The integration of syntactic and prosodic information is a severely understudied area in bilingualism research. Using event-related potentials (ERPs) we thus compared languages that differ considerably in their prosodic organization on processing of syntactic ambiguities in four groups:

1. **English native speakers**
2. **High proficiency German speakers**
3. **High proficiency Chinese speakers**
4. **Low proficiency Chinese speakers**

### Table: Proficiency Levels

<table>
<thead>
<tr>
<th>Group</th>
<th>Age</th>
<th>Age of acquisition</th>
<th>English proficiency in %</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP German</td>
<td>25.0</td>
<td>11.7</td>
<td>89.3*</td>
<td>20</td>
</tr>
<tr>
<td>HP Chinese</td>
<td>22.8</td>
<td>14.5</td>
<td>70.2</td>
<td>17</td>
</tr>
<tr>
<td>LP Chinese</td>
<td>29.8</td>
<td>13.8</td>
<td>21.7</td>
<td>4</td>
</tr>
</tbody>
</table>

* Different proficiency measure than Chinese groups

**Research Questions:**
1. Do L2 learners process prosodic cues in the same way as native speakers?
2. How do different prosodic backgrounds and proficiency levels influence syntactic parsing in L2?

### Task:
End of sentence acceptability judgment of whether or not a sentence sounded “natural”.

### Materials:
Correct Controls:
A: When a bear is approaching the people, the dogs come running.
B: When a bear is approaching the people, come running.

Prosody-syntax mismatches:
C: When a bear is approaching the people, the dogs come running.
D: When a bear is approaching the people, come running.

Speech signals of conditions A and B were recombined through cross-splicing to result in the violation conditions C and D. This leads to condition C missing a boundary when D contains a superfluous early boundary. Importantly, this provides us with a physically identical control epoch for each comparison.

### Results

**3.1 Acceptability judgment: ‘Yes’ answers in percent**

- **All groups** accept correct conditions A and B to the same high degree (ca. 80%).
- In the conflicting conditions C and D:
  - the **English native speakers** accept C significantly more often than D.
  - the **German group** accepts C more often than D, but both of these less than the English group.
  - the **highly proficient Chinese** speakers do not differentiate between violation conditions C and D, and accept both only in 40% of the cases.
- The **low proficient Chinese** group accepts all conditions independent of their status at a similarly high level (ca. 65%).

### 3.2 ERP Components

<table>
<thead>
<tr>
<th>Conditions</th>
<th>P600 in C</th>
<th>N400 in C</th>
<th>P600 in D</th>
<th>N400 in D</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPS 1</td>
<td>ms</td>
<td>0 - 600</td>
<td>500 - 1000</td>
<td>1800 - 1500</td>
</tr>
<tr>
<td></td>
<td>N400</td>
<td>380 - 750</td>
<td>750 - 1400</td>
<td></td>
</tr>
</tbody>
</table>

- **All groups** show the Closure Positive Shift (CPS) mirroring the processing of the prosodic break.
- For Condition C, **all groups** show a P600 between 500 and 1000 ms, but only the German and the English group shows a longer lasting P600 spanning from 500 to 1500 ms.
- In Condition D:
  - **both Chinese groups** show a different distribution of the N400.
  - **All groups** but the **low proficient Chinese** group show a P600.

**4. Research Question 1:**
As indicated by the indistinguishable CPS components, prosodic boundaries are processed online in the same way by all groups, independent of their language background.

**Research Question 2:**
However, once the prosodic and syntactic information are integrated online, processing differs. In which way depends both on the proficiency level and the prosodic L1 background:

- Proficiency seems to be the most important factor: The highly proficient groups (German and Chinese) resemble the native speakers the most (for more details see Nickels, Opitz and Steinhauer (in press).
- The prosodic structure of L1, however, also plays a role, as indicated by the shorter P600 in C and the more frontal N400 in D for the HP Chinese group, but not the HP German group. Critically though, proficiency was not entirely equal between these groups.

**Take-home message:**
- With increasing proficiency L1 background plays less and less a role.
- Until native-like proficiency is reached, other factors such as prosodic background or exposure also modulate the similarity between L1 and L2 online processing.