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An Exploration of Primary Stress in *If*-Conditionals in English Language Education Majors in Türkiye*

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ABSTRACT

It is well-established that suprasegmental pronunciation features are essential to effective communication. Given the assumed significance of primary stress as one suprasegmental aspect (Ghosh and Levis, 2021), the perceived difficulty of *If*-conditionals (Norris 2003), the professional requirement for language teachers to attain a good command of pronunciation (e.g., knowledge, skills, and competences) (Topal & Altay, 2022), and the causal connection between teacher cognition (e.g., knowledge), learning, and practice (Farrell and Tomenson-Filion, 2014), this study examined the perception and production levels of teacher trainees in relation to primary stress of *If*-conditionals. Employing a one-group pretest-posttest design (Cranmer, 2017), the study collected data from teacher trainees (n = 61) in a Turkish state-research university through tests of perception and production. Participants received suprasegmental pronunciation training between the pretest and posttest. Findings indicated moderate improvement in perceiving and producing the primary stress of *If*-conditionals. A linear relationship between the perceived difficulty of types of conditional sentences and degrees of improvement was also determined. The study is expected to contribute to our perceptions of language teacher cognition in language teacher education settings, notwithstanding the limitations.

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1. INTRODUCTION

Pronunciation is a crucial component of English language teaching, as it is essential for effective communication (Levis, 2021; Topal, 2022). Among the various aspects of pronunciation, stress patterns play a significant role in conveying meaning and emphasis (Gluhareva & Prieta, 2017). In English, primary stress is the strongest stress in a word and is important for determining sentential meaning. *If*-conditionals are a common structure in English, and the placement of primary stress in *If*-conditionals might significantly impact their meaning (Topal, 2017). For example, in the sentence "If you study hard, you will pass the exam," the stress is on "study" and "pass," which are the most important words in the sentence. This stress pattern helps to emphasize the condition (studying hard) and the consequence (passing the exam). Misplacement of stress on the wrong word or syllable might result in unclear or ambiguous sentential meanings. For example, if the stress is placed on "you" instead of "study" in the sentence above, the meaning could be interpreted as "If someone studies hard, you will pass the exam," which is a very different meaning than the intended "If you study hard, you will pass the exam."

Also known as conditional sentences, *If*-conditionals express hypothetical situations and are fundamental elements of English grammar (Ferguson, 2001). They are salient as they allow speakers and writers to communicate complex ideas and hypothetical situations clearly and concisely. Commonly used in conversation, writing, and formal settings such as academic papers and business presentations (Reyes, 2011), *If*-conditionals comprise two clauses: the *If*-clause and the main clause. The *If*-clause introduces the hypothetical situation, and the main clause expresses the consequence. In English, the primary stress in *If*-conditionals mainly falls on the content words (e.g., verbs, nouns, adjectives, and adverbs) in the main clause. Since misplaced stress in utterances relatively cause intelligibility problems (Hahn 2004; Ghosh & Levis 2021; Luchini & Paz, 2022), teaching the primary stress in *If*-conditionals is crucial for accurate and clear communication.

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Despite the importance of primary stress in *If*-conditionals, research on EFL teacher training in Türkiye suggests that pronunciation teaching is commonly overlooked in language teaching programs (Topal, 2022). Previous research in non-Turkish contexts on primary stress revealed its impact on recall (Hahn, 2004) intelligibility and comprehensibility (Lewis & Deterding, 2018; Ghosh & Levis, 2021), word recognition (Tremblay, 2008), and communication (Liu, 2017). Studies on *If*-conditionals, on the other hand, focused on medical discourse (Ferguson, 2001), the acquisition of *If*-conditionals by Korean and Spanish learners of English (Ko, 2013), modality in conditional and non-conditionals (Gabrielatos, 2019), corpus-based frequency of *If*-conditionals (Gabrielatos, 2021), and its comparison in EFL textbooks (Winter and Le Foll, 2022). On the other hand, previous research in Turkish contexts on primary stress indicated problems with stress placement for Turkish EFL learners and teacher trainees (Hismanoglu, 2012; Taş & Khan 2022), advantages of remedial training for learning outcomes (Arslan, 2013; Evis & Kılıç, 2020; Karaazmak, 2015; Topal, 2017), whereas studies on *If*-conditionals demonstrated that common conditional constructions were not included in ministerial textbooks (Şahinkayası & Büyükaşık, 2012), remedial training enhanced the intonation patterns of *If*-conditionals among teacher trainees (Topal, 2017), the pitch phonemes of teacher trainees improved after the treatment (Topal, 2018a) and the perception and production of juncture phonemes advanced among teacher trainees (Topal, 2018b). To the researcher's best knowledge, no studies primarily tackled the pitch phonemes of *If*-conditionals in English in the Turkish context.

All things considered, this study investigated the perception and production competence of the primary stress patterns of *If*-conditionals among Turkish EFL teacher trainees. The following research questions were addressed within the scope of the study:

(1) How well did the participants perform in Type 1, Type 2, and Type 3 conditionals in the tests of perception and production?
(2) Did the participants' perception and production of primary stress of *If*-conditionals improve following the treatment?

1.1. Pronunciation Instruction in Türkiye: A Succinct Background

Occupying a geopolitically special place in the world, Türkiye is one of the countries in Kachru's (1985) Expanding Circle, where English is spoken as a foreign language. In addition to its long-established language teaching history, Türkiye has conformed to the internally recognized, European-origin framework for language learning, teaching, and assessment (the CEFR, Council of Europe, 2001) for more than two decades (Hazar, 2021). The country has also undergone several curriculum revisions and updates to modernize foreign language education (Kirkgoz, 2007). The latest one mandates English language instruction from the second to the twelfth grade (Ayaz, Ozkardas & Ozturan, 2019). Following the overall and compulsory twenty-hour-long language education at the primary and secondary levels, Turkish students receive a compulsory one-year-long English education at the preparatory schools of university departments where English is the medium of instruction (Topal, 2024). ELT majors are offered two courses (i.e., Listening and Pronunciation I/II) in their first year (Topal & Altay, 2024). No specific attention is given to pronunciation at any education levels, except for the two undergraduate courses ELT majors receive.

Relevant curricula analyses strongly emphasize productive and receptive skills in primary and marginal pronunciation focus in secondary education (Ministry of Education 2018a, 2018b). Previous research also confirms this from several aspects. For instance, the analysis of ministerial and collegial coursebooks revealed complete abandonment of pronunciation at the primary and insignificant attention at the secondary education levels (Demirezen, 2001, 2022). Studies with EFL teachers showed exclusion of pronunciation from the curriculum, a lack of teaching confidence and knowledge, and some other institutional or curricular limitations (Çam, 2024; Hismanoglu & Hismanoglu, 2013; Topal & Altay, 2022). Similarly, diagnostic and interventional studies manifested problems with segmental and suprasegmental pronunciation features among Turkish EFL teacher trainees (Aksakalli & Yagiz, 2020; Arıkan & Yılmaz, 2019; Topal & Altay, 2022; Demirezen, 2009, 2010, 2016, 2022). Overall, despite the contextual, individual, and institutional dynamics and variations, pronunciation instruction is underemphasized in the Turkish context, with calls for teacher training in this language skill (Topal & Altay, 2022, 2024).

1.2. Language Teacher Cognition

Despite its rooted history yet popularization by Simon Borg in 2003, teacher cognition (Figure 1) refers to the mental lives of teachers (e.g., assumptions, beliefs, knowledge, and thoughts) that inform their teaching practice (Borg, 2003). Although previous research concentrated on teacher cognition in general, Borg (2003) specialized in "language teacher cognitions." After Borg's (2003) seminal work, relevant research has expanded into beliefs about specific language skills (e.g., grammar, vocabulary, and pronunciation) (e.g., Macalister, 2012; Zhang & Sun, 2022), cognition in specific contexts (e.g., EFL/ESL, CLIL, and online teaching) (e.g., Shiu, 2024; Sun, Wei, & Young, 2022), experienced and novice teachers (e.g., Karimi & Asadnia, 2023), and teacher learning and cognition in teacher education (e.g., Golombek & Doran, 2014). Researchers have also investigated the interaction between teacher cognitions and classroom practices, which usually results in tensions and mismatches (Li, 2025). Borg (2018) himself revisited this in later publications, emphasizing contextual and experiential factors mediating the cognition–practice link.

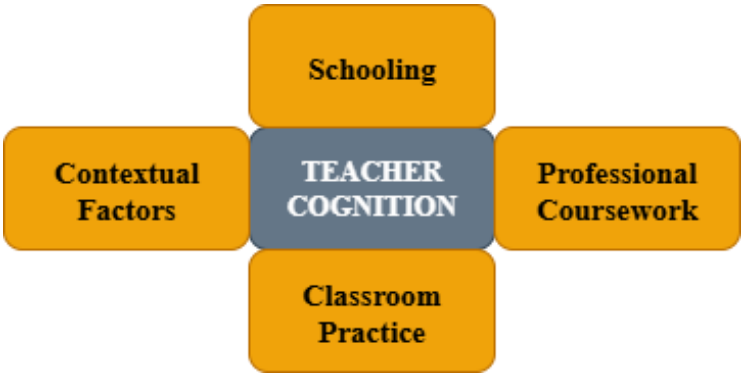

Figure 1. The schematic conceptualization of teacher cognition (adapted from Borg, 2003)

Conceptually, Borg (2003) cites teacher cognition as "what teachers know, believe, and think" (p.81). In our study, we refer to teacher trainees' knowledge (of the stress in *If*-conditionals) regarding teacher cognition. We believe that teacher trainees' previous schooling and professional coursework (the courses they have taken regarding pronunciation) may affect their cognitions about pronunciation instruction in their prospective teaching experiences. In that regard, teacher trainees with good pronunciation knowledge may be well-equipped content-wise to teach pronunciation. The knowledge aspect of teacher cognition also aligns well with Shulman's (1987) teacher knowledge (content knowledge and pedagogical content knowledge), suggesting that language teachers should have the content knowledge (pronunciation features) and pedagogical content knowledge (how to teach pronunciation). It also concurs with Baker and Murphy's (2011) framework for teachers' knowledge base of pronunciation teaching. Building on Shulman's (1987) teacher knowledge, Baker and Murphy (2011) posit that more research is needed to understand teachers' knowledge, beliefs, and thoughts about pronunciation to reveal what pronunciation features teachers must know, their awareness of potential student problems, and pedagogical priorities (e.g., which pronunciation features to teach).

Previous research on LTE about pronunciation showed a predominant reliance on controlled techniques, limited use of guided methods, and shared beliefs about the importance of listening perception, kinesthetic practice, and the potential dullness of pronunciation instruction (Baker, 2014), gaps in phonological training, uncertainty in instructional content and methods, and a tendency toward reactive teaching, and highlighted the need for more research and better integration of current findings into teacher education and practice (Couper, 2017), perceiving pronunciation less important by older teachers than younger ones, while all groups facing similar obstacles(e.g., time constraints and insufficient training) (Georgiou, 2019), a complex, reciprocal relationship in which identity construction profoundly influences and is influenced by the development of pedagogical cognition (Burri, Chen, & Baker, 2017), corrective feedback being largely ad hoc and focused on phonemes and words, typically delivered via recasts and repetition, with teachers valuing learner autonomy but showing gaps in training and a need for clearer understanding of effective CF practices (Couper, 2019), and a shift from a segmental-focused to a more balanced approach that values suprasegmentals, with growth influenced by self-awareness, perceived improvement, and native/non-native collaboration (Burri, 2015).

In the Turkish EFL teacher education context, Yagiz (2018) revealed moderate self-confidence and recognition of pronunciation's importance, yet limited knowledge focused mainly on segments and transcription, with notable neglect of suprasegmentals and a clear need for further support in pronunciation teaching and assessment. Uzun (2022) found that EFL teacher trainees feel inadequately trained to teach pronunciation while they view it as essential and aspire to native-like pronunciation, highlighting the need to rethink pronunciation instruction within ELT teacher education programs. Topal and Altay (2024) examined pronunciation knowledge, perception, and production of 80 first-year Turkish EFL teacher trainees over a 16-week course, found modest gains in knowledge, slight improvements in perception, and substantial progress in production, though persistent gaps remained in segmental and suprasegmental features, highlighting areas for pedagogical focus and further research.

Overall, research in Turkish and non-Turkish contexts indicates variations in pronunciation cognitions due to contextual factors. One issue emphasized in previous work, however, is the urgent need for pronunciation training of language teachers and teacher trainees. This supports the findings of previous research discussed earlier, regarding the lack of attention paid to pronunciation in both contexts.

1.3. Stress as a Salient Component of Intonation

Stress is closely related to intonation, a fundamental prosodic feature essential for language learners and teachers (Brown, Currie, & Kenworthy, 2015; Tench, 2015). Intonation has linguistic and paralinguistic dimensions, organizing information, expressing attitudes, distinguishing sentence types, and establishing textual structure (Levis & Wichmann, 2015; Tench, 2015). It operates through tonality—the division of speech into meaningful chunks; tonicity—the placement of the primary focal word; and tone—the use of pitch patterns such as rise, fall, fall-rise, or rise-fall to convey meaning (Halliday, 1970; Tench, 2015). Intonation can communicate emotions and attitudes beyond words (e.g., surprise or certainty), and differentiate questions from

statements (Goodman, 2014; Reed & Michaud, 2015). Emphasizing words through intonation highlights their importance, aiding listener comprehension and enhancing natural, fluent spoken English (Carter, 2011; Gilbert, 2014; Smiljanic, 2021). Overall, understanding and appropriately using intonation is vital for effective communication in English (Pickering, 2018; Reed & Michaud, 2015; Brown, 2017).

1.4. Primary Stress in English: Instruction and Significance

Intonation and stress are closely interconnected, though often confused with accent, which refers to a speaker's distinctive pronunciation (Roach, 2012; Crystal, 2008; Czap & Pintér, 2014). English, a stress-timed language with free stress, relies heavily on stress to create rhythm and meaning, distinguishing between word (lexical) stress and sentence (prosodic) stress, with primary stress typically on content words and serving to emphasize semantic importance (Lee & Song, 2019; Halliday, 1970; Lee et al., 2017). Misplacement of primary or nuclear stress can lead to misunderstanding and communication breakdowns, particularly for nonnative speakers whose native languages have different stress patterns, such as Turkish, which is syllable-timed and features fixed stress, complicating perception and production of English stress patterns (Jenkins, 2000; Clennell, 1997; Celce-Murcia, Brinton, & Goodwin, 2010; Demirezen, 2009). Despite its significance for intelligibility and naturalness, teaching intonation and stress is often neglected due to its complexity, teacher cognition, and typological differences between languages, highlighting the need for targeted training to raise phonological awareness and improve suprasegmental instruction among nonnative English teachers, especially for structures like *If*-conditionals (Couper, 2019; Mitrofanova, 2012; Topal & Altay, 2022; Topal, 2017; Wong, 1994). However, previous research indicated the possibility of teaching intonation successfully (Sonsaat-Hegelheimer & Levis, 2025).

1.5. Models and Methods of Intonation

Two models cited in the study will be mentioned here. The Grammar/Intonation Model (GIM) (Cauldwell & Hewings, 1996; Gussenhoven & Jacobs, 2017) is a theoretical framework that seeks to understand the interaction between intonation and grammar in spoken language. According to Gussenhoven and Jacobs (2017), this model proposes that intonation is not just an ancillary feature of language, but is instead an integral part of the grammar itself. This means that intonation patterns can convey important information about the structure and meaning of a sentence, including information about word order, focus, and emphasis. For example, in English, the placement of the nuclear pitch accent can change the meaning of a sentence (Gussenhoven & Jacobs, 2017), as in the difference between "He's going to Paris" and "He's going to Paris?" Furthermore, the GIM suggests that intonation and grammar are tightly linked, such that changes in one can have cascading effects on the other. This model has been influential in shaping our understanding of the complex interplay between prosody and grammar in spoken language (Ladd, 2014).

The Audio-Articulation Model (AAM, Demirezen, 2003, 2010), on the other hand, is used as a model to teach, correct, and address the core sound pronunciation problems of non-native English teachers. This model begins with raising awareness of fossilized pronunciation mistakes in the target language, followed by focused listening and oral practice exercises. To effectively correct the pronunciation mistakes and address L2 core sounds, it is important to take a comprehensive approach that includes both micro and macro-level perspectives. The AAM principles for teaching pronunciation involve extensive and customized aural and spoken activities that use natural language processing tools. Exclusive activities, which involve recognizing and distinguishing L2 sound patterns within speech streams, are central to teaching accurate pronunciation. Tools such as corpora, minimal pairs and sentences, and sentential cues are also critical for the AAM in designing practice procedures and constructing listening texts (Demirezen, 2010).

1.6. If-Conditionals in English

Conditionals are one of the most advantageous structures for expressing assumptions regarding events or circumstances that are not in accordance with reality. (Hall & Azar, 2010). In the speaker's perspective, conditional statements carry a type of truth value. The *If*-clause provides a condition which, in the speaker's judgment, may or may not result in the intended result. The speaker's forecast of an event might be stated in the result clause (Hall & Azar, 2010). There are three types of conditional sentences (Mead & Stevenson, 1996; Wu, 2012). Type 1 or real conditionals are used to talk about future situations their consequences (Clare and Wilson 2015a), wherein *If* is used for likely and when is used for certain situations. Type 2 or hypothetical present conditions are utilized to talk about present or future imaginary situations and their consequences (Clare & Wilson, 2015). Type 3 or hypothetical past conditions are employed to talk about past hypothetical or imaginary situations, describing unreal or impossible situations (Clare & Wilson, 2015b). In addition to these three types of conditionals which are the primary focus of this study, there is another conditional called Type 0 or zero conditional used to talk about general situations or facts (Clare & Wilson, 2015b). The four types of conditionals might be exemplified as follows:

- If it snows, we get our skis out (Type 0)
- If the weather improves, we'll go for a walk (Type 1)
- If we had more students, we would run the course (Type 2)
- If the rent had been lower, I would have taken the flat (Type 3)

There are very natural connections between *If*-clauses and their intonation just because *If*-clauses inherently house the stress patterns of intonation pertaining to conditional mood. It must be borne in mind that each clause in an *If*-clause has its own intonation pattern. Generally speaking, when the main clause begins a conditional sentence, the sentence has a single intonation pattern as exemplified in the following sentences:

- I can lend you money if you **NÉED** some.
- I can lend you money if **YÓU** need some.
- I can lend you money if you need **SÓME**.

On the other hand, if the subordinate clause initiates a conditional sentence, then each clause possesses a distinct intonation structure whereby the pitch drops toward clause ends. A comma is utilized to separate an *If*-clause when it precedes in a sentence. (Swan, 2002). Thus, there is always a possibility of placing primary stress on one of the components of the independent and dependent clauses:

- If you **NÉED** money, I can **LÉND** you some
- If you need **MÓ**ney, I **CÁN** lend you some.
- If YÓU need money, Í can lend you some.
- If you need money, I can lend **YÓU** some.
- If you need **MÓ**ney, I can lend **YÓU SÓME**.

In fact, in connected speech there are more possibilities of placing a primary stress on the other components of the words of dependent and independent clauses. Furthermore, connected speech is distinguished by uninterrupted modifications in intonation, stress, phonemic durations, lexical items, and whole sentences (Small, 2020).

2. METHODOLOGY

This study employed a one-group pretest-posttest design to examine changes in participants' performance before and after the intervention (Cranmer, 2017; Shadish, Phillips, & Clark, 2003). While this design lacks a control group and therefore limits internal validity, it was chosen due to practical constraints: random assignment was not feasible given the use of intact class sections and ethical concerns about instructional equity (Knapp, 2016). To mitigate threats to internal validity, several precautions were taken. The short time frame between pretest and posttest (less than two weeks) minimized history and maturation effects (Campbell & Stanley, 1963). To address the Hawthorne effect, the intervention was embedded in regular instruction, and participants were not informed that these activities were part of a study intervention; they were told only that the study concerned general learning outcomes (Dornyei, 2007). Although this design has limitations, it remains a pragmatic and widely accepted approach in educational research where experimental control is not always possible (Gao, Qin, & Gu, 2016; Koller & Stuart, 2016).

2.1. Context and Participants

The research was conducted at the English Language Teaching department of one of the state-research universities in Ankara, Türkiye. The university has been cultivating teacher trainees through undergraduate and graduate education since 1985. Candidates are required to receive an adequate score in the university entrance exam for program admission. They further take the proficiency exam to be exempt from one-year compulsory English preparatory school. Majors of this department are offered compulsory (75%) and elective (25%) courses in field knowledge, professional knowledge, and general knowledge. Those who complete courses that equal to 180 ECTS credits in eight semesters (in seven years at the latest) can graduate with a BA degree. Listening and Pronunciation I (L&P I) course offered in the first semester was within the scope of this research. The division majors learn the activities of bodily organs that are necessary for the right production of vowels and consonants to become skilled at effective listening and perfect pronunciation in the target language within the scope of the L&P I course.

The participants were 61 freshmen (13 males, 48 females) aged between 18-21 (M= 19.5 years). They all took the L&P I course and were assumed to possess similar levels of knowledge pertaining to primary stress. In addition, they took the same university entrance exam (min.= 395,45929; max.= 466,35997 out of 500,00) and proficiency exam (min.=65/100). Accordingly, it was assumed they were an academically homogenous sample. Out of the three sections available at the department, 61 participants were selected according to the convenience sampling method, “in which the participants were chosen based on their convenience and availability.” (Creswell & Creswell, 2017, p. 212).

2.2. Ethics Committee Approval

The authors' ethics commission letter dated 15.12.2016 and numbered 2866 was reviewed and deemed ethically appropriate by the Hacettepe University Senate Ethics Commission in its meeting numbered 35853172/43B-169 held on January 2, 2017.

2.3. Instrumentation

To assess the participants' competence levels in perceiving and producing the primary stress *If*-conditionals, two diagnostic tests (i.e., test of perception and test of production) were designed by the present researchers. Prior to test design, a sample corpus comprising 12 *If*-conditional sentences was collected using Apowersoft online audio recorder from paper-based and online dictionaries (e.g., Longman Dictionary of Contemporary English and Longman Dictionary of American English) and English textbooks (e.g., American English File and Face to Face). A similar data collection approach was previously adopted (Swan & Walter, 2011; Wells, 2014). The sentences were selected according to length, sound quality, prevalence, expert opinion, and equal distribution of conditional sentence types. Simply put, 12 target sentences and the position of *If*-clauses were distributed equally among Type 1, Type 2, and Type 3 conditionals. The corpus was provided in Table 1.

Table 1.
The corpus of sentences utilized in the diagnostic tests

Conditional Type	Sentence
Type 1	(1) If I start teaching again, I'll be exhausted after a year.
	(2) If you break the rules, you will be punished accordingly.
	(3) Kim will be disappointed if she figures it out.
Type 2	(4) It's hard to teach students if they lack interest in the subject.
	(5) If anything happened to the kids, I'd never forgive myself.
	(6) If I told them my real feelings, they would just laugh at me.
	(7) Investigators would be remiss if they didn't pursue every possible lead.
Type 3	(8) It would mean a lot to your father if you offered to help.
	(9) If I hadn't read the safety information, I wouldn't have acted so quickly.
	(10) If I'd known it was you on the phone, I would have answered it.
	(11) I would have organized the party for you if I'd known you were coming.
	(12) I would have been terrified if I'd been in that situation.

A test of perception (ToPer) comprising multiple-choice questions was developed by the present researchers. The ToPer was pilot-tested before administration, and was found to have a perfect correlation coefficient (α=.997) (DeVellis, 2016). The test of production (ToPro) comprised second language (L2) sentence productions, wherein the same set of sentences as in the ToPer were provided to the participants.

2.4. Treatment

After administering the diagnostic tests as pretests, the participants were given a six-hour remedial training to familiarize themselves with the perception and production of intonation, especially primary stress in *If*-conditionals. The remedial sessions consisted of PowerPoint presentations, including various mechanical and contextual exercises about the target structure. The drills were prepared in light of the AAM (Demirezen, 2003;2010) and the GIM (Cauldwell & Hewings, 1996; Gussenhoven & Jacobs, 2017) models. During these sessions, the participants were introduced to the rules of intonation patterns in *If*-conditionals and given perception and production exercises. The PowerPoint presentations were also shared with the participants for further use.

2.5. Data Collection and Analysis

The data for the research came from two diagnostic tests: ToPer and ToPro. Before the intervention, the participants were first given the ToPer in paper-based format and asked to select the best answer after listening to each sentence three times at five-second intervals. The internal consistency of the ToPer was found to be adequate (Cronbach's α=0.76 for the pretest and Cronbach's α=.71 for the posttest), suggesting inter-item reliability (>.70 Taber, 2018). After the completion of ToPer, the participants were asked to read aloud the 12 sentences in the ToPro. Their productions were recorded by Sony Icd-px440 voice recorder. Due to the dichotomous nature of the ToPer, Kuder-Richardson-20 (KR-20) formula was computed and found to be .79 for the pretest and .85 for the posttest), implying strong internal consistency (Tan, 2009; DeVellis, 2016). Also, a high degree of reliability (DeVellis, 2016) was found between the ratings for ToPro pretest (α=.93 with a 95% confidence interval from .905 to .961, (F=60, 120) =16.211, p=.000) and ToPro posttest (α=.92 with a 95% confidence interval from .888 to .954, (F=60, 120) =13.636, p=.000). Participants received remedial training following the test results. Post-tests were administered two weeks after the treatment. The same procedures were followed in their administration. Participant responses from the ToPer and ToPro were computed through IBM SPSS version 25 for descriptive and inferential analyses.

3. FINDINGS AND DISCUSSION

3.1. Quantitative Distribution of Participant Scores across Conditional Types

The first research question aimed to examine how well the participants performed in perceiving and producing the primary stress across conditional types in the pretest and posttest. The corpus (*n*=12) had equally distributed statements in Type 1, 2, and 3. Descriptive analyses were displayed in Figure 2 (ToPer) and Figure 3 (ToPro).

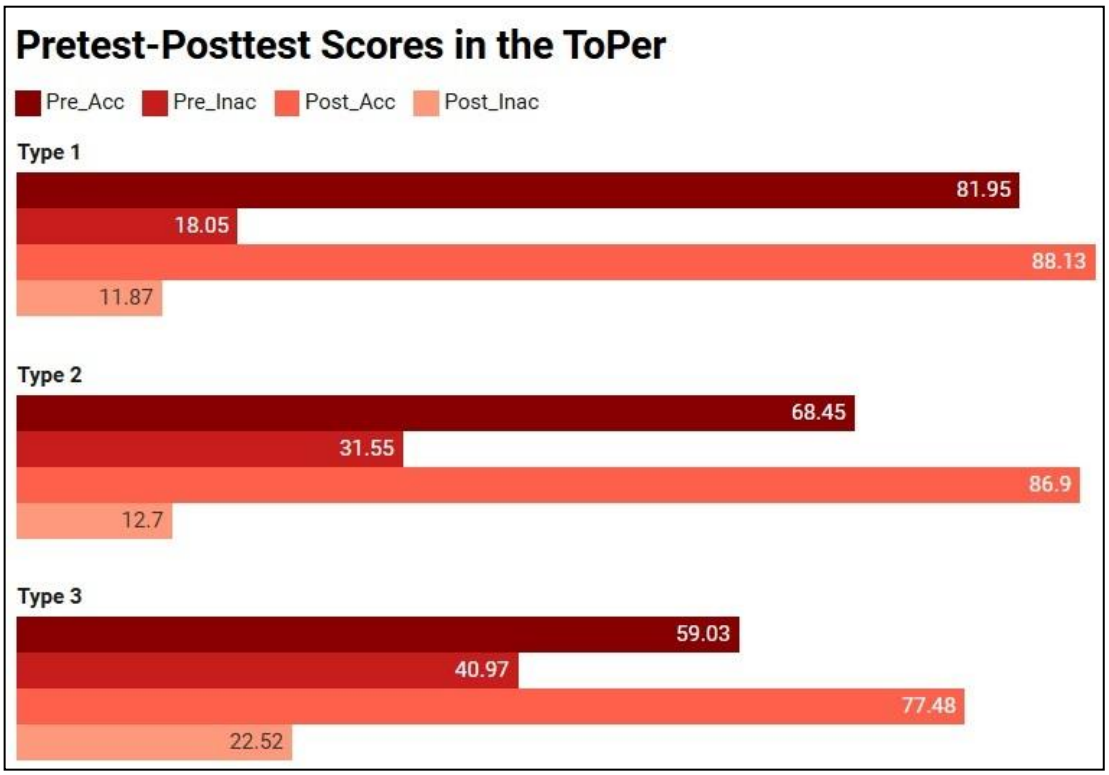

Figure 2. Descriptive Statistics of the ToPer

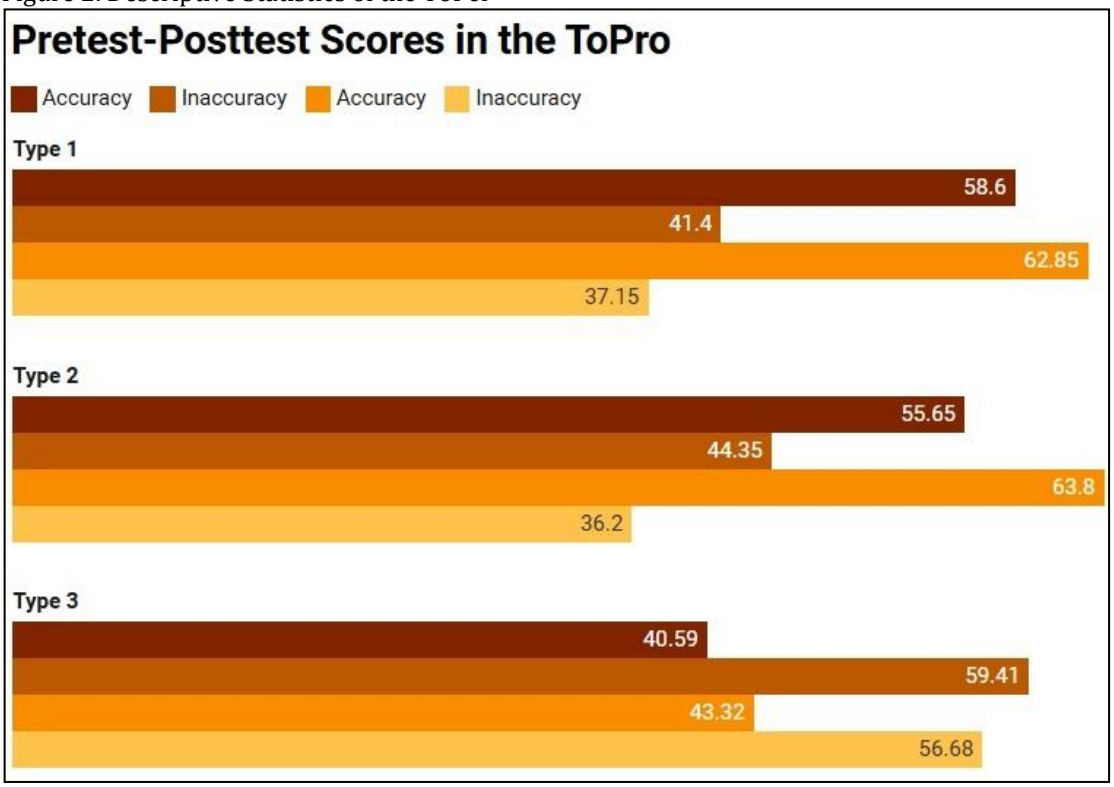

Figure 3. Descriptive Statistics for the ToPro

Teacher trainees were found to perform better in perceiving and producing Type 1 conditionals, followed respectively by Type 2 and Type 3. In a study, Maule (1988) found that Type 0 and 1 conditional forms were more prevalent in actual usage than other types. This might suggest the potential frequent exposure to this conditional type, hence better perception and production.

Winter and Le Foll (2022) revealed that French-speaking English learners produced first and second conditionals more, concurring with the current findings. Römer (2007) asserted that "conditionals" are an example of where the teaching of English as a foreign language clashes with the actual usage norm in various ways. In our case, however, the sentences in the corpus were gleaned from online dictionaries and textbooks, diverging from Römer's (2007) finding. Additionally, online dictionaries were found to present authentic sentence examples (McAlpine & Myles, 2003), conceivably implying that exposure to authentic language usage might foster the perception and production of *If*-conditionals. The low percentage of Type 3 conditionals might be justified by Covitt's (1976) finding, demonstrating that conditionals were the fifth most problematic teaching issue teachers encountered, following the articles, prepositions, phrasal verbs, and verbals. A similar finding was reported by Tuan (2012), revealing that more than 50% of learners could not recognize conditional types. The main difficulties for learning conditional types, according to Norris (2003), were "form, meaning, oversimplified explanations, and time-tense relationships" (Čeljo, Bećirović, & Bureković, 2018). Overall, findings showed that accurate perception and production of the primary stress of *If*-conditionals converged with conditional complexity (easy to difficult - Type 1-Type 3). However, a careful examination of the participant scores indicated that the biggest percental improvement in perception took place in Type 3 (31.25%), followed respectively by Type 2 (26.95%), and Type 1 (7.54%). The largest percental progress in production, on the other hand, occurred subsequently in Type 2 (14.64%), Type 1 (7.25), and Type 3 (6.72%).

3.2. Impact of the Treatment on Perception and Production

The second research question aimed to find out whether participant scores in the pretests and posttests (ToPer and ToPro) differed significantly after the treatment. A paired sample t-test was conducted to evaluate the impact of the treatment on teacher trainees' scores in the ToPer and ToPro. A statistically significant increase was observed in the test scores from Time 1 (Pre-intervention) (M= -.144, SD= .167) to Time 2 (Post-intervention) (M= -.063, SD= .164), t (60) = -3.07, p<.0005 (two-tailed). The negative mean scores reflect data coding (i.e., data computed as pre-treatment and post-treatment, not the vice versa), not the participants' performance. The mean increase in ToPer and ToPro scores was .22 with a 95% confidence interval ranging from -.105 to -.021 (negative scores indicating the mean difference). The eta squared statistic (.49) indicated a medium effect size (Cohen, 1988).

In other words, the t-test results indicated that the treatment helped participants to moderately improve their perception and production of primary stress in *If*-conditionals. Notwithstanding the short treatment period, it was demonstrated that remedial training might assist with suprasegmental improvement. This finding coincided with that of previous studies proving the fundamental impact of remedial training in prosodic improvement. For instance, Baills, Alazard-Guiu, and Prieto (2022) indicated the positive impact of embodied prosodic training on improving accentedness and suprasegmental accuracy. In another study, Derwing, Munro and Wiebe (1997) found that 12-week training helped improve learners' intelligibility. In addition, Martin (2020) also supported the current finding, revealing that homework-based pronunciation training resulted in enhanced comprehensibility. By the same token, Gordon and Darcy (2022) reported that fluency enhanced after explicit pronunciation training. Similarly, Sonsaat-Hegelheimer and Levis (2025) examined the impact of explicit teaching on the perception and production of three final intonation contours (falling, rising, falling–rising) among Turkish learners of English as a foreign language, finding that perception of all three contours improved after instruction, while production improved for falling–rising and rising contours. Overall, the current study's findings were supported by previous research. It might therefore be concluded that prosodic training might yield pedagogically beneficial outcomes for language learners.

4. RESULTS AND RECOMMENDATIONS

Investigating the perception and production competence levels of Turkish English teacher trainees in the primary stress of *If*-conditionals, this study revealed perceptional and productive improvement at varying degrees. Descriptive statistics showed that participants accurately perceived and produced the primary stress in Type 1, Type 2, and Type 3 conditionals consecutively. Concerning percental changes, Type 3 conditionals were improved most (31.25%), while Type 1 conditionals were improved least (7.54%) in the ToPer following the treatment. On the other hand, Type 2 conditionals were enhanced most (14.64%), whereas Type 3 conditionals were enhanced least (6.72%) in the ToPro after remedial training. Descriptive findings suggested that the degree of accurate perception and production of primary in *If*-conditionals was congruent with the perceived difficulty/complexity of conditional types. To find out whether this finding was statistically significant, a paired samples t-test was administered, the findings of which indicated a moderate effect of the treatment (eta=.49, p<.005). This implies the remedial training, albeit conceivably inadequate in duration, seems to have contributed moderately to perceptional and productive improvement in the primary stress of *If*-conditionals. Overall, findings showed convergence with (Maule, 1988; Norris, 2003; Tuan, 2012) and divergence from (Römer 2007) previous scholarly work. It was concluded that remedial suprasegmental training might promote the perception and production of primary stress in conditional sentences, as reported in previous studies (Derwing, Munro, & Wiebe, 1997; Martin, 2020; Baills, Alazard-Guiu, & Prieto, 2022; Gordon & Darcy, 2022).

The findings contribute to the language teacher cognition research in relation to teacher trainees' awareness of suprasegmental features. The observed improvement in both perception and production of primary stress in *If*-conditionals implies that targeted training reinforced participants' cognitive representations of stress patterns. Notably, the larger perceptual gains in Type 3 conditionals and the greater productive gains in Type 2 conditionals indicate a dissociation between receptive and productive competence, highlighting that teacher trainees may internalize stress rules differently when recognizing versus

articulating them. The results suggest that explicit suprasegmental training can recalibrate teachers' mental models of English pronunciation, equipping them to both perceive and teach prosodic features more effectively. However, the moderate effect size also indicates that teacher trainees may require longer and sustained exposure to suprasegmental training to integrate this knowledge into their teaching practice. Thus, teacher educators should view such training not as a peripheral component but as a central aspect of professional preparation. Given that perception was more sensitive to training than production, it can be argued that trainees may overestimate their ability to model stress patterns in the classroom. The gap between recognition and performance highlights teachers' theoretical knowledge about stress patterns, but their struggle to embody it in practice. Such findings underline the need for teacher education programs to provide both explicit theoretical input and ample opportunities for embodied practice.

The study acknowledges some limitations. First, delayed posttests could not have been carried out since test administration overlapped with participants' exam week. Further studies might take this into account in the future. Another limitation was a methodological one (i.e., one-group pretest-posttest design). Although the adopted design lacks a control group and therefore limits internal validity, it was chosen due to practical constraints: random assignment was not feasible given the use of intact class sections and ethical concerns about instructional equity (Knapp, 2016). Prospective researchers might recruit two groups (i.e., control and treatment) and prolong the duration of remedial training. A third limitation was the lack of qualitative data to corroborate the experimental findings. Future research might employ mixed-method designs for enriched data. Despite the limitations, the study is expected to contribute theoretically and practically to our understanding of teacher cognition in teacher education contexts.

Research and Publication Ethics Statement

The authors' ethics commission letter dated 15.12.2016 and numbered 2866 was reviewed and deemed ethically appropriate by the Hacettepe University Senate Ethics Commission in its meeting numbered 35853172/43B-169 held on January 2, 2017.

Contribution Rates of Authors to the Article

Both authors contributed equally to the study.

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Statement of Interest

The authors declare no conflicts of interests.

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