

Hungarian EFL Learners' Perception of Intrusive R in English

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Abstract

This study investigates the perception of Intrusive R among Hungarian learners of English. 24 participants performed an AX discrimination task focusing on sentence pairs with and without Intrusive R. Of 264 instances of detectable Intrusive Rs, participants accurately identified 58 (21.97%), and in 78 other cases (29.55%) they managed to find the difference but could only identify it indirectly. Factors influencing perception included the presence of another /r/ near the intrusive one and the order of the sentences in the perception task.

Keywords

Intrusive R, R-liaison, R-sandhi, Hungarian learners, EFL, perception.

1. Introduction³

Intrusive R, as in *law(r)and order*, *Shah(r)Excellence*, *Hosanna(r)in the highest*, etc., is a hiatus filler (i.e., a consonant inserted between two vowels, like in *Ady(j)Endre* in Hungarian) found in certain accents of English. It is not among the features of English pronunciation that an average Hungarian learner of the language will be familiar with. The reasons for this might be that Intrusive R is characteristic of a limited number of pronunciation varieties of English (the so-called non-rhotic ones), and that, due to the rare occurrence of the phonological environment in which it may appear, it is extremely rare even in

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those accents of the language which display this feature. Consequently, Intrusive R is not usually mentioned in English as a foreign language (EFL) coursebooks, even in those which contain exercises focusing explicitly on pronunciation (e.g., the *English File* series). Understandably, pronunciation activities found in coursebooks devote more attention to issues such as stress placement or sound contrasts, which contribute more substantially to learners' intelligibility, unlike the awareness or the production of Intrusive R.

For Hungarian learners of English, the first opportunity to learn about Intrusive R typically arises at university level, during their first course in English phonetics and/or phonology as part of a BA programme in English Studies, which includes a comprehensive overview of English pronunciation features. Based on the experience of university lecturers, including ourselves, who teach introductory courses in phonetics and phonology, not until being explicitly taught about Intrusive R can students even *notice* that it exists, regardless of the extent to which they have been exposed to a pronunciation variety of English displaying Intrusive R. What is more, learners' realisation of the feature often amuses them in a way that, interestingly, no other "un-Hungarian" characteristic feature of English pronunciation does – for some reason, learners do not seem to get as enthusiastic about interdental fricatives (commonly called "TH-sounds"), dark-Ls, or aspirated stops (to mention just a few other pronunciation features of English that are not attested in Hungarian) as about Intrusive R.

Students' apparent fascination with Intrusive R is especially intriguing given that hiatus filling is not unknown to Hungarians: Hungarian resolves certain hiatuses via the insertion of a /j/ sound (Siptár and Törkenczy 2000, 91), such as in *Frédi(j) és Béni* 'The Flintstones', *rádi(j)ó* 'radio', etc. Although English uses more consonants to resolve hiatuses than Hungarian does (in addition to /j/ and /r/, /w/ also occurs as a hiatus filler, as in *you(w)and me*), the phenomenon of hiatus filling happens to be a part of the little (Hungarian) phonetics/phonology that is represented in school curricula. Therefore, Hungarian learners are supposed to have some explicit knowledge of such phenomena.

It seems that the popular appeal of Intrusive R is not coupled with ease of acquisition. It has been shown that the accents of highly advanced learners of English, who start out from a fully rhotic accent and decide to acquire non-rhoticity, may display R-dropping but no Linking- or Intrusive R at an intermediate stage in the process, as the latter features seem to develop later (Piukovics and Balogné Bérces 2019). Furthermore, it is not just the production of Intrusive R that

poses challenges; perception difficulties also arise. Experience from teaching the beginners' phonetics and phonology course mentioned above indicates that even after learning about the feature, some learners fail to hear Intrusive Rs in samples where they know there should be some, such as in listening exercises focusing on Intrusive R. This paper aims to address the difficulties learners have with the perception of Intrusive R – specifically, it aims to gain a deeper understanding of learners' lack of ability to notice Intrusive Rs unless they are aware of its existence, and to explore what factors might influence their perception.

2. Intrusive R and experiments on R-liaison

Intrusive R is characteristic of the so-called non-rhotic accents of English (such as the southern British standard), in which /r/s are only pronounced prevocally, unlike in rhotic accents (such as the American standard), where all orthographic <r>s appear in pronunciation. Thus, in non-rhotic accents, the /r/ is pronounced in words like *rabbit* and *parrot*, but not in *bird*, *bore*, *far*, *summer*, etc. (though, as reflected in their spelling, historically these words also contained an /r/, which is why the phenomenon is traditionally called R-dropping). In connected speech, word-final, otherwise unpronounced /r/s may be reintroduced if a vowel-initial morpheme follows, giving rise to what are referred to as Linking-Rs (e.g., in *boring*, *far away* or *summer evening*). Such intervocalic /r/s on morpheme boundaries may also occur even in cases where historically there was no /r/ present: this is what is called Intrusive R, which, as its name suggests, is traditionally analysed as a rule of R-insertion occurring after the non-high vowels (/ɔ:/, /ɑ:/, /ɜ:/ and /ə/). Table 1 lists a few examples.

Trigger vowel	Examples
/ɔ:/	<i>law(r)and order, draw(r)ing</i>
/ɑ:/	<i>Shab(r)Excellence, baa(r)ing</i>
/ɜ:/	<i>cordon bleu(r)is delicious</i>
/ə/ (including schwa-final diphthongs)	<i>Hosanna(r)in the highest, rumba(r)ing, the idea(r)is that..., yeab(r)I do</i>

Table 1

On the other hand, some contemporary analyses, which take into consideration native English speakers' phonological knowledge, argue that no deletion happens in words like *bird* or the citation form of *bore*, as no /r/ is present in the underlying forms of such words. For these analyses, there is no difference between Linking-R and Intrusive R, as both occur after the same set of vowels, and are equally present in the speakers' underlying representations. Therefore, what is traditionally called R-dropping is rather regarded as a phonotactic restriction that only allows /r/s in syllable onsets (e.g., Harris 1994), and Linking-R and Intrusive R are both analysed as instances of consonant insertion (e.g., Nespor and Vogel 1986).

For our purposes, however, the traditional analysis of the phenomenon has to be adopted. Namely, we maintain that words like *bird* and *bore* undergo R-dropping; that Intrusive R is to be distinguished from Linking-R as it does not appear in spelling; and that the appearance of Intrusive R (and not that of Linking-R) is to be analysed as a consonant insertion rule. As the participants of our study (see Section 3.1) are non-native speakers learning English as a *foreign* language (and not a *second* language), with more exposure to written than to spoken English (Szpyra-Kozłowska 2005, 37), we can assume that they are heavily influenced by spelling, and this is why the historical difference between the two types of R-liaison or R-sandhi needs to be retained.

These discussions have contributed to the extensive coverage of R-liaison in academic discourse; however, empirical research on any aspect of R-liaison remains limited. Most of the few empirical studies touching upon Intrusive R have examined native English pronunciation varieties (e.g., Mompeán-Gonzalez and Mompeán-Guillamón 2009). Research involving non-native participants has typically focused on the broader acquisition of non-rhoticity, i.e., R-liaison as a whole, including the R-dropping rule and Linking-R, without specifically examining Intrusive R (Piukovics 2018, Piukovics and Balogné Bérces 2019). The studies have examined the process of acquiring categorical non-rhoticity by advanced-level Hungarian speakers of English who started out from speaking a fully rhotic accent of English, and gradually switched to non-rhoticity by suppressing previously pronounced /r/s. The studies have concluded that the reintroduction of Linking-Rs and the appearance of Intrusive Rs happen at a later, more advanced stage of the acquisition process, since R-liaison was not attested in the intermediate stage which the participants' accents were at.

Other studies, such as Tuinman, Mitterer, and Cutler (2011), have explored the phonetic characteristics of the Intrusive R, highlighting subtle acoustic differences

between historical onset /r/ and Intrusive R (e.g., *extra rice* vs. *extra(r)ice*), though the Dutch learners involved in a perception part of the study did not perceive the differences that were acoustically detectable. Additionally, Uzair, Mahmood, and Khan (2015) have demonstrated that explicit instruction on R-liaison, including Intrusive R, can significantly improve non-native speakers' listening skills, highlighting the educational benefit of teaching these features. These findings support the advice to learners of English given by Nádasy (2006), who claims that non-native speakers of English need not be able to produce Intrusive R, but being aware of its existence may help them avoid misunderstandings such as *vanilla rice* for *vanilla ice* (93).

As can be seen, studies on R-sandhi or Intrusive R in particular have barely touched upon non-native speakers' perception of the phenomenon, and at the time of writing this paper, we are not aware of any experiments on how those non-native speakers who possess no explicit knowledge of Intrusive R perceive the feature. In the case of Hungarian speakers, who, as mentioned in Section 1, only encounter explicit explanations of R-liaison at academic levels of English studies (and thus reach a high level of proficiency in English without learning about Intrusive R), such an experiment could provide valuable data for a deeper understanding of the learning process. It is this gap that our paper intends to fill by seeking answers to the following research questions:

1. To what extent are Hungarian learners of English able to notice the presence of Intrusive R if they are unaware of its existence?
2. In what ways do the background variables of lexical bias, vowel quality, the presence of another R nearby and the order of the stimuli determine Hungarian learners' perception of Intrusive R?
3. How do Hungarian learners of English describe their perception of Intrusive R when they have no explicit knowledge about this feature?

3. Research design

3.1. Participants

The study involved 26 participants, recruited through criterion and snowball sampling. Recruitment was terminated upon reaching data saturation in the qualitative part of the data collection (see Section 3.2), when no new themes emerged in the students' answers. The informants selected to participate in the experiment had to meet the following criteria:

- they were native speakers of Hungarian;
- they spoke English at least at an intermediate level;
- they were not exposed to multiple languages during the Critical Period (i.e., before puberty);
- they had never lived abroad;
- they had not been taught English by a native speaker of the language;
- and they had never studied English phonetics or phonology.

These criteria ruled out the possibility of some participants having exceptional hearing due to bilingualism, and ensured that none possessed explicit knowledge of Intrusive R – ideally, they were not even supposed to be aware of its existence. Of the 26 participants, two (Participants 4 and 17) were excluded from the analysis because their responses indicated some knowledge of Intrusive R. E.g., Participant 4 wrote that “at the end of the word ‘saw’ in the first sentence, there was a slight ‘r’ sound (as far as I know, this has something to do with British accents)”. Therefore, the data analysed came from 24 informants.

3.2. The data collection instrument and the variables examined

The data collection instrument used in the experiment was an AX discrimination (“same or different”) task. In this task, participants listen to pairs of audio stimuli and have to decide whether the two examples they heard were the same or different. The recordings used in the experiment included 17 pre-recorded sentence pairs (listed in the Appendix). The sentences were read out by a native speaker of English whose accent features Intrusive R, but who is also conscious of this feature enough to be able to control whether or not to actually pronounce an Intrusive R where possible. This native speaker was asked to read each sentence twice: once with and once without Intrusive R, ensuring there were no differences in other parts of the sentence.

In the case of 11 out of the 17 sentence pairs, the difference between the two sentences was the presence or absence of an Intrusive R. The remaining examples were either the same recording played twice or distractors – the latter involved other differences between the sentences, such as a geminate vs. a short consonant or different qualities of an R sound. Although more sentences could have provided us with more accurate results, we deliberately limited the number of sentences to avoid

participants recognising the recurring difference of the presence or absence of an /r/ sound, which could have influenced their perception.

The words in the sentences used in the experiment after which the Intrusive Rs occurred (henceforth referred to as “trigger words”) were carefully selected to examine the effect of specific variables on the participants’ perception. The experiment was exploratory in nature, therefore no hypotheses were tested; however, certain expectations about the results guided the choice of the variables investigated. Namely, the following variables were considered in our study:

- Lexical bias: Lexical bias in the field of pronunciation acquisition refers to the fact that substitution errors (such as /s/ for /θ/ or /v/ for /w/ by Hungarian speakers of English) occur more frequently in existing words than in nonwords (Costa, Roelstraete, and Hartsuiker 2006). Although at the time of writing this paper we are not aware of studies which directly explored perception errors (mishearings) along the word/nonword distinction, the effect of lexical bias has been shown in areas beyond speech production, such as comprehension monitoring (Severens and Hartsuiker 2009). To test whether participants’ perception of Intrusive R is influenced by word familiarity, our instrument included sentences in which all lexical content words were nonwords (e.g., *She jicked the pimma in the jave*) as well as ones involving existing words (e.g., *I was scared when I saw a dog*). Based the lexical bias effect, we expected learners to notice more /r/s in sentences with nonwords than in those with familiar words.
- Quality of the vowel preceding the Intrusive R: As shown in Table 1, Intrusive R occurs after the non-high vowels. This variable was considered to see if participants noticed Intrusive Rs more easily after certain vowels than others.
- Presence of another /r/ sound near the intrusive one: This variable was included to explore whether it affects the perception of Intrusive R if there is another /r/ sound near the intrusive one (such as in the examples *His camera(r)and his tablet are there* and *It’s easy to draw(r)a cat* – the /r/s near the intrusive one are highlighted in boldfaced underlined). Specifically, we tested whether auditory masking occurs, whereby the perception of a sound (in this case, the Intrusive R) is influenced by the presence of another (in this case, the “expected” /r/) (Gelfand 2004).
- The order of the sentences: In the AX discrimination task, the sentence containing the Intrusive R alternated between the first and the second

position in a pair. With this we aimed to investigate whether it was easier to detect the /r/ if it was in the first or the second sentence. According to the concept of priming (Bargh and Chartrand 2014), the first sentence in a perception task like ours could function as a priming stimulus, and the second as the target stimulus, the latter drawing more attention. Furthermore, the recency effect (according to which recent information, e.g., the last few items in a list, are more easily recalled; see Baddeley and Hitch 1993), suggests that participants may have forgotten the first sentence by the time the second one played. Based on these, we expected that the presence of an /r/ in the second sentence would be easier to detect than its absence. (As this last variable is language-external, it did not affect the selection of words for the sentences in the instrument.)

In summary, we anticipated that it would be easier to notice an /r/ under the following conditions:

- In sentences with nonwords, due to the nature of the lexical bias effect;
- If it occurs in the second sentence, due to priming and the recency effect.
- If there was no other /r/ nearby, due to auditory masking.

The fourth variable, vowel quality, was included for exploratory purposes: we wanted to see whether, e.g., the acoustic properties wherein the vowels differ could make a following /r/ more noticeable.

The participants performed the discrimination task individually and without supervision. This approach allowed for the inclusion of more participants and helped minimise the Hawthorne effect (Dörnyei 2007) or observer's paradox (Labov 1972), which states that participants may alter their behaviour when they are aware of being observed. Each informant received a link to an online platform (<https://testmoz.com/>) and a set of instructions, which they were asked to read carefully before starting the experiment. The instructions first reminded the informants to participate only if they met each of the criteria described in Section 3.1. A description of the task followed: participants were to indicate whether they heard any difference between the sentences in each pair, and, if so, to explain what the difference was. They were asked to complete the task in a quiet environment (free from distractions for 10–15 minutes), and to use headphones or earphones to listen to the recordings. They were also instructed to listen to each stimulus only once. The experiment

began with two trial rounds, where sample answers were provided to demonstrate the expected level of detail in their explanations.

3.3. Methods of data analysis

Data were stored in MS Excel, where the binary responses provided by the participants in the AX discrimination test were recorded. The spreadsheet also contained the values of the variables examined. For analysis, we reviewed each variable and counted the instances of its values within the dataset, then calculated how many of those instances were correctly identified by the participants. Table 2 summarises the total instances belonging to each value of the variables.

Variable	Values	Instances
lexical bias	existing words	144
	nonwords	120
vowel quality ⁴	/ɔ:/	96
	/ɑ:/	72
	/ə/	96
another /r/ nearby	yes	144
	no	120
order	/r/ in the 1st sentence	144
	/r/ in the 2nd sentence	120

Table 2

The data obtained from this study did not allow for the use of inferential statistics, nor was this our objective – our aim was to conduct a preliminary examination of the variables, with the results serving as a foundation for designing a larger-scale quantitative experiment to accurately test the real effect of these variables. Therefore, we employed descriptive statistics in the analysis. Participants' qualitative responses were analysed using thematic content analysis (Xu and Zammit 2020), which involved reviewing the explanations to identify common themes and patterns in the responses.

⁴ The vowel /ɜ:/ is missing from the table because it was not included in the stimuli due to the rare occurrence of trigger words ending in this vowel. Examples are limited to a few French loanwords such as *milieu* or *(cordon) bleu*.

4. Results and discussion

4.1. Intrusive R perception

The experiment involved a total of 264 instances of detectable Intrusive Rs, of which 58 (21.97%) were both noticed and correctly described by the participants as an /r/ (i.e., the participants were able to point out that the difference between the two versions of the sentence in the AX discrimination task was that in one of them there was an extra /r/ sound). Additionally, in the case of 78 instances (29.55%), the participants *did* perceive a difference in the sentence containing the Intrusive R, but were unable to provide a precise description of the difference they observed. In what follows, we will merge these two categories (clear and marginal instances) in our analysis and regard them as “found” differences, considering the fact that the learners possessed no explicit knowledge of what Intrusive R was, and the aim was to see if they noticed the difference at all, even if they could not pinpoint accurately what it was. The participants’ misperceptions will be discussed in Section 4.3.

In the remaining 128 cases (48.48%), the participants either indicated that the two sentences they listened to were the same, or pointed out a difference in a part of the sentence other than where the Intrusive R was. Thus, the overall detection rate was 51.52%.

4.2. The variables examined

Of the variables examined, we did not observe the anticipated influence of lexical bias – detection rates were similar for existing words and nonsense words (50% for the former and 52.33% for the latter). This indicates that word familiarity did not affect participants’ ability to detect Intrusive Rs, contrary to what was expected based on how the lexical bias effect operates.

The presence of another /r/ sound near the intrusive one and the order of the sentences affected the participants’ perception in the way we anticipated. The informants were more able to notice an Intrusive R when it was not near another /r/ sound, with a 60% detection rate with no other /r/, compared to 44.44% when there was another /r/ nearby. This suggests that two /r/ sounds, of which one is “unexpected”, are difficult for learners to notice; the “expected” /r/ *did* mask the presence of the Intrusive R.

Similarly, the order of the sentences influenced detection as expected, with Intrusive Rs being more easily noticed when they appeared in the second sentence of the pair (63.33%) rather than when they were in the first one (41.67%). This result

aligns with the priming and recency effects discussed in Section 3.2, as participants may have been more focused on the second sentence, allowing them to notice an Intrusive R there more clearly. This finding raises the issue that the order of the sentences could be considered in the instrument design, rather than being a variable to examine – we will discuss this in Section 5.

Finally, Intrusive Rs were more frequently detected following /ə/ and /ɑ:/ (63.54% and 61.11%, respectively), compared to /ɔ:/ (32.29%). The reason why Intrusive Rs were the most difficult to notice after /ɔ:/ may be that the articulatory-acoustic distance between /ɔ:/ (the least non-high of the trigger vowels) and /r/ is the smallest, as both are close and rounded. Especially compared to open-unrounded /ɑ:/, the detection of /r/s after /ɔ:/ may have been more difficult. However, perceptual salience due to stress may have interacted with vowel quality, influencing the results. Therefore, in future iterations of this study, including a follow-up with a revised design, we plan to examine the vowel *following* the Intrusive R as well, as this would allow for an analysis of how the /r/ being in the onset a stressed or unstressed syllable may affect perception.

4.3. Describing the differences

In this subsection, we examine the 78 instances in which the participants noticed the difference between the two versions of the sentence but could not specifically identify the presence of an extra /r/ sound. In their descriptions of the differences, the following themes were identified: pointing out differences in clarity (37+13 instances), associations with different words (11+7 instances), perceiving a Hungarian /ø/ (7 instances), and perceiving a consonant other than /r/ (3 instances).

Let us explore these themes in more detail. The majority of the participants highlighted differences in clarity or emphasis: in 37 cases, they noted that the sentence without the Intrusive R was more clearly articulated because the words were emphasised or separated. Some examples of their observations include: “in the second sentence, the end of the word ‘pizza’ merges with the following conjunction”, (Participant 3); “the words ‘hepra’ and ‘and’ were separated better in the second sentence” (Participant 18); “in the second sentence, a little pause was audible after ‘draw’” (Participant 3). In these instances, the participants did not mention an extra sound; they only noticed the difference between the sentences indirectly. These observations are likely to stem from the fact that the stimulus provider, whose natural accent of English displays Intrusive R, had to consciously

avoid hiatus filling, thus isolating the words by a very brief pause in one version of the sentence. This isolation may have made the sentences more easily understandable to the participants.

13 participants also referred to issues with clarity, but from a different perspective: they described one sentence as being articulated carelessly by the stimulus provider. They mentioned that the reader did not pronounce a word “properly”, either omitting the final syllable or the last few sounds. Such remarks were mostly (though not always) made about sentences with no Intrusive R. E.g.: “the ending of the word ‘pimma’ was closed more strongly in the second sentence, while in the first one the speaker just deleted the end of the word” (Participant 3 – the /r/ was in the 2nd sentence in this case); “in the first sentence, the part ‘ra’ was not pronounced normally in the word ‘hepra’” (Participant 8) – in this case, the Intrusive R was in the second sentence, so the participant is likely to have thought that “hepra” was actually “heprar”, and the form with the extra /r/ was how the word was to be pronounced “normally”.

In 11 instances, participants explained the difference between the sentences by identifying a particular word as different. Examples include “saw a dog” vs. “saw her dog” (Participant 5); “pizza or spaghetti” vs. “pizza roll spaghetti” (Participant 5), “draw” vs. “drawer” (Participant 6), etc. These participants heard an extra /r/ sound in one sentence, but explained its presence at the lexical rather than phonological level, associating it with another word containing an /r/ that fitted the sentence semantically (though not always perfectly). A similar phenomenon occurred with nonsense words: in seven such cases, without existing words to associate with, participants created a nonword that matched their perception. For instance: “it sounded as if ‘hepra’ was ‘hepura’ or ‘hepurer’ in one case (I don’t know the word)” (Participant 5); “I heard the word ‘hepra’ in the first sentence pronounced as ‘hepra’, and as ‘hepör’ in the second one” (Participant 2). As seen from the examples, these misperceptions occurred in nonsense words containing a non-intrusive /r/ and involved either adding an extra /r/ to a word (“hepurer”) or repositioning it (“hepra” vs. “hepör”).

Additionally, seven participants identified the Intrusive R as a Hungarian /ø/ sound. Examples include: “For the second time the word ‘hepra’ was pronounced with a letter ‘ö’” (Participant 7); “the ‘a’ in ‘pimma’ was pronounced first with a Hungarian ‘a’, and in the second case it sounded more like an ‘ö’ sound” (Participant 10); in the word ‘crah’ in the second sentence, [...] it was as if there was an ‘ö’ at the end of the word” (Participant 16). This can be explained by the phonetic

similarity between schwa and /r/, with schwa often perceived (and thus substituted) by Hungarians as /ø/.

Finally, in three cases, the participants observed an intrusive consonant, but not an /r/ – instead, they identified a /j/, e.g., “in the first [sentence], there was a ‘j’ sound at the end of ‘crah’” (Participant 19). This could be due to the fact that English /r/ is like a glide, with a vowel-like formant structure, making it sound more like /j/ to Hungarian speakers, particularly in contrast to the very consonantal Hungarian /r/, especially when the sound is unexpected. Alternatively, it is also possible that these learners possess some knowledge of hiatus fillers, but their perception is influenced by the fact that in Hungarian only /j/ can act as a hiatus filler.

5. Conclusion

This study has investigated the perception of Intrusive R among Hungarian learners of English. The findings indicate that the participants demonstrated a moderate ability to detect Intrusive Rs, identifying the difference in half of the instances tested (though only a fifth of the instances were described accurately). Of the variables examined, the presence of another /r/ nearby and the order of the sentences in the perception task emerged as potentially influential factors in learners' perception, with more Intrusive Rs detected when there was no other /r/ sound near the intrusive one, and when the Intrusive R appeared in the second sentence. Participants' qualitative descriptions of their perceptions of Intrusive R highlighted various themes, such as clarity and emphasis issues, associations with other lexical items, and misperceptions of the /r/ as other consonant sounds.

Nevertheless, the study suffers from a few limitations, which may have impacted the results. The sentence pairs used in the AX discrimination task were not the original and an artificially modified version of the same recording; instead, the stimulus provider read out each sentence twice. This approach ensured natural-sounding stimuli, but despite all efforts on the speaker's part to maintain consistency apart from the presence or absence of Intrusive Rs, unintended, subtle differences may have occurred between the two renditions of each sentence. These variations could have been perceptible to some participants, potentially diverting their attention away from the intended variable.

It is also important to acknowledge that data collection was conducted in an unobserved environment, with participants typing the differences they noticed between the sentence pairs. As described in Section 3.2, this method was chosen

primarily to increase the number of participants and to minimise the Hawthorne effect / observer's paradox. However, while advantageous in these respects, this method has inherent drawbacks: participants may have been able to articulate their observations more effectively and accurately in a verbal form rather than in writing. Furthermore, as the experiment progressed, participant fatigue may have led to decreased attention and thus less detailed responses, potentially contributing to data loss. Additionally, it remains uncertain whether participants adhered strictly to the instructions, especially the one about not replaying the recordings – this possibility may also have impacted comparability across responses.

Moving forward, future iterations of this study could benefit from dividing it into two separate phases. Firstly, a qualitative phase could involve a small number of participants performing a similar discrimination task, but in an observed environment. Participants would provide binary answers on a computer, and qualitative responses verbally, which would be recorded and transcribed. We are also considering having participants listen to each stimulus twice, and consistently placing the Intrusive R in the second sentence of the sentence pairs. Subsequently, in a quantitative phase, a larger pool of participants could be examined, using a yes/no format to identify Intrusive Rs in audio stimuli. With participants informed about what to listen for, no distractors would be necessary, allowing for the inclusion of more stimuli. Such a larger-scale approach would facilitate a comprehensive quantitative analysis, exploring not only the variables discussed in this paper, but also others such as explicit knowledge (which was not addressed here, since unfamiliarity with the feature was one of the criteria participants had to meet).

In conclusion, our study has highlighted the complexity of Intrusive R perception, thus paving the way for further exploration. The modifications we proposed could offer a deeper insight into the participants' perception of Intrusive R as well as the influence of various linguistic variables on their perception.

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Appendix

1. I was scared when I saw a dog.
2. Doing yoga is good for you.
3. She jicked the pimma in the jave.
4. A plaw and a zunny are fiking.
5. My mother-in-law is nice.
6. The glah is my penchy wuck.
7. This paper gives extra information.
8. The health spa is still open.
9. The frimpy traw is a hurn.
10. He bizzed the fimra in the beel.
11. His camera and his tablet are there.
12. It's easy to draw a cat.
13. He glonked the limmy zaa at the frummy.
14. They himmed the hepra and the crat.
15. My grandma is the best cook.
16. A nemp jimps the crah into the tole.
17. Would you like pizza or spaghetti?