
<td>Le lâche de répétition des non-mots</td>
<td>Crouzy, 2000</td>
</tr>
<tr>
<td>Concepts et exercices des codes (CEO)</td>
<td>CELF, Canadian-Français (CELF-4)</td>
<td>Wig et al., 2003</td>
</tr>
<tr>
<td>Imitation des phrases (IP)</td>
<td>CELF, Pre-Print: French adaptation (CELP-F)</td>
<td>Semel et al., 2004</td>
</tr>
<tr>
<td>Démonstration automatique rapide (DAR)</td>
<td>Rapid automatized naming – French adaptation</td>
<td>Cats, 1993</td>
</tr>
<tr>
<td>Number Repetition (NR)</td>
<td>CELF-4</td>
<td>Semel et al., 2003</td>
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<tr>
<td>Répétition des noms</td>
<td>CELF, Canadian-Français (CELF-4)</td>
<td>Wig et al., 2003</td>
</tr>
</tbody>
</table>

**Working memory evaluations**

**Automated Working Memory Assessment (AWMA)** (Allaway, 2007):

- Visuospatial WM
- Verbal WM

**Non-verbal cognitive evaluations**

**Leiter International Performance Scale-Revised (Leiter-R)** (Roid & Miller, 1997):

- Sustained attention
- Categorization
- Cognitive flexibility
- Fluid reasoning

**RESULTS**

1. Do bilingual children differ from monolingual children with regards to WM and NLCs?

   The following subtests revealed significant differences:
   
   - **Letter - Classification**: $<0.05$
   - **Destination des non-mots**: $<0.05$
   - **Imitation des phrases**: $<0.001$
   - **DAR errors**: $<0.05$

   **Overall, there were no significant differences in performance between the TD monolingual and bilinguals.**

2. Do children with PLI differ from TD children with regards to WM and NLCs?

   These findings correspond with previous research conducted by Archibald & Gathercole (2006) and by Archibald & Joannis (2009) with regards to visuospatial WM skills for children with PLI.

3. Do bilingual children score differently on WM tasks and non-linguistic cognitive tasks than bilingual children with PLI?

   The following subtests revealed significant differences:
   
   - **Leiter - Form Completion**: $<0.05$
   - **AWMA - DR**: $<0.001$
   - **AWMA - BDR**: $<0.05$
   - **AWMA - CR**: $<0.05$

   **Overall, there were no significant differences in performance between the TD monolingual and bilinguals.**

3. Do children with PLI differ from TD children with regards to WM tasks and NLCs?

   These findings correspond with previous research conducted by Archibald & Gathercole (2006), but they failed to properly identify children with PLI, misidentifying them as TD children. However, this study has shown the importance of verbal WM tasks as well as for the NLCS, categorization task. The AWMA tasks revealed no significant differences. However, the NWR and DR tasks from the language battery were revealed to be significant. It is possible that the most subtest of the AWMA was informally translated, it interfered with the administration protocol, thus invalidating it. Furthermore, unlike the findings from Archibald and Gathercole (2007), our study did not reveal significant differences with regards to visuospatial WM skills between the groups. However, our study used the individual subtest scores and not the composite scores.

4. The regression analyses revealed the significance of one verbal WM subset, sentence imitation in French, to be a predicting factor in the identification of bilingual children with PLI. This subset could be part of the underreporting difficulties responsible for verbal WM deficits. Future studies should investigate further into the consideration of NLCS, notably fluid reasoning, in the assessment and identification of children with PLI.

**CONCLUSION**

This study has shown the importance of verbal WM tasks as indicators for PLI. These tasks should figure prominently within the investigation of language impairment among children. Although some children with PLI seemed to have deficits with certain NLCS, the nature of the NLCS, is unknown if these skills could be part of the underlying difficulties responsible for verbal WM deficits. Future studies should investigate further into the consideration of NLCS, notably fluid reasoning, in the assessment and identification of children with PLI.

**REFERENCES**

[References provided in the text.]

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**Appendix**

[Appendix contents provided in the text.]