Helping Students Recognize Pronunciation Strengths and Weaknesses

Sue Ingels
University of Illinois, Urbana-Champaign
Purpose of this session

- To describe two techniques for helping students focus attention on pronunciation strengths and weaknesses.

- To describe research findings on usefulness of these techniques.

- To discuss implications of these findings for teaching.
Some background

- Learners often can’t perceive errors or difficult target features in their own speech (Pennington, 1998).

- Instruction is necessary to point out non-salient L2 features (Elliott, 1997), such as phrase stress and intonation.
Some type of attention is needed for learning to occur (Schmidt, 1993).

Explicit L2 instruction is more effective than implicit (Norris & Ortega, 2001).
This study: Two techniques for explicitly focusing learner attention

- Self-correction
- Self-transcription
Self-correction

Students...

- explicitly evaluate production
- predict pronunciation with pronunciation rules
- may review their production holistically
What is a feedback control concept? It is very simple. It just takes the output signal back into the input signal and you maintain a certain value. And the input value is actually what you wanted to maintain. So later, after I show you the diagram of the computation, you can know exactly what this mechanism does. So the advantages of feedback control is actually it has disturbance rejection and guarantees the performance, and also you can stabilize an unstable system.
Self-transcription

Students...

- replay short segments of their recorded speech as many times as needed
- explicitly listen for one target feature at a time
- use multiple senses
So basically | in presentation | I will give you | first | you | the definition of the ASR, and give me give | some examples | how to test ASR and | finally | hope we can come up with some ideas | to continue ASR. But before that | I think it's better to | something | about the concrete. So first | want to | you | who have any ideas about the concrete | who | the components of concrete | the applications of concrete.
In-focus

- Students reported that they explicitly focused on these items

- All students explicitly focused on primary phrase stress and message unit boundaries
Out-of-focus

- Students did not report focusing on these items
- Intonation was the most common out-of-focus target
Research questions

- Does explicit focus lead to improved production?
- Do students improve on out-of-focus (peripheral) targets?
- Is one technique more effective than the other?
- Do some target features improve more than others?
My study

Repeated measures design:

- Each student tried out each technique

Pre- and post-test measures to determine amount of pronunciation improvement

- I compared their production accuracy before and after they used the techniques
## Participants

(Pronunciation course for ITAs)

<table>
<thead>
<tr>
<th>Participant (L1: Mandarin)</th>
<th>Speak test score</th>
<th>M/F?</th>
<th>Age</th>
<th>Yrs of English instruction</th>
<th>Graduate student in:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td>45</td>
<td>F</td>
<td>28</td>
<td>17</td>
<td>Anthropology</td>
</tr>
<tr>
<td>QL</td>
<td>45</td>
<td>M</td>
<td>28</td>
<td>15</td>
<td>Geology</td>
</tr>
<tr>
<td>LL</td>
<td>45</td>
<td>M</td>
<td>29</td>
<td>15</td>
<td>Computer Eng.</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFC</td>
<td>35</td>
<td>F</td>
<td>23</td>
<td>10</td>
<td>Astronomy</td>
</tr>
<tr>
<td>ZS</td>
<td>37.5</td>
<td>M</td>
<td>26</td>
<td>10</td>
<td>Math</td>
</tr>
<tr>
<td>YX</td>
<td>42.5</td>
<td>M</td>
<td>28</td>
<td>10</td>
<td>Computer Eng.</td>
</tr>
<tr>
<td><strong>Averages</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td></td>
<td>12.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Study procedures

Explicit training on target pronunciation features and on self-transcription and self-correction during the semester

Pre-test accuracy
(before treatment)

(Time 1: Week 16 of semester)

Final course project:
recording of 5-minute mini-lecture

Post-test accuracy
(after treatment)

(Time 2: 2 weeks later)

They transcribed and/or corrected segments from Time 1 recordings; then re-recorded the segments
Treatment conditions

For segments 1, 4

T+C+
Self-transcribe
Mark corrections
Record

For segments 2, 5

T+C-
Self-transcribe
(Do not mark corrections)
Record

For segments 3, 6

T-C+
(T transcribed)
Mark corrections
Record

Controlled for order effects
Data analysis

- I transcribed pre-test segments
  - Coded total correct targets for PPS, message units, intonation
  - Calculated % correct and number of errors
- I transcribed post-test segments
  - Calculated the number of pre-test errors corrected after the post-test and the % accurate after post-test
HFC’s recordings at T1 and T2

T1: but it may become the definition of planets

T2: but it may be a problem of the definition of planets
Results...
Does explicit focus lead to improved production?

<table>
<thead>
<tr>
<th>Group results</th>
<th>Individual results</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>This finding is highly consistent across all categories.</td>
</tr>
</tbody>
</table>
In-focus targets

Explicit Focus: % Accurate at T1 and T2

![Bar Chart](chart.png)

- YX
- ZS
- HSC
- QL
- CY
- LL

T1
T2
Is there improvement on out-of-focus items?

<table>
<thead>
<tr>
<th>Group results</th>
<th>Individual results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Not all attentional focus is explicit. Improvement occurs on items receiving “peripheral attention”</td>
</tr>
</tbody>
</table>
Out-of-focus items

No Focus Reported: % Accurate at T1 and T2

- YX
- ZS
- HSC
- QL
- CY
- LL

0% 20% 40% 60% 80% 100%

T1
T2
Which treatment is most effective?

<table>
<thead>
<tr>
<th>Group results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-transcription (T+) &gt; no self-transcription (T-).</td>
<td>Transcription helps.</td>
</tr>
<tr>
<td>No clear pattern for self-correction.</td>
<td>Interaction of C+/C- with T+/T- cannot be established from this data.</td>
</tr>
</tbody>
</table>
Treatment effects

% Improvement Overall, by Treatment

- T+C-: 65%
- T+C+: 75%
- T-C+: 65%

Graph showing the percentage improvement overall by different treatments.
Do some target features improve more than others?

<table>
<thead>
<tr>
<th>Group results</th>
<th>MUs &gt; Intonation &gt; PPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual results</td>
<td>MUs &gt; Intonation &gt; PPS</td>
</tr>
<tr>
<td>Comments</td>
<td>MUs are likely under conscious control and less prone to L1 influence.</td>
</tr>
</tbody>
</table>
Targets

% Improvement, overall by target

Message Units
PPS
Intonation
Are there differences based on proficiency level?

- No: on in-focus targets
- Yes: on out-of-focus targets
  - High-proficiency learners improved more on out-of-focus items than low-proficiency learners

Why?
  - High-proficiency learners may have more attentional resources available to attend to peripheral items
% Improvement from pre- to post-test; by focus and proficiency
Effect of treatment on targets, by proficiency level

High-proficiency learners:
- improved more using C+ on MUs and intonation
- but T+ was more effective for PPS

Low-proficiency learners:
- improved more using T+ for MUs and intonation
- but C+ was more useful for PPS
Why the differences?

For high proficiency learners...

- MUs are an indicator of fluency. Hi-prof learners likely are more fluent and may have more control over MUs to start with.

- PPS is harder to control consciously; self-transcription may have helped them notice their errors.
Why the differences?

For low-proficiency learners...

- May have fewer attentional resources available for monitoring accuracy of MUs and intonation.

- Self-transcription may help them notice what they’re doing.

- May need to apply rules more consciously for use of PPS, because it is less automatized. Self-correction allows them to notice.
Do you have questions before we start the discussion?
Discussion

How do these findings translate into teaching? For example, what are implications for

- types of classroom activities and homework assignments;
- for different types of learners in different settings?

Are there other techniques you have used successfully for helping learners perceive their production?
Discussion Summary
Conclusions

- Focusing attention leads to improved production for both in- and out-of-focus targets.

- Techniques such as self-transcription and self-correction can help learners notice their pronunciation errors.

- A mix of these techniques can help learners with varied proficiencies.


Thank you!

Sue Ingels
University of Illinois, Urbana-Champaign
Email: suemauck@uiuc.edu
Slides and handouts are available on TESOL’s website