RELATIONSHIP BETWEEN LEARNER BACKGROUND AND PRONUNCIATION GAIN ON IELTS

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This study examined the impact of learner background on pronunciation development in the context of IELTS exam performance. Participants were 52 adult Korean EFL students enrolled in IELTS preparation classes. They completed the official IELTS exam before and after a 12-week preparation course, along with pre-, weekly, and post-surveys about their background and language learning habits. Key learner background factors (prior English study, desired IELTS scores, program attendance, mock exam scores, perceived progress in English/IELTS, and instrumental motivation for studying IELTS) were measured as potential predictors of pronunciation development on the monologic IELTS speaking task. Multiple regression analyses revealed program attendance and mock exams to be the strongest predictors of pronunciation feature development. These results offer promising implications for classroom language learning in the EFL context.

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INTRODUCTION

On high-stakes language proficiency exams such as the IELTS, score gains are interpreted as evidence of linguistic development. For speaking assessment, particularly in pronunciation, this connection may be problematic as scores are limited by the options available on the rubric (Isaacs, Trofimovich, Yu, & Muñoz Chereau, 2015), leading to scores that may not accurately represent a test-taker's actual pronunciation performance. Relatively little research exists examining learners' pronunciation development on large-scale English proficiency exams by measuring the linguistic features associated with pronunciation scores. Furthermore, while learner background factors such as motivation and study habits have been shown to contribute to both pronunciation development (Saito, Dewaele, Abe, & In'nami, 2018) and IELTS performance gains over time (Elder & O'Loughlin, 2003), questions remain about how these background factors contribute to learners' pronunciation gains in their test performances, especially for learners in an EFL context. It is this gap that the current study seeks to address.

A purposefully broad term, 'learner background factors' has been selected to describe the myriad aspects of learners' individual differences (e.g., motivation, self-perception), behaviors (e.g., course attendance, exam performance), and experiences (e.g., previous English study) that can affect pronunciation performance and its longitudinal development. In previous IELTS research, Elder and O'Loughlin (2003) found that measures of "personal, instructional and environmental" (p. 209) factors contributed significantly to IELTS score gains. In this paper, we report on six such factors: previous English study, program attendance, perceived progress in English/IELTS, mock exam scores, desired IELTS score, and instrumental motivation in studying IELTS. Previous

English study has often been measured in IELTS performance gain research (operationalized as number of years/months of previous study; for example, Elder & O'Loughlin, 2003; Green, 2007) to provide context for learners' L2 proficiency, though it has not emerged as a statistically significant predictor of score increases for ESL learners. EFL learners, however, may be more likely to rely on their study experiences for input in the L2 than those in an immersive ESL context. Similarly, program attendance, or the amount of time spent in class (measured through number of class sessions attended or hours present in class), has been shown to significantly predict exam performance in the EFL context (Kelsen & Liang, 2012), but not in the ESL context (Elder & O'Loughlin, 2003). Beyond daily classroom attendance, students' self-perception of their learning process is a powerful motivational tool that allows learners to notice gaps in their learning and consciously adjust their efforts (Smith, 2012; Weiner, 2000). This has been measured in various ways, including through teacher-student interviews (Smith, 2012). An additional tool aiding in self-perception for test-takers is mock (or practice) exams. These give learners an opportunity to learn the demands of the test they are preparing for (Green, 2007) and can positively impact IELTS performance for EFL students (Khodabakhshzadeh & Zardbanloo, 2017). They may serve as intermediary instrumental motivators while learners develop their language skills because the changes in performance that they demonstrate allow learners to track their progress. In fact, learners' motivation has been widely established as a positive correlate with L2 achievement (Masgoret & Gardner, 2003), including pronunciation development (with motivation operationalized as responses to Likert-scale items; see Saito et al, 2018). Another salient motivator for test-takers is their desired exam score. On top of the washback on learners' test preparation activities (Green, 2007), a self-reported desired exam score reflects external validation of the language skills required to achieve a broader life goal, for example, university admission, visa eligibility, or professional certification (Lam, Green, Murray, & Gayton, 2021; Merrifield, 2012, 2016).

Current Study

In the present study, we examined Korean EFL learners' pronunciation progression on the IELTS speaking section over a 12-week period by investigating learner background factors that predict their pronunciation development. An EFL context was selected due to a relative lack of research on EFL learners' pronunciation performance changes on large-scale proficiency exams. It should be noted that this is part of a larger project examining the impacts of IELTS preparation and learner background factors on both score gains and linguistic progression on the IELTS (see Kang, Ahn, Yaw, & Chung, 2021).

Research Question

This study was motivated by the following research question:

1. How do learner background factors (i.e., prior English study, desired IELTS score, program attendance, mock exam scores, perceived progress in English/IELTS, instrumental motivation in studying IELTS) predict pronunciation progression on the IELTS speaking section?

METHODS

Participants

Participants were 52 Korean EFL students enrolled in a 12-week IELTS preparation course at a language institute in Seoul, South Korea. Ranging in age from 16 to 53 years old (M = 26.75, SD = 8.91), this group was 61.5% female (n = 32) and 38.5% male (n = 20). The language institute placed participants into three proficiency levels using an in-house placement test scaled similar to the IELTS with subcomponents for reading and writing. Beginners (n = 16) scored from 1.0-4.0, intermediate (n = 17) scored from 4.0-6.0, and advanced (n = 19) scored 6.0 or higher. Prior official IELTS scores were also considered for those who had taken the test.

All IELTS preparation courses included work on the four skill sections of the IELTS (listening, reading, speaking, writing), though there were variations across the proficiency levels as the aim was to help learners achieve the greatest amount of score improvement possible in the course session. For beginners, the emphasis was on becoming familiar with IELTS question types and prompts, and learning to develop ideas. Intermediate courses focused more on individualized feedback targeting learners' areas in need of improvement, while advanced courses emphasized more target-like language production, including formulaic language. Across all levels, courses included weekly mock IELTS exams to offer learners detailed feedback on their strengths and weaknesses.

Research Instruments

At the beginning and end of the 12-week study, participants took the official IELTS test as part of a regular test administration session. Intervals between pre- and post-tests varied from 77 to 98 days (M = 88.53, SD = 5.55), with one outlier delayed a further three months because of COVID-19. The research team received official score reports and recordings of test-takers' speaking performances for all participants. These recordings were used to analyze linguistic progression between the two test sessions.

We administered background questionnaires to all participants via Qualtrics at two times: 1) prior to their first IELTS exam, and 2) at the end of their course and before their second IELTS exam. Adapted from Elder and O'Loughlin (2003), the forced-choice and open-ended questionnaire items were designed to elicit information about potential predictors of IELTS score gains and linguistic development. These included demographics, previous English study, target IELTS score to meet their academic goals, and instrumental motivation for English language learning and IELTS preparation. On the post questionnaire, participants also indicated their perceived degree of progress in English and IELTS during the 12-week study period.

During the study, participants completed a weekly Qualtrics survey reporting on their hours of English study (i.e., total time spent studying in and out of class that week) and their amount of target language use (i.e., total time in contact with English outside of a study context). In each survey, learners indicated how much time they spent attending their IELTS preparation classes that week and their most recent mock IELTS exam score.

Table 1 displays the operationalization of the six learner background variables reported in this paper.

Table 1

Operationalization of learner background variables

Variable	Operationalization
Prior English study	Years of studying English since secondary school, including private tutoring
Desired IELTS score to meet academic goals	Participant self-reported IELTS score needed for degree programs or other personal goals, provided in Week 1 of study
Program attendance	Average number of hours per week spent attending IELTS preparation classes
Institutional mock exam scores	Average weekly institutional mock IELTS exam score
Perceived progress in English/IELTS	Participant self-report of progress in English skills and IELTS performance by skill area (i.e., reading, writing, listening, speaking) using a four-point Likert scale (*a lot*, *a moderate amount*, *a little*, *not at all*) for each skill
Instrumental motivation in studying IELTS	Aggregate of the number of different reasons (i.e., IELTS-related goals) for studying IELTS across four items: 1) parental suggestion, 2) job-related, 3) further study, 4) general test-score achievement

Procedure

Data collection occurred over a one-year period. Participants began the study by completing the pre-questionnaire and taking the official IELTS exam, then started their IELTS preparation course. During the 12 weeks of IELTS study, they completed weekly surveys on their program attendance and mock exam scores. At the end of this period, they took the post-questionnaire, followed by a second official IELTS exam.

Speech Coding

To examine participants' linguistic development, the monologic long-run task (Part 2) of the IELTS speaking section was used. The first 60 seconds of each response were coded for a range of linguistic features corresponding to the categories in the IELTS speaking band (fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation). Responses from Time 1 (pre-test) and Time 2 (post-test) were coded; this allowed for calculation of changes on each variable from Time 1 to Time 2. We report on the two pronunciation-related variable categories here.

Pronunciation features were coded using a combination of automatic extraction and manual coding. Suprasegmentals (speech rate, silent and filled pauses, tone choice, prominence, and pitch range) were extracted using Kang and Johnson's (2018a, b) patented prosodic modeler. Rhythm and segmental errors were coded by two trained linguists using PRAAT (Boersma & Weenink, 2007; http://www.praat.org), with inter-coder reliability (Cronbach's alpha) of .98 for rhythm and

.93 for segmentals. Table 2 illustrates the operationalization of the pronunciation features as they correspond to IELTS score categories.

Table 2

Operationalization of Pronunciation-Related Linguistic Variables

IELTS Score Category	Variable	Operationalization
Fluency and coherence	Speech rate	Composite of syllables per second, articulation rate, and mean length of run (Kang, 2010; Kormos & Denés, 2004)
	Silent pauses	Composite number and length of silent pauses longer than 100 ms (Kang, 2010; Kormos & Denés, 2004)
	Filled pauses	Composite number and length of filled pauses longer than 100 ms (Kang, 2010; Kormos & Denés, 2004)
Pronunciation	Rhythm	Ratio of the length of the stressed syllable to the length of the unstressed syllable, measured on the first 10 two-syllable words produced (Kang et al., 2018)
	Tone choice	Rising, falling, or level tone, measured on the final prominent syllable in the tone unit (Brazil, 1997)
	Pitch range	Difference between highest and lowest prominent syllable F0 pitch values (Kang, 2010; Kormos & Denés, 2004)
	Prominence	Composite of pace (average number of prominent words/minute) and space (proportion of prominent words to total words) (Vanderplank, 1993)
	Lexical stress	Number of errors in lexical stress placement
	Segmental errors	Number of segmental errors, categorized as either high or low functional load (Catford, 1987; Kang & Moran, 2014)

Statistical Analysis

To address the research question, a series of multiple regression analyses were conducted in R. In each model, the six learner background variables (Table 1) were treated as predictors, and the change in each of the pronunciation variables (Table 2) was treated as a dependent variable. Differences in learner proficiency were accounted for by modeling the gains (or changes) from Time 1 to Time 2 in each of the pronunciation variables. Prior to modeling, assumptions of absence of multicollinearity and autocorrelation were checked. Residuals were also checked for normal distribution, linearity, and homoscedasticity. There were no apparent concerns with non-normality. All predictors then were entered simultaneously into each model and evaluated for statistical significance at an alpha level of .05.

RESULTS

To contextualize the multiple regression analyses, descriptive statistics of the learner background variables are provided in Table 3. On average, participants had 5.69 years of post-secondary English study, aimed for a global band score of 6.5 on the IELTS, attended classes for 8-10 hours per week, and scored 4.39 on their mock IELTS exams. For their perceived progress in English

skills and IELTS, the lowest possible value was 11 (i.e., no perceived improvement in any of the skills measured), and the highest possible was 44 (i.e., a lot of perceived improvement). The mean of 32 shows a moderate amount of perceived progress. Finally, instrumental motivation was measured through the presence of up to four IELTS-related study goals (see Table 1), with the mean indicating that most participants had at least one instrumental motivator guiding their IELTS studies.

Table 3

Descriptive statistics of learner background variables

Variable	*n*	Min	Max	Mean	SD
Prior English study (in years)	52	0	20	5.69	6.74
Desired IELTS score	43	5.5	> 7.0	6.5	1.1
Program attendance (in hours/week)	52	< 1	> 16	8-10	3.02
Mock exam scores	52	0	7.46	4.39	1.65
Perceived progress in English/IELTS	52	14	44	32	6.33
Instrumental motivation in studying IELTS	52	0	4	1.37	.66

Table 4 summarizes the multiple regression results for models of the six background factors on each pronunciation feature that yielded statistically significant associations at $p < .05$, along with those whose effect sizes were $r \geq .25$ (see Plonsky & Oswald, 2014). Only the predictors that meet one of the above criteria are reported, though each multiple regression model included all six predictor variables. Most notable in these findings is the predictive role of program attendance. As learners spent more time attending classes, their number of high functional load segmental errors decreased (t = -2.107, p = .043, r = .31), and their speech rate increased (t = 1.707, p = .097, r = .25), though this latter association was quite weak. In terms of tone choice, their use of rising tone decreased (t = -2.536, p = .016, r = .38), while use of level tone increased (t = 1.901, p = .066, r = .29), though again this latter association was not strong. Mock exam scores were predictive of more target-like rhythm patterns (t = 2.223, p = .033, r = .33), indicating that learners scoring higher on their mock exams were producing longer stressed syllables. Finally, there were weak associations between previous English study and filled pauses (t = 1.828, p = .076, r = .28), as well as desired IELTS score and prominence (t = 1.790, p = .082, r = .28). Overall, these predictors accounted for approximately 6% to 15% of the variance in pronunciation feature development.

Table 4

Summary of multiple regression of background factors on pronunciation features

Pronunciation feature	Predictor	Std. Est. (β)[a]	t	p	Partial R^2
Speech rate	Program attendance	.283	1.707	.097	.061
Filled pauses	Previous English study	.281	1.828	.076	.077
Rhythm	Mock exams	.375	2.223	**.033**	.11
Rising tone	Program attendance	-.411	-2.536	**.016**	.148
Level tone	Program attendance	.318	1.901	.066	.085
Prominence	Desired IELTS score	.292	1.790	.082	.077

Segmental – HF[b]	Program attendance	-.359	-2.107	**.043**	.094

[a] standardized regression coefficients, [b] HF = high functional load

None of the learner background factors were statistically significant predictors of progression in silent pauses, falling tone, pitch range, lexical stress, or low functional load segmental errors. Moreover, neither perceived progress in English/IELTS nor instrumental motivation for IELTS preparation were shown to be significant predictors of the pronunciation features.

DISCUSSION

This longitudinal study examined how learner background factors (previous English study, desired IELTS score, program attendance, mock exam scores, perceived progress in English/IELTS, and instrumental motivation for studying IELTS) impacted pronunciation development of Korean EFL learners on the IELTS speaking section over a 12-week period.

Multiple regression analyses showed that program attendance, or the amount of time spent in class each week, predicted changes in multiple pronunciation features, most notably high functional load segmental errors and tone choice. Though perhaps not surprising, this provides further evidence that showing up to class matters, especially in an EFL context in which learners may not have much incidental exposure to the target language. Producing fewer high functional load errors contributes to greater intelligibility (Kang & Moran, 2014) and comprehensibility (Munro & Derwing, 2006). This demonstrates a communicative benefit for those in IELTS preparation courses beyond merely achieving their desired exam score. It is particularly promising over 12 weeks given that segmental developments are generally a slow process (Kang & Kermad, 2020).

What is more surprising is the association between program attendance and tone choice, as learners who attended class more also used significantly fewer rising tones and more level tones. This is contrary to what one might expect. Assuming that spending more time in class helps learners produce language that is more target-like, we would anticipate a decrease in level tones and an increase in falling tones (Kang, 2010; Pickering, 2001). As part of the broader study, we found that target language use— contact with English in non-study contexts—corresponded with more target-like tone choices, while hours of study—time studying both in and out of the classroom—did not significantly impact tone choice (Kang et al., 2021). One possible explanation for the current finding, then, is that the classes focused on academic English without any explicit pronunciation instruction. Perhaps for students whose English contact occurred primarily in the classroom, their pronunciation reflected a greater focus on the language itself rather than the communicative function linked to rising and falling tone choices (Pickering, 2018).

Mock exam scores also contributed to more target-like rhythm, meaning longer stressed syllables and shorter unstressed ones. If mock exam scores are taken as an indicator of proficiency, this finding is in line with that of the broader study, with proficiency predicting rhythm patterns (Kang et al., 2021). Beyond measuring proficiency, however, mock exams provide learners with individualized feedback on their performance. The IELTS preparation curriculum varied according to learners' level, with the advanced course emphasizing formulaic language and target-like language production. It seems the combination of course content and individual feedback at the higher levels was helpful for participants' improvement of this pronunciation feature.

While this study contributes to the small but growing body of longitudinal pronunciation development research, there are some limitations. First, 12 weeks of time may not be enough to see significant changes in pronunciation, as we know that gains in pronunciation may be limited to certain features or contexts (Derwing et al., 2008). Indeed, as reported in Kang et al. (2021), while fluency and coherence features (i.e., speech rate, silent pauses, filled pauses) improved significantly among our participants during this time, only the pronunciation features of rhythm and prominence showed similar improvements. A lack of substantive change in some linguistic features makes the potential predictive power of learner background factors harder to detect. Nonetheless, the implications of this study are positive for classroom language learning in EFL contexts. Both program attendance and mock exams relate directly to the classroom environment. Thus, encouraging students to show up to class, even if the class does not focus explicitly on pronunciation, and providing students with regular, detailed feedback can help them reap English pronunciation benefits on high-stakes exams like the IELTS.

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