

## Explicit vs. implicit awareness of sociophonetic cues in L1 and L2 listeners

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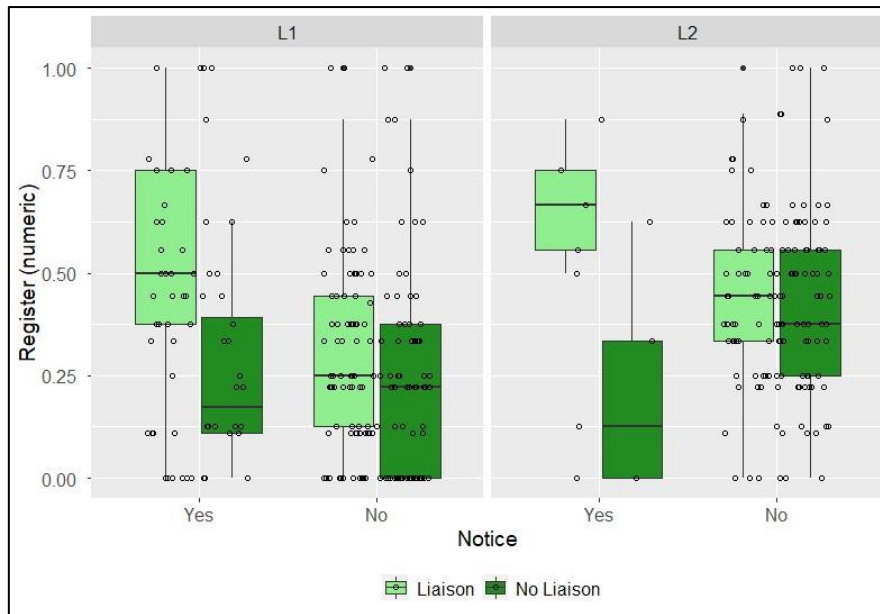
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Social inferences about a talker or context arise rapidly and implicitly during native language speech perception [1], and this integrated social information in turn influences speech perception [2]. Further, noticing, or becoming explicitly aware of, socially-indexed variation in the speech signal during perception amplifies these social inferences and impacts language processing in real time [3,4]. To what extent the same is true for L2 listeners remains understudied.

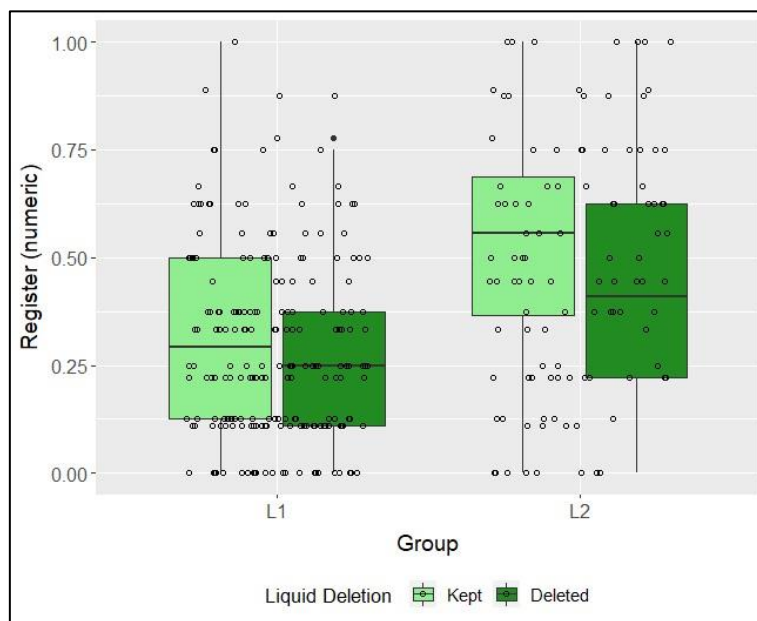
We tested L1 and L2 French listeners' social inferences on and noticing of two sociophonetic cues to register: optional liaison, a stereotyped cue to formal speech (e.g., *plats italiens* [plazitaliẽ] for [plaitaliẽ], 'Italian dishes' [5]), and post-obstruent liquid deletion, a non-stereotyped cue to everyday speech (e.g., *tab* [tab] for *table* [tabl] 'table' [6]). L2 participants were adults living in France and fluent in French; reported L1s were varied but predominantly European. For each cue, we employed a matched-guise listening task. Stimuli in each task were 17 simple sentences, each containing one environment for the relevant cue and no other cues to register. Both recorded guises of each sentence were manipulated to be acoustically identical, except for the presence or absence of liaison or liquid deletion, respectively. Participants in both experiments listened to one version of each sentence and selected its register, formal or everyday speech, in a 2AFC design. Participants answered two questions post-experiment to assess noticing: 'What strategy did you use to make your choices?' and 'Was there an aspect of the sentences that attracted your attention in particular?'. Participants who directly referenced the cue (e.g., 'liaison') or who gave specific examples (e.g., 'speaker said *tab*' instead of *table*') in their responses were coded as noticers.

For the liaison experiment, results include data from 109 L1 participants, published in [3], and from 72 advanced L2 French listeners (median length of residence in France: 6 years). Rates of noticing liaison were higher amongst L1 than L2 participants (29% vs. 7% respectively). A mixed-effects logistic regression on register ratings revealed a main effect of liaison in the expected direction ( $\beta=0.62$ ,  $SE=0.08$ ,  $z=7.72$ ,  $\text{Chi}^2(1)=70.1$ ,  $p<0.001$ ), and an interaction of liaison and noticing ( $\beta=-0.43$ ,  $SE=0.08$ ,  $z=-5.40$ ,  $\text{Chi}^2(1)=33.1$ ,  $p<0.001$ ), such that the effect of liaison on register ratings was larger for noticers than for non-noticers (Figure 1). A trend towards a 3-way interaction of liaison, group (L1 vs. L2) and noticing was observed ( $\beta=0.15$ ,  $SE=0.08$ ,  $z=1.83$ ,  $\text{Chi}^2(1)=3.50$ ,  $p=0.067$ ), suggesting that all subgroups except L2 non-noticers exhibited an effect of liaison on register ratings, which was confirmed in a regression run on the L2 non-noticer subgroup only ( $\beta=0.07$ ,  $SE=0.07$ ,  $z=1.13$ ,  $\text{Chi}^2(1)=1.27$ ,  $p=0.26$ ). Thus, while L1 French listeners associate the presence of optional liaison with formal speech regardless of noticing, the liaison effect in L2 listeners seems to hinge on noticing, pointing to explicit, but not implicit association of liaison with formal speech in this group.

For the liquid deletion experiment, results include data from 104 L1 listeners and 52 L2 listeners (median length of residence in France: 11 years). There was very little noticing of liquid deletion by either L1 (5%) or L2 (4%) groups, as anticipated; therefore, noticing was not included as a factor in the analysis. A mixed-effects logistic regression on register ratings revealed a main effect of liquid deletion in the expected direction ( $\beta=0.26$ ,  $SE=0.05$ ,  $z=5.02$ ,  $\text{Chi}^2(1)=24.9$ ,  $p<0.001$ ) (Figure 2), demonstrating that both L1 and L2 listeners associate the cue with everyday speech in a largely implicit manner. The results from both experiments establish that listener native language and individual noticing interact to mediate social inferences that arise during speech perception, and that specific sociophonetic cues might be easier than others for L2 learners to acquire, depending upon their complexity. Implications for models of L1 and L2 speech perception will be discussed.



**Figure 1.** Register ratings for the liaison matched-guise task by Liaison, Noticing, and Group (L1 vs. L2). Responses were coded as 1 for ‘formal speech’ and 0 for ‘everyday speech’. Data points are subject means.



**Figure 2.** Register ratings for the liquid deletion matched-guise task by Liquid Deletion and Group (L1 vs. L2). Responses were coded as 1 for ‘formal speech’ and 0 for ‘everyday speech’. Data points are subject means.

## References

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