# The impact of L2 on L1 in students with learning disabilities

Georgia Andreou, Maria Segklia
[1]Department of Special Education, University of Thessaly, Greece
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## Abstract

Adequate knowledge of the first language (L1) has a positive impact on second language (L2) learning. Research has also confirmed a cross linguistic skills transfer from L2 to L1, according to the Cognitive Retroactive Transfer Hypothesis, which claims that an intervention in L2 linguistic skills can also benefit L1's corresponding skills even among students with learning disabilities. The present study examined the cross linguistic skills transfer of decoding and spelling skills from L2 (English) to L1 (Greek) among students with learning disabilities, after an intervention in L2. The results showed that transfer existed for decoding, but not for spelling, which seems to be language specific.

Keywords: CRT, cross-linguistic transfer, language

## Introduction

Students with L.D. and poor reading skills in their L1 will also show weaknesses in L2 because metalinguistic skills are common to all languages. However, children whose performance is high in L1 will perform well in L2 (Feder & Abu-Rabia, 2020).

Research has shown that there may be cross-linguistic transfer from L1 to L2 and its effect on L2 learning. However, only four researches study the transfer of these skills from L2 to L1 (Abu-Rabia & Bluestein-Danon, 2012; Feder & Abu-Rabia, 2020; Abu-Rabia & Shakkour, 2014; Abu-Rabia, Shakkour, & Siegel, 2013) based on the Cognitive-Retroactive Transfer Hypothesis (CRT), according to which, an intervention in L2 will improve the linguistic skills of both L2 and L1.

The aim of the present study is to examine further the transfer of decoding and spelling skills from English as an L2 to Greek as an L1 after an intervention program in L2, in students with L.D. and discuss them in terms of the CRT hypothesis. More specifically, our research hypotheses are:

1) It is expected that there will be an improvement of the participants in the decoding of L2 after intervention in L2., 2) it is expected that there will be an improvement of the participants in the decoding of L1 after intervention in L2, 3) it is expected that there will be an improvement of the participants in the spelling of L2 after intervention in L2, 4) it is expected that there will be no improvement of the participants in the spelling of L1 after intervention in L2.

## Methodology

### Participants

35 Greek 8th grade students with Greek as an L1 and English as an L2 were the participants of the study. They were diagnosed with L.D. and they had all attended English classes since the 3rd grade only at school having the same level in L2 (beginners). The sample was divided into an experimental group (20 students) and a control group (15 students) with a combined average of 13.6 years of age.

### Procedure

Two weeks before the intervention both groups were tested in decoding and spelling in both languages. The same tests were administered two weeks after the intervention to all the students as well.

After the administration of the pre-tests the intervention in L2 began. All students of the experimental group participated in small group instruction sessions. The students had 45 minute lessons twice a week for a 5-month period.

## Results

In order to examine the statistical significance in L2 and L1 decoding and spelling skills before and after the intervention program, a nonparametric test (Wilcoxon test) for dependent samples was conducted.

In Table 1 the mean scores of the experimental group's L1 and L2 performance in each test for each linguistic skill before and after the intervention are presented.

Table 1. Mean scores of the experimental group in L1 and L2 decoding and spelling skills before and after intervention.

| | Pre-intervention | | | Post-intervention | | | |
|---|---|---|---|---|---|---|---|
| L1 Decoding | N | Mean | SD | Mean | SD | z-score | p value |
| | 20 | 94.65 | 3.13 | 102.20 | 1.88 | -3.925 | ,000* |
| L2 Decoding | 20 | 31.45 | 6.52 | 45.45 | 9.13 | -3.924 | ,000* |
| L1 Spelling | 20 | 35.15 | 5.35 | 35.50 | 5.26 | ,942 | ,346 |
| L2 Spelling | 20 | 24.20 | 4.92 | 31.50 | 4.81 | -3,942 | ,000* |

*statistically significant difference ($p<0.05$)

In Table 2 the mean scores of the control group's L1 and L2 performance in each test for each linguistic skill before and after the intervention are presented.

Table 2. Mean scores of the control group in L1 and L2 decoding and spelling skills before and after intervention.

| | Pre-intervention | | | Post-intervention | | |
|---|---|---|---|---|---|---|
| L1 Decoding | N | Mean | SD | Mean | SD | z-score p value |
| | 15 | 97.40 | 4.17 | 98.73 | 2.84 | -1.569 ,117 |
| L2 Decoding | 15 | 33.20 | 9.54 | 33.60 | 9.53 | -1.038 ,299 |
| L1 Spelling | 15 | 33.60 | 5.30 | 34.80 | 5.94 | -2.412 ,016 |
| L2 Spelling | 15 | 23.13 | 5.37 | 23.53 | 5.18 | -.777 ,437 |

## Discussion

The current study investigated the transfer of decoding and spelling skills from L2 to L1 after an intervention in L2 among students with LD. The findings of the present study indicate that the intervention program in L2 improved the performance of the participants in all English tests. Moreover, there was a similar improvement in L1 decoding but not in L1 spelling tests.

The first research hypothesis was verified. There was a statistically significant performance of the participants in the intervention group in the decoding skill in L2 after the intervention. Regarding the control group, no improvement in decoding skills was observed in the post-test since this group consisted of students with L.D. who did not receive any intervention.

The second research hypothesis was verified since there was an improvement in the decoding skill in L1 for the intervention group, but not for the control group. This improvement for the first group shows the cross-linguistic transfer of the skill from L2 to L1 confirming the CRT Hypothesis. It also seems that an intervention in L2 decoding can improve L1 decoding even in languages with different orthographic depth.

Furthermore, there was an improvement in the spelling skills of the intervention group in L2 after the intervention, and therefore verification of the third research hypothesis. In contrast, the control group did not show an improvement in its spelling skills during the final evaluation.

Moreover, it seems that interventions that focus on decoding and enhance phonological awareness, can also improve students' ability to encode words (Feder & Abu-Rabia, 2020). Also the intervention in both spelling and decoding skills in L2 improved the spelling skills of the intervention group students in this language.

Regarding the intervention group in the fourth research hypothesis, it seems that the spelling performance of L1 did not improve, because the spelling experiences from L2 were not transferred to L1. In contrast, the control group, showed a slight improvement in the spelling of L1 but not due to a transfer of the skill from L2 to L1, as the performance of the students in the control group in the spelling of L2 was constant in both measurements.

Moreover, the results for the intervention group are consistent with the findings of other studies that implemented a similar intervention program to the present study (Abu-Rabia & Bluestein-Danon, 2012· Abu-Rabia & Shakkour, 2014· Abu-Rabia, Shakkour, & Siegel, 2013).

## Conclusion

To conclude, it is understood that the systematic teaching of spelling and decoding skills in the foreign language is of high importance. It is also necessary to plan educational interventions in L1 and L2, so that both typical and non-typical students can benefit. Finally, the cooperation between the teachers of L1 and L2 language (and other languages, too), in schools, is considered important. In this way students with L.D. will have the opportunity to be successfully included in L1 and L2 classes.

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