

THE EFFECTS OF CORRECTIVE FEEDBACK FREQUENCY ON ESL PRONUNCIATION UPTAKE, REPAIR, AND PREFERENCE

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Despite growth in second language pronunciation research, there is limited research on Corrective Feedback (CF) frequency and pronunciation. This study examined the effects of CF frequency on learner uptake, repair, and CF preferences. Participants ($n = 9$) joined an English pronunciation tutoring session and received high (100%) or low (50% feedback on productive activities) feedback. Surveys (pretest and posttest) established biographical data and explored preferences for CF. Sessions were analyzed for pronunciation errors, uptake, and repair success. Participants reported mostly positive emotions when receiving feedback. Participants wanted frequent CF. Results showed CF frequency did not affect uptake. Frequency may have impacted repair success (i.e., marginal significance [$p=.08$] was found when comparing high and low feedback groups); the low feedback group had a higher repair success rate. Results suggest that while learners prefer high feedback, we need to explore CF frequency and repair.

INTRODUCTION

Pronunciation in second language (L2) learning is a blossoming field of interest (Levis & Wu, 2018), as is the study of corrective feedback (CF) and the role it plays in L2 language development (Saito, 2019; Saito & Lyster, 2012). Research has shown that pronunciation is directly related to intelligibility, the degree to which speech is understood (Munro & Derwing, 1995), and impacts the success of communication (Levis, 2018). Further, even when speech is intelligible, listeners may have biases against accented speech (Gilakjani, 2016; Lindemann, 2005; Yager, 1992). Thus, pronunciation is an important area of L2 acquisition as it has direct ramifications for how L2 learners are perceived by others in the real world. Although researchers have studied learners' beliefs about CF and the effectiveness of feedback types in pronunciation learning (Couper, 2022), research is limited regarding the effects of feedback frequency. The present study investigates how the frequency of teacher-provided CF affects learners' uptake and error repair as well as preference for CF frequency.

Corrective Feedback and Language Development

CF refers to oral feedback indicating something in a learner's output is erroneous (Nassaji & Kartchava, 2017). CF has direct ties to Schmidt's (1990) Noticing Hypothesis which states that only features learners notice and are consciously aware of are accessible for true learning. After receiving CF, learners may respond in a variety of ways that indicate noticing (i.e., uptake), including attempting to fix the error (i.e., repair) (Wu, 2020). Although pronunciation may present particular challenges, such as learners' ability to perceive differences in feedback (Couper, 2022), generally language learners can recognize CF and show high rates of uptake. In Wu's (2020) study, learners showed a 91% uptake rate in response to CF.

In general research has concluded that CF plays a pivotal role in helping learners improve (Saito, 2019) and that providing CF is more effective than providing no CF (Russell & Spada, 2006). Couper (2022) concludes that CF is also important and impactful in L2 pronunciation learning. For example, Saito and Lyster (2012) explored the effects of CF with three groups following a meaning-oriented lesson: one received no training or feedback (control), one received form-focused instruction (FFI), and the last received CF in addition to FFI (Saito & Lyster, 2012). Only the group receiving FFI and CF improved their pronunciation of the phoneme /ɪ/ outside of the controlled classroom activities and in spontaneous, unrehearsed speech outside of class (Saito & Lyster, 2012). CF likely helped because it drew learners' attention to their incorrect pronunciation (Saito & Lyster, 2012). Further, several studies have shown that learners prefer receiving CF over not receiving CF (Russell & Spada, 2006; Yakışık, 2021), react positively to CF (Phuong & Phuong, 2019), and often want to receive the most CF possible (Huang & Jia, 2016; Jean & Simard, 2011).

Research on CF has focused on sources and types of CF. For example, research has shown that although learners are sometimes able to self- or peer-correct (Ahangari, 2014; Sultana, 2009), they may find it difficult to assess their own pronunciation (Dlaska & Krekeler, 2008). Learners may doubt the accuracy of peer-feedback (Miao et al., 2006). While teacher feedback has its own problems, such as higher learner anxiety, it is often seen as quick and accurate (Ahangari, 2014). Studies have also examined the efficacy of various types of feedback, finding that although recasts can be helpful, explicit feedback is often more effective for improving pronunciation, perhaps due to learners being unable to correctly hear and form the desired pronunciation trait in a recast (Couper, 2022; Gooch et al., 2016).

Most studies examining frequency of CF focus on how frequently teachers employ particular forms of CF. For example, studies have shown that recasts often make up over half the CF provided (Fu and Nassaji, 2016; Lyster & Ranta, 1997). Wu (2020) looked at overall frequency of classroom CF and found that EFL instructors provided a high frequency of CF (86%), on average giving CF every 1.2 errors. A notable phenomenon in CF frequency research is the difference in perception of perceived CF versus the actual frequency of CF. Fu and Nassaji's (2016) L2 classroom study calculated that the instructor gave CF at 2.5-minute intervals, but the majority of students and the instructor perceived the CF frequency to be greater than it actually was.

Our study seeks to better understand the effects of CF frequency by looking at efficacy for uptake and repair and examining learner beliefs and preferences. Uptake for this study will be defined per Wu's 2020 study where uptake is a learner noticing CF and error repair is the verbal attempt at repairing said error, regardless of the success of error repair.

Our research questions are:

1. Does the frequency or rate at which CF is provided by an instructor affect learners' pronunciation uptake and error repair?
2. After experiencing a low or high frequency CF rate during a pronunciation tutoring session, what are learners':
 - a. reactions to the CF received and
 - b. preferences for frequency of feedback?

METHODS

Data collection for this small-scale, exploratory study ran from October 2021 to January 2022. Data was collected through surveys hosted on SurveyMonkey and a video-recorded pronunciation tutoring session that took place on Zoom.

Participants

Participants ($n = 9$) were adult, nonnative speakers of English. Although 12 learners started the study, only nine successfully completed it. The majority of participants were female ($n = 7$). The average age was 23.56 years ($SD = 7.18$, range: 19–42). Participants spoke various native languages: Arabic, Hindi, Korean, Nepali (2), Spanish (3), and Yoruba. On average, participants reported having learned 2.75 languages ($SD = 1.48$). The average age learners reported beginning to learn English was 5.78 years ($SD = 2.78$), and the average length of residence in the United States was 11.29 months ($SD = 13.39$). In the pre-lesson survey, participants used a 9-point Likert-scale (1 = strongly disagree, 9 = strongly agree) regarding their feelings about improving their pronunciation. Participants reported feeling motivated to improve their pronunciation ($M = 7.78$, $SD = 1.75$) and felt positively towards having their pronunciation errors corrected ($M = 7.67$, $SD = 1.56$).

Surveys

The study utilized a pre- and post-training survey design. The pre-lesson survey included a consent form along with three sections: participant demographics (four questions), language background (seven questions), and biographical data concerning their experiences and attitudes toward English pronunciation and feedback (four questions). After completing the lesson, participants completed a post-lesson survey (five questions), which asked about perceived rate of feedback during the lesson, preferences for CF rate, and emotions experienced when receiving CF. For example, the post-lesson survey included a 9-point Likert scale question that asked participants to rate how strongly they agreed with the statement, “I enjoyed the amount of feedback and correction that I received today,” from 1 (strongly disagree) to 9 (strongly agree).

Tutoring Session

Before the tutoring session, the researcher randomly assigned participants to a low frequency feedback group (LFFG, $n = 4$) or high frequency feedback group (HFFG, $n = 5$). Because there was no guaranteed number of participants, the assigned group was determined by alternating additions to the LFFG and HFFG. Participants were not notified of their grouping at any time during the study.

Each tutoring session was conducted one-on-one between the lead researcher and participant through Zoom and video recorded. The lesson covered was researcher-created and consisted of eight activities designed with Celce-Murcia, Brinton, and Goodwin’s (2010) framework in mind, including explanation, perception, and controlled and guided production activities. All activities in the lesson focused on two vowels, /æ/ and /ɛ/ which are both lax and exist very close together in the mouth space (Reetz & Jongman, 2009). Further, one or both of these vowels are absent

from at least 41 world languages (Nilsen & Nilsen, 2010).

For the first four activities, which focused on metalinguistic explanation and perception, the researcher gave feedback for every error to all participants (100% frequency). For the final four activities, which were focused on controlled and guided production, the researcher provided CF based on grouping. While HFFG continued to receive feedback for every error (100%), the researcher alternated feedback for every other error for LFFG, approximating a 50% frequency. The CF consisted of oral feedback indicating something in the learner's output was erroneous (Nassaji & Kartchava, 2017). Specifically, the researcher employed explicit correction, recasts, clarification requests, elicitation, and metalinguistic explanation. All CF was researcher-provided and based on the researcher's perception of the learner's pronunciation of /æ/ and /ɛ/ throughout the entire session. The lesson did force participants to repeat words with vowels /æ/ and /ɛ/, but the CF covered any learner utterance that used /æ/ and /ɛ/.

Analysis

Survey responses, both pre- and post-training, underwent descriptive statistical analysis. An Excel sheet was used to track data from the tutoring session video recordings. The sheet tracked participant errors for the final four lesson activities including time code of error, time code of CF (if present), type of CF given, whether the participant noticed the feedback (uptake), and error repair for each error coded as successful, partial, or unsuccessful.

Because the researcher could not guarantee an even number of errors made by LFFG participants, the actual frequency of CF was calculated by dividing how many errors received CF out of the total errors made for each participant. The percent of uptake for each participant was found by dividing the total uptake scores (zero for no uptake, one for uptake) from their session by the number of errors that received CF. Finally, a percent of repair accuracy was found by coding each pronunciation error that received CF. The repair got a full score (one) for successful repair, a score of 0.5 for partial improvement, and a score of zero for no improvement, all analyzed by ear. From this, the total repair score for each participant was divided by their total errors that received CF to give a percent of repair accuracy.

The data was grouped by CF frequency (HFFG, LFFG) for inferential analysis. Given the small groups, non-parametric tests that did not assume normal distribution were run in SPSS with an alpha level of 0.05. To analyze frequency effects on uptake, a chi-square test was used, while a Mann-Whitney *U* test was used to examine frequency effects on repair success.

RESULTS

Frequency Effects on Uptake and Repair

Participants showed high levels of uptake regardless of grouping, with 100% uptake reached for eight participants. One participant had an uptake of 75%. Overall, participants also had high percentages of accuracy of error repair; whereas all four of the LFFG had 100% repair, three out of five HFFG had lower repair rates (see Table 1 for individual participant data).

Table 1

Uptake and Repair Scores Per Participant

Participant Code	Participant Native Language	Frequency Group	Total Count of Errors Receiving CF	Total Count of Uptake for Errors Receiving CF	Total Percent of Uptake for Errors Receiving CF	Total Count of Error Repair for Errors Receiving CF	Total Percent of Error Repair for Errors Receiving CF
P1H	Nepali	HFFG	10	10	100	9	90
P2H	Nepali	HFFG	4	3	75	2	50
P3H	Arabic	HFFG	7	7	100	4.5	64
P4H	Spanish	HFFG	7	7	100	7	100
P5H	Korean	HFFG	12	12	100	12	100
P6L	Yoruba	LFFG	2	2	100	2	100
P7L	Spanish	LFFG	1	1	100	1	100
P8L	Spanish	LFFG	2	2	100	2	100
P9L	Hindi	LFFG	2	2	100	2	100

The uptake rates for HFFG and LFFG underwent analysis via Chi-square, finding a p value of 0.34, meaning there were no statistically significant differences in uptake rates across groups. The frequency of CF did not affect uptake rate.

When examining differences in accuracy of pronunciation repair between the HFFG and LFFG, the Mann Whitney U test yielded a p value of .08. Although $p > .05$, the difference in repair could be considered marginally significant. Notably, every participant in LFFG reached a repair rate of 100%. In contrast, only two of five HFFG participants reached a repair rate of 100%, suggesting that a high frequency rate of CF may have negatively affected learners' pronunciation error repair.

A follow-up analysis was conducted to explore learners with imperfect error repair rates (those under a 100% rate of accuracy). This analysis attempted to look at those with imperfect error repair accuracy to see if there was a pattern in their ability to repair their errors over the course of the ESL lesson. Table 2 shows errors in the order they were made and repair accuracy for each.

Table 2

HFFG Errors and Improvement Over Lesson Per Participant

Participant Code	Error Made	CF Given	Uptake	Error Repair Accuracy
P1H	Error 1	yes	1	1
	Error 2	yes	1	1
	Error 3	yes	1	1
	Error 4	yes	1	1
	Error 5	yes	1	1
	Error 6	yes	1	1
	Error 7	yes	1	1
	Error 8	yes	1	1
	Error 9	yes	1	0
	Error 10	yes	1	1
P2H	Error 1	yes	1	0.5
	Error 2	yes	0	0
	Error 3	yes	1	0.5
	Error 4	yes	1	1
P3H	Error 1	yes	1	0
	Error 2	yes	1	0.5
	Error 3	yes	1	1
	Error 4	yes	1	0.5
	Error 5	yes	1	1
	Error 6	yes	1	0.5
	Error 7	yes	1	1

The individual data shows that out of the three learners with imperfect error repair, one of the three, P3H, may have improved their ability to repair errors over the course of the lesson. P3H received CF and showed either partial or successful repair throughout the duration of the lesson, although the limited data size of the data set makes this finding difficult to generalize.

Frequency Effects on Learner Perceptions of Feedback and Preferences

In the post-lesson survey, a nine-point Likert scale (1 = strongly disagree, 9 = strongly agree) was used to assess participant enjoyment of CF received during the lesson. The average Likert scale score was 7.78 ($SD = 1.75$), showing that learners generally enjoyed CF. Seven participants agreed they enjoyed the CF received during the lesson, with six marking “strongly agree” (HFFG $n = 3$, LFFG $n = 3$). Two participants felt neutral about the lesson’s CF.

Participants were also asked to report emotions experienced when receiving CF in the lesson. They were presented with a range of emotions and could select as many as appropriate: disgusted, sad, nervous/anxious, surprised, satisfied, happy, and other (where they could fill in an emotion). Six participants felt happy when receiving CF. Six felt satisfied when receiving CF.

Two checked feeling anxious/nervous. Thus, participants mostly felt positive emotions when receiving CF, although a smaller number of participants experienced nervousness or anxiousness.

Participants reported perceived frequency of CF received using a nine-point Likert scale (1 = no feedback to 9 = 100% feedback). Table 3 shows that six participants did not correctly perceive their frequency of CF. Two of the HFFG inaccurately perceived their frequency of CF to be less than what it was. Out of the four in LFFG, none were accurate and perceived more CF than was given.

Table 3

Participants' Perceived Feedback Frequency and Preferences

Participant Code	Grouping based on CF Frequency	Preferred Percent Frequency of CF Before Lesson	Actual Frequency of CF Received in Percent	Likert Scale Perceived Frequency of CF in Percent	Preferred Percent Frequency of CF After Lesson
P1H	HFFG	100	100	100	100
P2H	HFFG	100	100	100	100
P3H	HFFG	50	100	100	100
P4H	HFFG	50	100	50	50
P5H	HFFG	72.22	100	72.22	72.22
P6L	LFFG	72.22	66.67	88.89	72.22
P7L	LFFG	72.22	33.33	88.89	100
P8L	LFFG	100	50	100	100
P9L	LFFG	50	40	61.11	50

Table 3 also shows the majority of participants did not change their preference for frequency of CF after experiencing the tutoring session (i.e., comparing responses from the pre- and post-survey). Two participants, P3H and P7L, preferred receiving a higher frequency of CF (100%) after the session.

DISCUSSION

Given the lack of research regarding effects of CF frequency, the current study explored whether CF frequency affects learners' pronunciation uptake, error repair or preferences. Regarding learners' uptake, there was no evidence that frequency of CF affected uptake; all but one of the participants had 100% uptake, a higher rate of uptake than reported in Wu (2020). This may be because students often see the teacher as the locus of control, and in this one-on-one context, the degree of interaction and directness between the teacher (researcher) and the student (participant) was heightened. Students may have felt a greater need to acknowledge and fix pronunciation errors.

Regarding pronunciation repair, there was marginal significance across groups suggesting a

lower frequency of CF may be more beneficial for repairing pronunciation errors. This is one of the first studies to explore this phenomenon. One possible explanation would be that high CF might overwhelm learners and therefore be less effective at allowing learners to repair pronunciation errors while low CF frequency may allow learners to focus their attention on a smaller number of errors. There were differences, however, in the number of errors made by the two groups (see Table 1) which complicates any attempt to draw comparisons. Further, the follow-up analysis of individual data does not support this hypothesis, as there was a participant who trended towards becoming more accurate in repairs over time. This aligns with previous research showing learners tend to remember items more clearly and effectively if the item is addressed frequently over several short periods of time (Settles & Meeder, 2016). If learners in the HFFG were growing overwhelmed by the feedback, we would expect them to become less accurate in making repairs over time. These conflicting findings invite future additional research into this topic.

The study also explored the learners' perception of the rate of CF received during the session and preferences. Data showed the majority of participants were inaccurate in their perception of the frequency of CF received, corroborating Fu and Nassaji's (2016) research showing teachers and students perceive higher CF frequency. This study showed learners can also be inaccurate in the opposite direction, especially when receiving high levels of feedback. Thus, future studies should also examine perceptions of CF frequency when students are receiving high levels (at or near 100%) of CF.

In terms of preference for CF frequency, few learners changed preference for CF frequency following the session. Both HFFG and LFFG had one participant who wanted a higher rate of CF following the tutoring session. This result aligns with previous research showing learners request and prefer the most CF possible (Huang & Jia, 2016; Jean & Simard, 2011; Yakışık, 2021) and further validates these learners' aforementioned desire to improve their pronunciation.

When participants were asked about emotional reactions to CF during the session, most participants experienced positive emotions, with two participants reporting anxiousness/nervousness. These mixed results were in line with findings that teacher CF can make some learners experience negative emotions or heighten their affect (Ahangari, 2014) but also allow learners to experience positive emotions like happiness (de Dios Martínez Agudo, 2013). In this study, learners' positive and negative emotions were not necessarily mutually exclusive; one participant reported experiencing both positive emotions (happiness, satisfied) and negative emotions (anxiousness/nervousness). When considering this finding, research acknowledges that anxiety is not always detrimental. In fact, research has shown that anxiety can be debilitating (negatively impacting learning outcomes) or facilitative (motivating students to perform more efficiently or rehearse more) (Alpert & Haber, 1960).

Directions for Future Work

There were several limitations to the current study. The sample size was small, meaning results are not generalizable. In addition, the learners in this study all had relatively high levels of proficiency in the target language; it would be interesting to investigate how CF frequency affects lower proficiency learners' uptake and repair. Also, three of the LFFG participants did not

receive a perfect 50% CF rate. Further, the study design of alternating feedback for LFFG required the lead researcher (teacher) to heavily divide their attention between teaching, perceiving errors, and providing CF. This challenge may, however, make the study more ecologically valid.

Future research could take multiple directions. In addition to studying larger groups, it would be useful to explore the places learners did not show uptake or were unsuccessful at repair to search for patterns, examining context of the error or type of feedback provided. With a larger sample size, a delayed posttest could be added to discover if there are any lasting effects from the tutoring session. Research could also explore uptake and repair rates for peer-feedback versus teacher-feedback.

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