Academic Language Task Frequency and Self-Efficacy in EMI Higher Education: Patterns, Predictive Relationships, and Cross-Domain Influences

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Abstract

This study examined relationships between academic language task frequency and self-efficacy among 483 Turkish undergraduate students in English-medium instruction (EMI) programs. Using a comprehensive questionnaire, the study assessed language task engagement and self-efficacy across reading, listening, speaking, and writing domains, exploring both within-domain and cross-domain relationships. Results revealed a clear hierarchy in language demands: reading was most frequently required, followed by listening, speaking, and writing. Significant gaps emerged between task frequency and self-efficacy across all domains, with confidence consistently lower than task demands. Multiple regression analyses showed varying predictive relationships, with reading frequency demonstrating the strongest cross-domain influence. Findings suggest that mere exposure to academic tasks may be insufficient for developing robust confidence in academic language use. Results emphasize the need for integrated language support and targeted interventions addressing both skill-specific and cross-domain aspects of academic language development in EMI programs.

Keywords: *Academic language, English-medium instruction (EMI), language skills, self-efficacy, task frequency*

Eğitim Dili İngilizce Olan Programlarda Akademik Dil Becerilerinin Kullanım Sıklığı ve Öz-Yeterlik: Örüntüler, Yordayıcı İlişkiler ve Beceriler Arası Etkiler

Öz

Bu çalışma, eğitim dili İngilizce (EDI) programlarındaki lisans öğrencileri arasında akademik dil becerilerinin kullanım sıklığı ile öz-yeterlik arasındaki ilişkileri incelemiştir. Kapsamlı bir anket kullanılarak, okuma, dinleme, konuşma ve yazma alanlarında dil becerilerini kullanım sıklığı ve katılıcıların öz-yeterlik düzeyleri değerlendirilmiş, hem beceri alanı içi hem de alanlar arası ilişkiler araştırılmıştır. 483 öğrenciden toplanan veriler, dil becerilerinin kullanımında net bir hiyerarşi ortaya koymuştur: okuma en sık kullanılan beceri olup, bunu dinleme, konuşma ve yazma izlemiştir. Tüm alanlarda dil beceri kullanımı ile öz-yeterlik arasında önemli farklar bulunmuş, öz-yeterlik düzeyleri sürekli olarak beceri kullanım sıklığının altında kalmıştır. Çoklu regresyon analizleri, okuma becerisinin en güçlü alanlar

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arası etkiyi gösterdiği değişken öngörücü ilişkiler ortaya koymuştur. Bulgular, akademik dil becerilerine maruz kalmanın tek başına dil kullanımında güçlü güven geliştirmek için yetersiz olabileceğini göstermektedir. Sonuçlar, EDI programlarında hem beceriye özgü hem de alanlar arası akademik dil gelişimi yönlerini ele alan bütünleşik dil desteği ve öğretim programının gerekliliğini vurgulamaktadır.

Keywords: *Akademik dil, beceri kullanım sıklığı, dil becerileri, eğitim dili İngilizce, öz-yeterlik*

Introduction

English-medium instruction (EMI) has become a widespread strategy in higher education institutions globally, driven by the need to prepare graduates for the international job market and enhance universities' global profiles (Macaro, 2018; Wächter & Maiworm, 2015) This trend is particularly evident in non-English speaking countries like Türkiye, where a significant proportion of universities offer EMI programs to foster internationalization and improve graduate competitiveness (Aslan, 2018; Kırkgöz et al., 2023). Turkey's EMI implementation is distinctive in primarily serving students with limited English exposure outside academic settings, creating unique challenges for academic language development (Macaro & Akincioglu, 2018). While preparatory-year English programs (PEPs) aim to bridge the linguistic gap for students entering EMI undergraduate studies, questions remain regarding their effectiveness in fully preparing students for the diverse academic language demands they will encounter (Curle et al., 2022).

A critical, yet understudied, aspect of EMI implementation is the relationship between students' engagement with academic language tasks and their self-efficacy—their confidence in successfully performing these tasks (Goetze & Driver, 2022). Understanding this relationship is crucial, as increased task exposure does not automatically equate to increased confidence or competence. Furthermore, while language skills are often examined separately (Dearden, 2014), their interconnectedness in academic settings warrants investigation, particularly regarding how task frequency in one skill domain influences self-efficacy in others. Exploring these within-domain and cross-domain relationships is essential for developing more effective and integrated language support in EMI programs.

The Turkish higher education context offers a valuable setting for examining these dynamics due to its rapid EMI expansion, the established PEP system, and the presence of both successful and challenging implementations (Sahan, 2024). Unlike many international EMI contexts designed primarily for international student recruitment, Turkish EMI programs serve predominantly domestic students who must develop academic English proficiency while simultaneously mastering disciplinary content, often with minimal English use opportunities beyond university settings (Kamaşak et al., 2021). This study aims to address the gap in understanding EMI implementation by investigating the patterns of academic language task frequency and

self-efficacy beliefs among Turkish undergraduate students. Specifically, this research examines within-domain relationships between task frequency and self-efficacy, and explores the cross-domain influences of task frequency in one skill area on self-efficacy in others. The findings will inform curriculum design in PEPs, pedagogical practices in EMI courses, and the development of targeted language support services for EMI students.

Literature Review

English language proficiency and academic success in EMI contexts

Research has consistently shown that inadequate English language proficiency presents a major obstacle to successful academic performance in EMI contexts (Aizawa et al., 2023; Rose et al., 2020). Studies suggest that students studying in EMI programs without sufficient English proficiency risk achieving lower academic outcomes compared to those studying in their first language (Bradford, 2019; Thompson et al., 2022). Success in EMI contexts requires more than just general English proficiency; students must also develop discipline-specific language skills, including academic English (EAP) and specialized terminology (ESP) appropriate to their field of study (Aizawa et al., 2023). The absence of essential language proficiency can create barriers to effective content learning, as students struggle to fully access and engage with academic material in EMI settings(Macaro, 2018). Recognizing these challenges, researchers emphasize the importance of providing comprehensive language and academic support services to EMI students (Galloway & Ruegg, 2020). To address these linguistic challenges, Turkish universities have established preparatory English programs (PEP) that align with what Macaro (2018) describes as integrated language support models, offering specifically tailored English language preparation both prior to and during EMI studies.

EMI in higher education: The Turkish context

The implementation of English-medium instruction (EMI) in Turkish higher education represents a significant case study in language policy and educational reform. While EMI has existed in Türkiye Turkey since the 19th century, recent decades have seen its rapid expansion across both public and private universities (Kırkgöz, 2014). This growth reflects broader trends in higher education internationalization and responds to increasing demands for English-proficient graduates in the global job market (Galloway et al., 2017; Macaro et al., 2018).

Turkish EMI implementation operates across diverse institutional models, creating a complex landscape of practices and policies. Public universities typically implement selective EMI approaches, offering English-medium programs alongside Turkish-medium instruction within the same faculties, while private universities often adopt more comprehensive EMI strategies (Macaro et al., 2016; Sahan, 2024). The PEP system represents a distinctive feature, systematically accommodating students

requiring additional language preparation through mandatory one-year programs for those not meeting the required proficiency standards (Kamaşak et al., 2021). The institutional context of this study—a state university with selective EMI implementation across multiple faculties—represents this common Turkish EMI model, serving students who have either completed PEP or demonstrated equivalent English proficiency. This setting provides insights relevant to similar EMI implementations, while the diversity of practices across Turkish institutions enhances the potential transferability of findings to comparable international contexts.

However, the implementation of EMI in Turkish universities has faced several challenges (Macaro et al., 2016). Research indicates significant variations in policy implementation across and within institutions (Sahan, 2024), with practices ranging from strict English-only approaches to more flexible multilingual strategies (Kırkgöz, 2009). These inconsistencies can create obstacles for students attempting to navigate varying linguistic expectations across different courses and academic contexts.

Linguistic challenges in EMI contexts

A growing body of EMI research has documented a range of difficulties that students encounter when studying academic content in English (Aizawa et al., 2023; Evans & Morrison, 2011; Kamaşak et al., 2021; Rose et al., 2020). Studies have shown that speaking and reading present particularly significant obstacles for EMI students (Kamaşak et al., 2021; Kırkgöz, 2005; Li & Pei, 2024). In terms of speaking, students often struggle with participating in classroom discussions, delivering oral presentations, and engaging in spontaneous academic discourse. Reading challenges typically stem from difficulties in comprehending discipline-specific vocabulary and processing large volumes of English-language materials (Bradford, 2019). As for listening comprehension in EMI contexts, it presents its own set of challenges, particularly in lecture settings where students report difficulties in following lectures delivered in English, understanding various accents of international faculty, and taking effective notes (Thompson et al., 2022). These challenges are often exacerbated by factors such as the use of specialized terminology, rapid speech delivery, and varying lecture styles (Macaro & Akincioglu, 2018). Writing still poses significant difficulties for many EMI students, particularly in terms of academic convention adherence and the production of extended written texts (Breeze & Dafouz, 2017).

Research suggests these linguistic challenges persist even at higher proficiency levels, varying significantly across academic disciplines, with social science students reporting greater difficulties with writing and reading tasks compared to engineering students (Kamaşak et al., 2021). While research has documented these disciplinary variations in linguistic challenges, less attention has been paid to how the frequency of engagement with academic language tasks relates to students' confidence in performing them. Although task-related factors such as task type, task sequencing, cognitive load, and task complexity have the potential to influence student

performance and learning outcomes in academic contexts, the present study focuses specifically on task frequency for several theoretical and practical reasons.

First, from a theoretical perspective, Bandura's (1997) social cognitive theory emphasizes that mastery experiences—repeated successful engagement with tasks—serve as the most powerful source of self-efficacy development. This suggests that the frequency of task engagement may be a fundamental factor in building student confidence in EMI settings. Second, task frequency represents a more readily observable and measurable aspect of EMI instruction that can inform practical pedagogical considerations about curriculum design and language support provision (Evans & Morrison, 2011). While task complexity and cognitive load require sophisticated analysis of individual tasks and student cognitive processes, task frequency can be systematically tracked and adjusted within existing EMI programs. Finally, understanding patterns of task engagement frequency provides essential groundwork for future research examining more complex task-related variables and their interactions with student self-efficacy development in EMI contexts.

Frequency of engagement with academic language tasks and self-efficacy beliefs

Academic language tasks in EMI contexts encompass a diverse range of activities that require students to engage with disciplinary content while simultaneously developing English language proficiency. These tasks differ from general English language learning activities as they integrate content mastery with language development within authentic academic settings (Evans & Morrison, 2011). Research has made reference to distinct task categories across the four primary skill domains: reading tasks such as comprehending discipline-specific texts and analyzing visual data; listening tasks including lecture comprehension and note-taking; speaking tasks encompassing academic discussions and oral presentations; and writing tasks involving extended academic texts and critical analysis (Aizawa et al., 2023; Thompson et al., 2022). The complexity and frequency of these tasks vary across EMI programs and academic disciplines (Kamaşak et al., 2021). Importantly, EMI tasks are characterized by their integrated nature, often requiring simultaneous application of multiple language skills, suggesting that engagement in one domain may influence competence development in others.

While previous research has often approached academic language tasks in EMI contexts primarily as sources of linguistic challenges (Evans & Morrison, 2011; Kamaşak et al., 2021; Rose et al., 2020), this study conceptualizes these tasks as essential components of academic language skills development and indicators of EMI linguistic demands. These tasks represent not just potential obstacles but crucial opportunities for developing academic language competence in EMI settings.

The relationship between task engagement frequency and self-efficacy in language learning is theoretically grounded in Bandura's (1997) concept of mastery

experiences, where increased engagement with tasks typically fosters greater confidence in performing them. Self-efficacy, defined as individuals' beliefs in their capability to perform specific tasks successfully, has been consistently identified as a crucial factor influencing persistence, effort, and achievement in academic language tasks (Goetze & Driver, 2022; Wang et al., 2014). Research indicates that students with high self-efficacy are more likely to actively participate in language learning activities and demonstrate deeper engagement with academic tasks, while those with low self-efficacy tend to show reduced effort and poorer performance (Thompson et al., 2022).

Extending these insights to EMI contexts, the frequency of engagement with academic language tasks takes on particular significance, as students must simultaneously develop both content knowledge and necessary language skills. Active and consistent engagement with academic tasks can strengthen language competence and possibly enhance self-efficacy, cultivating a sense of confidence essential for successfully navigating and performing the relevant linguistic tasks. Studies have shown that self-efficacy, alongside L2 proficiency serves as a significant predictor of academic success in EMI settings (Rose et al., 2020; Thompson et al., 2022). However, the relationship between task frequency and self-efficacy development is complex and may not be strictly linear. While increased exposure to language tasks generally contributes to improved confidence, the quality of engagement and the nature of feedback received during task completion also play crucial roles (Wang et al., 2014).

While these theoretical foundations and empirical findings provide valuable insights into the role of self-efficacy in language learning, there remains a significant gap in our understanding of how the frequency of engagement with specific academic language tasks influences self-efficacy beliefs across different language domains in EMI contexts. This gap exists in two key dimensions: first, how task frequency relates to self-efficacy within the same language skill area (within-domain relationships, such as how frequent reading tasks influence reading confidence), and second, how task engagement in one language skill might affect self-efficacy in other skills (cross-domain relationships, such as how extensive reading might influence speaking or writing confidence). Previous research has documented the challenges these tasks present (e.g., Aizawa et al., 2023; Kamaşak et al., 2021; Li & Pei, 2024), however, less attention has been paid to how regular engagement with these tasks might contribute to building student competence and confidence. Furthermore, the potential cross-domain effects of task engagement on self-efficacy development remain largely unexplored in EMI research. This gap in the literature is particularly relevant given the integrated nature of language skills in academic contexts, where tasks often require the simultaneous application of multiple language competencies. Understanding both within-domain patterns and cross-domain influences could provide valuable insights for designing more effective language support systems and pedagogical approaches

in EMI programs, particularly in contexts like Turkish higher education where EMI implementation continues to evolve.

The present study addresses these gaps by investigating patterns of academic language task frequency and self-efficacy beliefs among Turkish EMI students, examining both within-domain and cross-domain relationships. Specifically, the study seeks to answer the following research questions:

1- What are the patterns of academic language task frequency and self-efficacy beliefs among EMI students across four language domains (reading, listening, speaking, and writing)?

2- To what extent does task frequency predict self-efficacy beliefs within each language domain?

3- To what extent does task frequency in one language skill predict self-efficacy beliefs in other language skills?

Method

Setting

The study was conducted at a state university in Türkiye, selected for its diverse undergraduate EMI programs across multiple disciplines. This institution provided a representative sample of Turkish universities offering EMI programs and was accessible to the principal researcher as a member of the academic staff. Students entering EMI programs were required to demonstrate English proficiency (CEFR B2 level) either through an in-house exam or internationally recognized tests like TOEFL, IELTS, or PTE. Those failing to meet this requirement enrolled in preparatory English programs (PEPs) before starting their EMI coursework.

Participants

The participants of the study included the students in the EMI programs at the designated university. They were enrolled in four-year undergraduate programs within the Faculties of Economics and Administrative Sciences, Engineering, Arts and Sciences, and Architecture. The study specifically targeted the students in their second, third, and fourth years of study, as their prior experience in EMI coursework was expected to provide more comprehensive insights into their language-related needs, which underlie the present study.

A total of 611 students completed the online questionnaire. However, the final analysis included responses from 483 participants. This reduction in sample size was due to three factors: First, data from 73 participants were removed due to missing or incomplete responses. Second, 21 participants indicated that they had previously studied academic subjects in English before attending university. Therefore, they were

removed from the data set. Finally, data from 34 participants were not included as they reported that they were international students. The exclusion of international students was a deliberate choice to ensure a more homogeneous sample, thereby controlling for external variables that might influence the results. As for gender, 259 (46.4%) participants were male and the remaining 224 (53.6%) female. In the end, all participants were Turkish and their exposure to English was limited to their EMI classes, and most had few opportunities to practice and enhance their English skills outside of the classroom. Demographic information of participants concerning their gender, field of study and years of study is displayed in Table 1 below.

Table 1.
Participant Demographics

		Frequency	Percentage (%)
Gender	Female	224	53,6%
	Male	259	46,4%
Field of Study	Faculty of Economics and Administrative Sciences	134	27,8%
	Faculty of Engineering	211	43,7%
	Faculty of Arts and Sciences	92	19%
	Faculty of Architecture	46	9,5%
Years of Study	2nd year	98	20,3%
	3rd year	228	47,2%
	4th year	157	32,5%

Data Collection

The study employed a comprehensive questionnaire consisting of two sections. The first section sought demographic information on the respondents' gender, field of study, and year of study. The second section was designed to gather data on students' academic language-related needs across four domains: reading, speaking, listening, and writing. The instrument comprised 36 items, systematically divided into sections corresponding to each skill area. Each item was assessed along two dimensions: the frequency of engagement and self-efficacy. The frequency of engagement was measured using a 5-point Likert scale ranging from "Never" to "Very Frequently," allowing participants to indicate how often they engaged in or experienced each skill or activity. Concurrently, self-efficacy was evaluated on a separate 5-point Likert scale, assessing students' confidence in their ability to perform each skill, from "Not at all confident" to "Very confident." This dual-rating system provided a

comprehensive understanding of both the prevalence of language skill use and the students' perceived competence.

The items of the questionnaire were adopted from the questionnaire employed by Evans and Morrison (2011) and also included those developed by the researchers. The items in the original questionnaire were specifically developed for an EMI university context, and it has been used by other researchers in different EMI contexts including Japan and China (Aizawa & McKinley, 2020; Zhou et al., 2022) to investigate EMI linguistic demands.

The questionnaire was piloted with 60 students who were not included in the main study. Favorable feedback was received in terms of the comprehensibility, clarity, and length of the items in the questionnaire. Additionally, preliminary analysis of the scale yielded acceptable Cronbach's alpha values, suggesting that the participants consistently answered the items.

The administration of the questionnaire for the actual study was conducted online. After having obligatory permissions from the ethical committee of the university, the researchers recruited the participants, with the questionnaire link distributed through Google Forms. Prior to participation, they were informed about the study's objectives and assured of their anonymity. Consent was obtained electronically, with participants required to check a box indicating their agreement to partake in the study. Only those who provided consent were granted access to the questionnaire.

Data Analysis

Data analysis involved four phases using SPSS 25.0 and AMOS 24.0. First, the instrument's psychometric properties were evaluated through internal consistency reliability (Cronbach's alpha) and confirmatory factor analysis (CFA) to validate the four-factor structure. Second, descriptive statistics (means and standard deviations) were calculated for task frequency and self-efficacy ratings across all four skills. Third, paired samples t-tests examined differences between task frequency and self-efficacy within each skill domain. Finally, multiple regression analyses explored both within-domain and cross-domain relationships between task frequency and self-efficacy. Composite scores for each domain were computed by averaging responses to items within that domain. Assumptions of normality, linearity, and homoscedasticity were verified, and multicollinearity was checked using Variance Inflation Factors (VIF).

Results

Validation of the Instrument

Prior to examining the research questions, reliability analyses were conducted to ensure the internal consistency of the instrument and verify its psychometric

properties for the current sample. The reliability analysis revealed strong internal consistency for both the overall scale and its subscales. The Cronbach's alpha coefficient for the complete instrument was .94, indicating excellent overall reliability. The subscales also demonstrated strong internal consistency, with Cronbach's alpha coefficients ranging from .83 to .91 (Reading $\alpha = .88$, Listening $\alpha = .91$, Speaking $\alpha = .86$, Writing $\alpha = .83$), all exceeding the recommended threshold of .70.

Following the reliability analysis, Confirmatory Factor Analysis (CFA) was conducted as a crucial step to validate the structural integrity of the research instrument. The primary purpose of the CFA was to examine how the questionnaire items aligned with their theoretically predetermined factors (reading, writing, listening, and speaking) and to investigate the relationships between these four skill domains. This analysis was particularly important given that our instrument combined items from an established questionnaire (Evans & Morrison, 2011) with newly developed items specific to our context.

The analysis examined the standardized factor loadings to verify the strength of relationships between individual items and their respective constructs (see Figure 1). All factor loadings were statistically significant ($p < .001$), with reading items ranging from .77 to .87, listening items from .72 to .92, speaking items from .71 to .93, and writing items from .74 to .84. These strong factor loadings indicate robust connections between the observed variables and their corresponding latent constructs.

The model's goodness of fit was evaluated using multiple indices to ensure a comprehensive assessment of model fit. The results demonstrated good model fit: $\chi 2/df = 2.43$ (below the recommended threshold of 3.0), Comparative Fit Index (CFI) = .92, Tucker-Lewis Index (TLI) = .91 (both exceeding the recommended .90 threshold), and Root Mean Square Error of Approximation (RMSEA) = .055 (below the recommended .08 threshold).

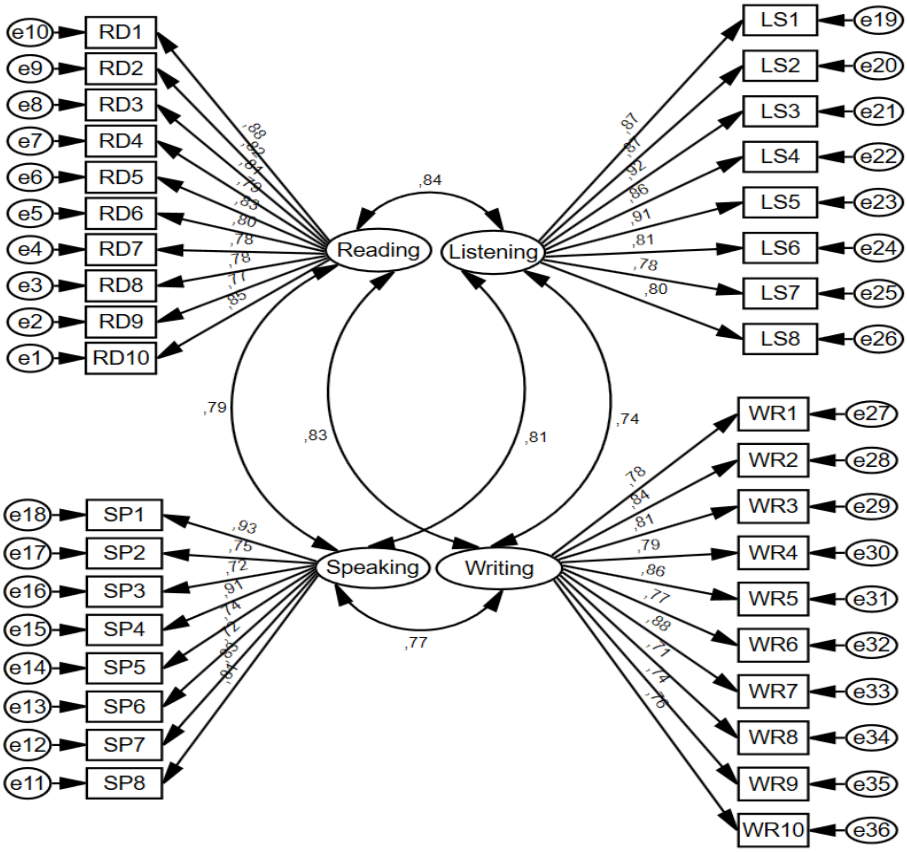

Figure 1. Path diagram of the four-factor model

These validation analyses provide strong evidence for the psychometric quality of the instrument. The high internal consistency coefficients across all subscales indicate that the items within each domain reliably measure their intended constructs. Furthermore, the CFA results confirm the theoretical four-factor structure of the instrument, with strong factor loadings demonstrating clear connections between individual items and their respective language skill domains. The good model fit indices suggest that the instrument effectively captures the distinct yet related nature of the four academic language skills. These findings establish a solid foundation for the subsequent analyses of task frequency and self-efficacy patterns across these domains.

Frequency of Language Tasks and Self-Efficacy Beliefs

Tables 2 and 3 present the descriptive statistics for both the frequency of language tasks and students' self-efficacy beliefs across all four academic language skills. The

data reveals distinct patterns in both the frequency of required tasks and students' confidence in performing them, with notable variations across different skill areas and specific tasks within each domain.

Academic reading skills

Reading emerged as the most frequently required skill (M = 3.74, SD = 1.11), with summarizing (M = 4.44, SD = 0.88) and question-answering (M = 4.14, SD = 0.93) being most common, while text organization (M = 3.11, SD = 1.14) was less frequent.

In terms of self-efficacy, students reported highest confidence in "reading to answer questions" (M = 3.80, SD = 1.29) and "identifying main ideas" (M = 3.70, SD = 1.22). The analysis revealed substantial gaps between frequency and self-efficacy, particularly in "analyzing visual illustrations" (frequency: M = 3.88, SD = 1.37; self-efficacy: M = 2.67, SD = 1.30) and "reading to synthesize information" (frequency: M = 3.67, SD = 1.05; self-efficacy: M = 2.94, SD = 1.34).

Academic listening skills

Listening tasks showed varying frequency patterns (overall M = 3.56, SD = 1.15). "Taking brief, clear notes during lectures" was the most frequent task (M = 4.39, SD = 0.88), followed by "following instructions of lecturers" (M = 4.14, SD = 1.13). The least frequent task was "working out accents of international lecturers/students" (M = 2.72, SD = 1.34).

Self-efficacy in listening skills (overall M = 3.05, SD = 1.41) showed notable disparities with frequency. The largest gaps were observed in "taking brief notes" (frequency: M = 4.39, SD = 0.88; self-efficacy: M = 3.48, SD = 1.36) and "following instructions" (frequency: M = 4.14, SD = 1.13; self-efficacy: M = 2.98, SD = 1.33).

Table 2.
Descriptive Statistics for Frequency of Academic Language Tasks Across Four Skills

Academic Reading		
Items	Mean	SD
RD1 Reading quickly to get overall meaning	4,05	1,04
RD2 Identifying the main ideas of a reading text	3,91	1,12
RD3 Reading quickly to find specific information	3,76	1,18
RD4 Identifying the supporting ideas and examples in a reading text	3,18	1,22
RD5 Reading a book chapter or an article to summarize or take brief notes	4,44	0,88
RD6 Reading to answer questions related to a text (for an assignment or coursework)	4,14	0,93
RD7 Reading texts from different sources to synthesize information	3,67	1,05
RD8 Understanding the organization of a reading text	3,11	1,14
RD9 Analyzing visual illustrations (PPT presentations, tables, charts, graphs, etc.)	3,88	1,37
RD10 Working out the meaning of unfamiliar vocabulary	3,24	1,16
Academic Reading Overall	3,74	1,11
Academic Listening		
Items	Mean	SD
LS1 Understanding the main ideas of lectures	3,92	0,97

LS2 Understanding the overall organization of lectures	3,22	1,14
LS3 Taking brief, clear notes during lectures	4,39	0,88
LS4 Identifying supporting ideas and examples of lectures	2,89	1,22
LS5 Following the instructions of lecturers during courses	4,14	1,13
LS6 Watching videos (online lectures, Youtube, TEDtalks, etc.) to complete tasks or supplement classes	3,41	1,33
LS7 Following discussions during courses	3,78	1,22
LS8 Working out the accents of international lecturers/students	2,72	1,34
Academic Listening Overall	3,56	1,15
Academic Speaking		
Items	Mean	SD
SP1 Asking questions during lectures	3,03	1,28
SP2 Answering questions asked by lecturers	3,29	1,26
SP3 Participating actively in discussions	3,51	1,16
SP4 Giving a short, rehearsed talk (e.g. from notes or using PowerPoint)	3,74	1,12
SP5 Presenting information and/or doing demonstrations	3,09	1,23
SP6 Interpreting and describing information from visual aids (e.g. Tables, Figures, etc.)	3,16	1,29
SP7 Interacting with international lecturers/students	2,57	1,72
SP8 Using seminar strategies (stating point of view, supporting and/or challenging view expressed by another speaker, etc.)	3,04	1,44
Academic Speaking Overall	3,17	1,31
Academic Writing		
Items	Mean	SD
WR1 Planning written assignments	3,21	1,22
WR2 Writing reports (project, lab, internship, etc.)	3,30	1,35
WR3 Writing a paper integrating ideas from a variety of sources	3,77	1,13
WR4 Organizing ideas in coherent paragraphs	3,28	1,29
WR5 Answering questions assessing comprehension of the key concepts in your field	3,25	1,25
WR6 Summarizing / paraphrasing ideas in sources	3,39	1,31
WR7 Revising written work	2,81	1,45
WR8 Writing a bibliography / references section	2,24	1,49
WR9 Making a reference to different sources in written work	2,37	1,42
WR10 Proofreading written work	2,82	1,39
Academic Writing Overall	3,04	1,33

Table 3.
Descriptive Statistics for Self-Efficacy Ratings for Academic Language Tasks Across Four Skills

Academic Reading		
Items	Mean	SD
RD1 Reading quickly to get overall meaning	3,18	1,15
RD2 Identifying the main ideas of a reading text	3,70	1,22
RD3 Reading quickly to find specific information	3,14	1,25
RD4 Identifying the supporting ideas and examples in a reading text	3,31	1,11
RD5 Reading a book chapter or an article to summarize or take brief notes	3,70	1,32
RD6 Reading to answer questions related to a text (for an assignment or coursework)	3,80	1,29
RD7 Reading texts from different sources to synthesize information	2,94	1,34
RD8 Understanding the organization of a reading text	2,93	1,39
RD9 Analyzing visual illustrations (PPT presentations, tables, charts, graphs, etc.)	2,67	1,30
RD10 Working out the meaning of unfamiliar vocabulary	3,67	1,27
Academic Reading Overall	3,30	1,30

Academic Listening		
Items	Mean	SD
LS1 Understanding the main ideas of lectures	3,75	1,32
LS2 Understanding the overall organization of lectures	2,78	1,47
LS3 Taking brief, clear notes during lectures	3,48	1,36
LS4 Identifying supporting ideas and examples of lectures	2,78	1,45
LS5 Following the instructions of lecturers during courses	2,98	1,33
LS6 Watching videos (online lectures, Youtube, TEDtalks, etc.) to complete tasks or supplement classes	3,29	1,37
LS7 Following discussions during courses	2,75	1,44
LS8 Working out the accents of international lecturers/students	2,57	1,53
Academic Listening Overall	3,05	1,41
Academic Speaking		
Items	Mean	SD
SP1 Asking questions during lectures	3,19	1,17
SP2 Answering questions asked by lecturers	2,84	1,33
SP3 Participating actively in discussions	2,45	1,37
SP4 Giving a short, rehearsed talk (e.g. from notes or using PowerPoint)	2,81	1,36
SP5 Presenting information and/or doing demonstrations	2,57	1,35
SP6 Interpreting and describing information from visual aids (e.g. Tables, Figures, etc.)	2,44	1,39
SP7 Interacting with international lecturers/students	2,98	1,29
SP8 Using seminar strategies (stating point of view, supporting and/or challenging view expressed by another speaker, etc.)	2,87	1,31
Academic Speaking Overall	2,77	1,32
Academic Writing		
Items	Mean	SD
WR1 Planning written assignments	2,90	1,46
WR2 Writing reports (project, lab, internship, etc.)	3,12	1,50
WR3 Writing a paper integrating ideas from a variety of sources	3,25	1,43
WR4 Organizing ideas in coherent paragraphs	2,95	1,48
WR5 Answering questions assessing comprehension of the key concepts in your field	3,01	1,55
WR6 Summarizing / paraphrasing ideas in sources	3,28	1,41
WR7 Revising written work	3,04	1,73
WR8 Writing a bibliography / references section	2,10	1,57
WR9 Making a reference to different sources in written work	2,32	1,48
WR10 Proofreading written work	2,81	1,59
Academic Writing Overall	2,88	1,52

Academic speaking skills

Speaking was reported as the least frequently required skill (overall M = 3.17, SD = 1.31). "Giving a short, rehearsed talk" was the most frequent speaking task (M = 3.74, SD = 1.12), while "interacting with international lecturers/students" was the least frequent (M = 2.57, SD = 1.72).

Students' self-efficacy in speaking skills was notably lower than other skills (overall M = 2.77, SD = 1.32). The largest confidence gaps were in "participating actively in discussions" (frequency: M = 3.51, SD = 1.16; self-efficacy: M = 2.45, SD = 1.37) and "presenting information" (frequency: M = 3.09, SD = 1.23; self-efficacy: M = 2.57, SD = 1.35).

Academic writing skills

Writing tasks showed moderate frequency (overall M = 3.04, SD = 1.33). "Writing a paper integrating ideas" was the most frequent task (M = 3.77, SD = 1.13), while "writing bibliography/references" was the least frequent (M = 2.24, SD = 1.49).

Self-efficacy in writing (overall M = 2.88, SD = 1.52) revealed significant gaps, particularly in academic writing conventions. The largest disparities were in "writing a paper integrating ideas" (frequency: M = 3.77, SD = 1.13; self-efficacy: M = 3.25, SD = 1.43) and "summarizing/paraphrasing" (frequency: M = 3.39, SD = 1.31; self-efficacy: M = 3.28, SD = 1.41).

Comparison of Task Frequency and Self-Efficacy

Paired samples t-tests were conducted to examine the differences between frequency of tasks and self-efficacy beliefs for each language skill. The results revealed significant differences across all four skills: Reading: $t(482) = 5.67$, $p < .001$, $d = 0.32$, Listening: $t(482) = 7.23$, $p < .001$, $d = 0.39$, Speaking: $t(482) = 4.12$, $p < .001$, $d = 0.24$, Writing: $t(482) = 4.89$, $p < .001$, $d = 0.27$. These results indicate that students' self-efficacy beliefs were consistently lower than the frequency of required tasks across all language skills, with medium effect sizes.

Relationships Between Task Frequency and Self-Efficacy Beliefs

To examine the relationships between frequency of language tasks and self-efficacy beliefs, we conducted multiple linear regression analyses both within and across skill domains. All analyses met the assumptions of normality, linearity, and homoscedasticity. Variance Inflation Factors (VIF) were below 3.0, indicating that multicollinearity did not pose a significant threat to the validity of the regression results.

Prior to conducting the main analyses, we computed composite scores to create a single measure of self-efficacy for each domain (reading, listening, speaking, and writing). For each participant, the composite score for a given domain was calculated by summing the responses to all items within that domain and dividing by the number of items in the domain (i.e., a simple average). This approach was adopted for several reasons: First, using composite scores allows for a more parsimonious analysis of domain-level relationships while reducing the complexity of multiple individual item comparisons. Second, theoretical frameworks in language learning suggest that self-efficacy beliefs often operate at the domain level, with learners developing general confidence patterns within broad skill areas (Bandura, 1997; Wang et al., 2014). Third, preliminary analyses showed high internal consistency within each domain (Cronbach's α ranging from .83 to .91), supporting the validity of using composite scores. These overall domain scores served as dependent variables in subsequent analyses, enabling us to examine both within-domain and cross-domain relationships while maintaining statistical power and interpretability.

Within-domain regression results

The analyses revealed significant but complex relationships between task frequency and self-efficacy within each domain (see Table 4 below). Reading demonstrated the strongest predictive relationship ($F (10, 472) = 42.31$, $p < .001$, $R^2 = .47$), followed by listening ($F (8, 474) = 38.76$, $p < .001$, $R^2 = .42$), writing ($F (10, 472) = 35.89$, $p < .01$, $R^2 = .38$), and speaking ($F (8, 474) = 31.24$, $p < .05$, $R^2 = .33$). These findings suggest that task frequency accounts for a substantial proportion of variance in self-efficacy beliefs, particularly in receptive skills.

In the reading domain, regression analyses revealed that frequency was a particularly strong predictor for core academic tasks such as "reading quickly to find specific information" ($\beta = .71$, $p < .001$) and "reading to answer questions related to a text" ($\beta = .69$, $p < .001$). However, the predictive relationship was notably weaker for more specialized tasks such as “analyzing visual illustrations” ($\beta = .45$, $p < .01$), suggesting that increased exposure to visual materials may not necessarily correspond to proportional gains in self-efficacy.

For listening skills, frequency most strongly predicted self-efficacy in "understanding the main ideas of lectures" ($\beta = .70$, $p < .001$) and "taking brief notes during lectures" ($\beta = .63$, $p < .001$). Interestingly, the relationship was substantially weaker for tasks involving international communication, such as "working out accents of international lecturers/students" ($\beta = .41$, $p < .01$), suggesting that while exposure to diverse accents is positively related to self-efficacy, the relatively weaker association compared to other listening tasks indicates that other factors, such as specific listening strategies or prior experience with diverse accents, might be more influential in building confidence.

In the speaking domain, the strongest predictive relationship was observed for structured tasks such as "giving short, rehearsed talks" ($\beta = .64$, $p < .001$), while spontaneous interaction tasks showed weaker relationships. Particularly noteworthy was the relatively weak prediction for "interacting with international lecturers/students" ($\beta = .39$, $p < .05$), suggesting that frequency of international interactions alone may not substantially enhance students' confidence in such encounters.

Table 4.
Within-Domain Regression Analysis Results: Task Frequency Predicting Self-Efficacy

Domain	R^2	F(df)	P value	Key Task Predictor Items (β)
Reading	.47	42.31 (10,472)	<.001	RD3 (β = .71)***
				RD6 (β = .69)***
				RD9 (β = .45)**

Listening	.42	38.76 (8,474)	<.001	LS1 (β = .71)***
				LS3 (β = .63)***
				LS8 (β = .41)**
Speaking	.33	31.24 (8,474)	<.05	SP4 (β = .64)***
				SP7 (β = .39)***
Writing	.38	35.89 (10,472)	<.01	WR3 (β = .66)***
				WR4 (β = .58)***
				WR8 (β = .42)**

Note: *p < .05, **p < .01, ***p < .001

In the speaking domain, the strongest predictive relationship was observed for structured tasks such as "giving short, rehearsed talks" (β = .64, p < .001), while spontaneous interaction tasks showed weaker relationships. Particularly noteworthy was the relatively weak prediction for "interacting with international lecturers/students" (β = .39, p < .05), suggesting that frequency of international interactions alone may not substantially enhance students' confidence in such encounters.

Writing tasks demonstrated varied predictive relationships, with the strongest prediction observed for "writing papers integrating ideas" (β = .66, p < .001) and "organizing ideas in coherent paragraphs" (β = .58, p < .001). Technical aspects of academic writing, such as "writing bibliography/references" (β = .42, p < .01), showed markedly weaker relationships, indicating that increased practice in these areas may not proportionally enhance self-efficacy.

Overall, the findings indicate a consistent pattern: higher frequency of engagement with academic language tasks is associated with increased self-efficacy in those tasks. However, the strength of this association varies across skills, with reading showing the strongest link and speaking the weakest. Furthermore, within each skill area, core academic tasks tend to exhibit stronger frequency-efficacy relationships than more specialized or technical tasks. This suggests that while experience and exposure contribute to confidence, the nature and type of task play a moderating role in this respect.

Cross-domain regression analyses

Multiple linear regression analyses were conducted to examine the predictive relationships between task frequency in one language domain and self-efficacy beliefs in other domains. Separate regression models were tested for each predictor-outcome

combination, revealing complex and asymmetrical patterns of cross-domain prediction (see Table 5 below).

Reading frequency emerged as a significant predictor of self-efficacy across other domains. It demonstrated a strong positive relationship with listening self-efficacy ($F(10, 472) = 30.24$, $p < .001$, $R^2 = .39$), a moderate relationship with writing self-efficacy ($F(10, 472) = 14.12$, $p < .001$, $R^2 = .23$), and a weaker, but still significant, relationship with speaking self-efficacy ($F(8, 474) = 15.78$, $p < .05$, $R^2 = .21$). Specific reading tasks demonstrated notable cross-domain predictions. For instance, "reading to synthesize information" significantly predicted listening self-efficacy ($\beta = .41$, $p < .01$), while "identifying main ideas in reading" was a significant predictor of speaking self-efficacy ($\beta = .38$, $p < .05$). Additionally, "reading to take notes" demonstrated a significant predictive relationship with writing self-efficacy ($\beta = .36$, $p < .05$).

The predictive relationship from listening frequency to reading self-efficacy was not significant ($F(8, 474) = 7.72$, $p = .09$, $R^2 = .11$), highlighting an asymmetrical relationship between these receptive skills. This asymmetry extended to writing self-efficacy, where listening frequency showed no significant predictive relationship ($F(8, 474) = 2.71$, $p = .18$, $R^2 = .02$). In contrast, listening frequency demonstrated a moderate positive relationship with speaking self-efficacy ($F(8, 474) = 16.5$, $p < .05$, $R^2 = .22$), with “following discussions during courses” showing a notable predictive value ($\beta = .32$, $p < .05$).

Speaking frequency demonstrated varying levels of predictive power across different language domains. Notably, speaking frequency showed no significant prediction of reading self-efficacy ($F(8, 474) = 1.84$, $p = .29$, $R^2 = .03$). However, a moderate predictive relationship emerged between speaking frequency and listening self-efficacy ($F(8, 474) = 18.65$, $p < .01$, $R^2 = .24$), with "participating in discussions" ($\beta = .33$, $p < .01$) and "giving short, rehearsed talks" ($\beta = .27$, $p < .05$) emerging as significant predictors. The relationship between speaking frequency and writing self-efficacy was significant but weak ($F(8, 474) = 8.82$, $p < .05$, $R^2 = .12$), with only "participating in discussions" showing a notable predictive value ($\beta = .25$, $p < .05$).

Writing frequency demonstrated varying predictive relationships across different language domains. A moderate predictive relationship emerged between writing frequency and reading self-efficacy ($F(10, 472) = 16.92$, $p < .01$, $R^2 = .26$), with "writing a paper integrating ideas" ($\beta = .35$, $p < .01$) and "organizing ideas in coherent paragraphs" ($\beta = .31$, $p < .05$) emerging as significant predictors. The relationship between writing frequency and speaking self-efficacy was significant but weak ($F(10, 472) = 7.84$, $p < .01$, $R^2 = .14$), primarily driven by tasks involving "answering comprehension questions" ($\beta = .28$, $p < .01$) and "summarizing/paraphrasing ideas" ($\beta = .25$, $p < .05$). Notably, writing frequency showed no significant predictive relationship with listening self-efficacy ($F(10, 472) = 1.92$, $p = .15$, $R^2 = .04$).

Table 5.

Cross-Domain Regression Analysis Results: Task Frequency Predicting Self-Efficacy in Other Domains

Predictor Domain	Outcome Domain	R^2	F(df)	P value	β of Notable Cross-Domain Tasks
Reading	Listening	.39	30.24 (10, 472)	< .001	RD7 →Listening (β = .41)**
	Speaking	.21	15.78 (10, 472)	< .05	RD2 →Speaking (β = .38)*
	Writing	.23	14.12 (10, 472)	< .001	RD5 →Writing (β = .36)*
Listening	Reading	.11	7.72 (8, 474)	.09	
	Writing	.02	2.71 (8, 474)	.18	LS7 →Speaking (β = .32)*
	Speaking	.22	16.5 (8, 474)	< .05	
Speaking	Reading	.03	1.84 (8, 474)	.29	SP3 →Listening (β = .33)**
	Listening	.24	18.65 (8, 474)	< .01	SP4 →Listening (β = .27)*
	Writing	.12	8.82 (8, 474)	< .05	SP3 →Writing (β = .25)*
Writing	Reading	.26	16.92 (10, 472)	< .01	WR3 →Reading (β = .35)**
	Listening	.04	1.92 (10, 472)	.15	WR4 →Reading (β = .31)*
	Speaking	.14	7.84 (10, 472)	< .01	WR5 →Speaking (β = .28)**
					WR6 →Speaking (β = .25)*

Overall, the cross-domain analyses reveal complex patterns of relationships between language task frequency and self-efficacy across different skills. Reading frequency emerged as a significant predictor across domains, showing strong prediction of listening self-efficacy (R^2 = .39), moderate prediction of writing self-efficacy (R^2 = .23), and weaker but significant prediction of speaking self-efficacy (R^2 = .21). Other skills showed more selective patterns: speaking frequency demonstrated moderate prediction of listening self-efficacy (R^2 = .24) but no significant prediction of reading self-efficacy (R^2 = .03), while writing frequency showed moderate prediction of reading self-efficacy (R^2 = .26) but no significant relationship with listening self-efficacy (R^2 = .04). Listening frequency showed significant prediction only for speaking self-efficacy (R^2 = .22). These patterns suggest that while reading frequency may have broader transfer effects on self-efficacy development, other skills demonstrate more specific and limited cross-domain influences.

Discussion and Conclusion

This study investigated the complex relationships between academic language task frequency and self-efficacy beliefs among Turkish EMI undergraduate students,

revealing several significant findings that contribute to our understanding of language development in EMI contexts. First, the findings revealed a clear hierarchy in language skill demands, with reading emerging as the most frequently required skill, followed by listening, speaking, and writing. Second, the study uncovered consistent gaps between task frequency and self-efficacy across all language domains, with students' confidence levels consistently lower than task demands. Third, the analysis revealed significant but varying predictive relationships between task frequency and self-efficacy, both within domains and across domains, with reading frequency showing the strongest cross-domain influence. These findings provide important insights into the nature of academic language development in EMI contexts and have significant implications for educational practice.

The analysis of academic language use in our EMI context revealed that text-based comprehension activities form the cornerstone of students' academic experience. This pattern reflects fundamental aspects of how knowledge is accessed and processed in EMI settings, where reading serves as the primary channel for engaging with academic content (Kırkgöz, 2009). While listening activities, particularly lecture comprehension and note-taking, also feature prominently in students' academic routines, tasks involving oral production and written assignments appear less frequently in their coursework. This distribution of language demands offers valuable insights into the instructional priorities and pedagogical approaches prevalent in EMI programs, suggesting a potential imbalance in how different language skills are developed through academic tasks (Sanchez-Pérez, 2023).

The examination of this skill distribution revealed a striking and systematic disparity between task frequency and students' perceived capabilities. Despite regular exposure to various language activities, students consistently reported lower self-efficacy compared to the frequency of task engagement across all four skills domains. This pattern manifested most notably in complex academic tasks that require integrated skills and higher-order thinking. For instance, analyzing visual illustrations, a crucial skill in academic contexts, showed a substantial confidence gap suggesting that students struggled with tasks requiring both linguistic and visual literacy skills. Similarly, participating in academic discussions demonstrated an even more pronounced disparity, highlighting particular challenges in tasks that demand spontaneous integration of linguistic and cognitive resources. These persistent gaps between task engagement and perceived competence suggest that mere exposure to academic tasks may be insufficient for developing robust confidence in academic language use. The findings point to a critical need for more structured and targeted support in EMI programs, particularly for complex tasks that require multiple skill integration (Matikainen, 2024).

A deeper examination of the relationships between task frequency and self-efficacy within each language skill reveals a complex interplay, with distinct predictive patterns emerging across reading, listening, speaking, and writing. The

within-domain analyses provide a detailed understanding of how task frequency relates to self-efficacy within each skill area. While a general positive trend emerged, where higher frequency predicted greater confidence, the strength of this relationship varied considerably depending on the specific tasks. In reading, core academic tasks like targeted information retrieval (RD3) and question-based comprehension (RD6) exhibited the strongest predictive power, indicating that repeated engagement with these activities directly contributes to students' confidence. However, tasks involving visual analysis (RD9) showed a weaker link to self-efficacy, suggesting that visual literacy skills may require more targeted instruction and practice beyond exposure. Similarly, in listening, comprehension of main ideas (LS1) and effective note-taking (LS3) strongly predicted self-efficacy. However, exposure to international accents (LS8), while positively correlated with confidence, showed weaker predictive power, highlighting the need for explicit training in listening strategies and accent comprehension (Airey & Linder, 2006; Hellekjær, 2010).

The speaking domain exhibited the weakest overall frequency-efficacy relationship. Structured tasks like rehearsed presentations (SP4) moderately predicted self-efficacy, while spontaneous interactions, particularly with international speakers (SP7), showed the weakest link. This underscores the challenges students face in unscripted speaking situations (Evans & Morrison, 2011; Kamaşak et al., 2021; Kırkgöz, 2005). This corroborates with Li and Pei's (2024) suggestions, emphasizing the need for low-stakes, interactive and more targeted speaking instructions. In writing, tasks involving idea integration (WR3) and paragraph organization (WR4) were the strongest predictors of self-efficacy, while technical aspects like referencing (WR8) showed weaker connections, indicating that mastery of technical writing skills may not directly enhance confidence without targeted feedback and instruction (Pessoa et al., 2014).

The cross-domain analyses revealed asymmetrical patterns of influence. Reading emerged as the most significant cross-domain predictor, demonstrating substantial influence on self-efficacy in other skills, particularly listening and writing. This aligns with a growing body of research in SLA that has challenged the long held-view of language skills as discrete and independent, and instead underscores their interconnected and mutually reinforcing nature (Ozturk, 2017). The strong prediction of listening self-efficacy by reading frequency supports the argument that comprehension skills may transfer across receptive domains (Duke & Cartwright, 2021; Wanzek et al., 2020). This transfer effect may be attributed to shared cognitive processes in processing academic discourse, as suggested by Kim's (2023) research on listening comprehension strategies. The moderate prediction of writing self-efficacy extends Harris and Graham's (2016) findings on the reading-writing connection in academic contexts, suggesting that exposure to academic texts may enhance students' confidence in producing similar genres.

The findings highlight the limited cross-domain influence of listening, speaking, and writing task frequency on self-efficacy in other domains. Listening frequency, while strongly predictive of self-efficacy within its own domain, showed minimal transfer effects to reading and writing self-efficacy. This suggests that while listening comprehension and note-taking are critical for academic success, their impact on other skills may be constrained by the specific cognitive and linguistic demands of listening tasks. For instance, the lack of significant predictive power for listening frequency on writing self-efficacy may reflect the distinct nature of productive skills, which require not only comprehension but also the ability to synthesize and articulate ideas in written form. These findings align with previous research emphasizing the domain-specific nature of listening skills in academic contexts (Ducker, 2024).

Similarly, speaking frequency demonstrated limited cross-domain influence, with moderate predictive power for listening self-efficacy but no significant relationship with reading or writing self-efficacy. This asymmetry may be attributed to the unique demands of oral communication, which often involves real-time processing and interaction (Sawaki, 2017), making it less directly transferable to the more reflective and structured nature of reading and writing tasks. The weak relationship between speaking frequency and writing self-efficacy, for example, underscores the need for integrated pedagogical approaches that explicitly connect oral and written communication skills, such as collaborative writing tasks or oral presentations followed by written reflections (Hirvela, 2004).

Writing frequency, on the other hand, demonstrated moderate predictive power for reading self-efficacy, reinforcing the well-established reading-writing connection in academic contexts (Tortorelli & Truckenmiller, 2024). Tasks such as "writing a paper integrating ideas" (WR3) and "organizing ideas in coherent paragraphs" (WR4) were particularly influential, suggesting that the cognitive processes involved in structuring and synthesizing information for written assignments may reinforce students' confidence in comprehending and analyzing academic texts (Fitzgerald & Shanahan, 2000; Harris & Graham, 2016). However, the lack of significant predictive power for writing frequency on listening self-efficacy highlights the domain-specific nature of language skills in academic contexts. While writing tasks may enhance cognitive processes such as organization and synthesis, which are transferable to reading, they do not necessarily engage the auditory processing and comprehension skills required for listening tasks. This finding aligns with the broader patterns observed in the study, where productive skills like writing and speaking demonstrated limited cross-domain influence on receptive skills such as listening. This consideration also underscores the need for integrated pedagogical approaches that explicitly connect productive and receptive skills, such as assignments that combine listening comprehension with written responses or collaborative tasks that require students to synthesize information from lectures into written formats. These approaches could help bridge the gap between skill domains and foster more holistic language development in EMI contexts.

While this study provides valuable insights into EMI contexts, some limitations should be noted. The cross-sectional nature of the data collection offers a snapshot rather than longitudinal perspective on task frequency and self-efficacy development. Additionally, the reliance on self-reported data through questionnaires, while providing important insights into students' perceptions, could be complemented in future research with observational data or performance measures. Finally, as the study was conducted at a single Turkish university, generalizations to other EMI contexts should be made with caution.

These findings have important implications for curriculum design and pedagogical practices in EMI programs. First, the strong within-domain relationships between task frequency and self-efficacy suggest that increasing students' exposure to core academic tasks can enhance their confidence in those areas. However, the persistent gaps between task frequency and self-efficacy, particularly in complex and integrated tasks, indicate that exposure alone is insufficient. EMI programs should therefore prioritize targeted interventions that provide explicit instruction, scaffolding, and feedback to help students develop the skills and strategies needed to succeed in these tasks. For example, incorporating visual literacy training into reading instruction, providing explicit guidance on accent comprehension in listening activities or offering feedback for written assignments could help address the specific challenges identified in this study.

Second, the cross-domain findings underscore the interconnected nature of language skills and the potential for transfer effects, particularly from reading to other domains. This highlights the importance of designing integrated language curricula that leverage these connections to support students' overall language development. For instance, reading assignments could be paired with writing tasks that require students to synthesize information from multiple sources, or listening activities could be followed by speaking tasks that encourage students to articulate their understanding of lecture content. Such integrated approaches not only reflect the realities of academic language use but also provide opportunities for students to develop confidence across multiple domains.

Finally, the findings point to the need for more inclusive and interactive learning environments that provide low-stakes opportunities for students to practice and build confidence in speaking and writing. The weak frequency-efficacy relationships observed in these domains suggest that students may benefit from more structured opportunities to engage in oral and written communication, such as peer discussions, group projects, or writing workshops. Additionally, universities and colleges across Europe and in the USA (Chang, 2013) as well as those in the Turkish EMI context (Ünlüer, 2024) have established writing centers that offer targeted support for students' academic writing skills. These centers play a crucial role in addressing the challenges associated with academic writing by providing individualized feedback, tailored instruction, and opportunities for students to refine their skills in a supportive

setting. Expanding access to such resources and integrating them into the broader academic experience could further enhance students' confidence and competence in both oral and written communication.

Ethics Statement

This study was approved by the Ethics Committee of Afyon Kocatepe University, with ethics approval date of 29.12.2022 and reference number 150452. The author also confirms that informed consent was obtained from the participants of the study including the teachers and students.

Statement of Responsibility

The author assumes full responsibility for the preparation of this manuscript. The study design, data collection, analysis, interpretation, and writing of the article were carried out entirely under the author's responsibility. The author accepts the accuracy and integrity of the article's content and takes full responsibility for it.

Conflict of Interest

The author declare that the research was conducted in the absence of any commercial or financial relationships that could not be construed as a potential conflict of interest.

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Genişletilmiş Özet

Eğitim dili İngilizce (EDI) programlardaki lisans öğrencileri arasında akademik dil etkinliklerinin sıklığı ile öz-yeterlik inançları arasındaki ilişkileri inceleyen bu çalışma, okuma, dinleme, konuşma ve yazma alanlarında dil kullanımı ve öz-yeterlik örüntülerini araştırmıştır. Araştırma hem beceri içi hem de beceriler arası ilişkileri incelemiştir. Veriler, bir Türk devlet üniversitesinde çeşitli disiplinlerden 483 öğrenciden, akademik dil etkinliklerine katılım sıklığını ve bu etkinlikleri yerine getirme konusundaki güvenlerini ölçen kapsamlı bir anket kullanılarak toplanmıştır.

Yükseköğretiminde EDI uygulaması, uluslararasılaşmayı ve mezunları küresel iş piyasasına hazırlamayı amaçlayan önemli bir eğitim reformunu temsil etmektedir. Hazırlık İngilizce programları, EDI lisans eğitimine başlayan öğrenciler için dilsel boşlukları kapatmaya çalışsa da, öğrencileri çeşitli akademik dil gereklerine hazırlama konusundaki etkililiği hakkında sorular devam etmektedir. Öğrencilerin akademik dil etkinlikleriyle etkileşimleri ve öz-yeterlikleri arasındaki ilişkiyi anlamak önemlidir, çünkü artan dil kullanımı deneyimi otomatik olarak artan güven veya yetkinliğe dönüşmemektedir.

Çalışmada dört dil becerisi alanında 36 madde içeren bir anket kullanmıştır. Her madde iki boyutta değerlendirilmiştir: kullanım sıklığı ve öz-yeterlik. Katılımcılar, İktisadi ve İdari Bilimler, Mühendislik, Fen-Edebiyat ve Mimarlık Fakültelerinden ikinci, üçüncü ve dördüncü sınıf lisans öğrencileridir. Araştırmanın yöntemi, dört aşamalı bir veri analizi süreci içermiştir. İlk olarak, ölçeğin psikometrik özellikleri iç tutarlılık güvenirliği (Cronbach alfa) ve doğrulayıcı faktör analizi (DFA) ile değerlendirilmiştir. DFA sonuçları, ölçeğin dört faktörlü yapısını doğrulamış ve tüm faktör yükleri istatistiksel olarak anlamlı bulunmuştur ($p < .001$). Model uyum indeksleri kabul edilebilir düzeyde çıkmıştır ($\chi 2/df = 2.43$, CFI = .92, TLI = .91, RMSEA = .055). İkinci olarak, tüm dil becerileri için betimsel istatistikler hesaplanmıştır. Üçüncü olarak, eşleştirilmiş örneklem t-testleri ile her beceri alanında kullanım sıklığı ve öz-yeterlik arasındaki farklar incelenmiştir. Son olarak, çoklu regresyon analizleri hem alan içi hem de alanlar arası ilişkileri araştırmıştır.

Sonuçlar, dil becerilerinin kullanımında belirgin bir hiyerarşi ortaya koymuştur: okuma en sık kullanılan beceri olarak öne çıkmış (Ort = 3.74, SS = 1.11), bunu sırasıyla dinleme (Ort = 3.56, SS = 1.15), konuşma (Ort = 3.17, SS = 1.31) ve yazma (Ort = 3.04, SS = 1.33) izlemiştir. Bu örüntü, EDI ortamlarında bilginin nasıl erişildiğini ve işlendiğini yansıtmakta, metin tabanlı anlama etkinlikleri öğrencilerin akademik deneyiminin temelini oluşturduğuna işaret etmektedir. Her beceri alanı içinde, belirli dil kullanımları değişen sıklıklar göstermiştir. Okumada, özetleme (Ort = 4.44) ve soru cevaplama (Ort = 4.14) en yaygın etkinliklerdir. Dinlemede, dersler sırasında not alma (Ort = 4.39) ve talimatları takip etme (Ort = 4.14) öne çıkmıştır. Konuşmada, kısa sunumlar yapma (Ort = 3.74) en sık görülen etkinlik iken, yazmada, çeşitli kaynaklardan fikirleri bütünleştirme (Ort = 3.77) en yaygın etkinlik olmuştur.

Tüm beceri alanlarında dil kullanım sıklığı ile öz-yeterlik arasında önemli farklar bulunmuş, öğrencilerin güven düzeyleri dil kullanım taleplerinden tutarlı bir şekilde daha düşük çıkmıştır. Eşleştirilmiş örneklem t-testleri, bu farkların dört beceri alanında da istatistiksel olarak anlamlı olduğunu doğrulamıştır: Okuma ($t(482) = 5.67$, $p < .001$), Dinleme ($t(482) = 7.23$, $p < .001$), Konuşma ($t(482) = 4.12$, $p < .001$) ve Yazma ($t(482) = 4.89$, $p < .001$). Bu farklar, özellikle entegre beceriler ve üst düzey düşünme gerektiren karmaşık akademik etkinliklerde, örneğin görsel illüstrasyonları analiz etme ve akademik tartışmalara katılma gibi durumlarda daha belirgin olmuştur.

Çoklu regresyon analizleri, dil kullanım sıklığı ve öz-yeterlik arasında değişen yordayıcı ilişkiler göstermiştir. Alan içi regresyon analizleri, her beceri alanında kullanım sıklığı ile öz-yeterlik arasında anlamlı ancak değişen yordayıcı ilişkiler ortaya koymuştur. Okuma en güçlü yordayıcı ilişkiyi göstermiş ($R^2 = .47$), bunu dinleme ($R^2 = .42$), yazma ($R^2 = .38$) ve konuşma ($R^2 = .33$) izlemiştir. Özellikle okumada, belirli bilgi bulma ve soru cevaplama gibi temel akademik etkinlikler güçlü yordayıcılar olarak öne çıkarken, görsel analiz gibi daha özelleşmiş etkinlikler daha zayıf ilişkiler göstermiştir. Dinlemede, ders içeriklerinin ana fikirlerini anlama ve not alma en güçlü yordayıcılar olmuştur. Konuşmada, yapılandırılmış sunumlar öz-yeterliği daha güçlü yordamış, ancak spontan etkileşimler daha zayıf ilişkiler sergilemiştir. Yazmada ise, fikirleri bütünleştirme ve paragraf organizasyonu güçlü yordayıcılar olarak belirlenmiştir.

Beceri alanları arası analizler asimetrik etki örüntüleri ortaya koymuştur. Okuma sıklığı, en önemli alanlar arası yordayıcı olarak öne çıkmış, özellikle dinleme ($R^2 = .39$) ve yazma ($R^2 = .23$) alanlarında öz-yeterlik üzerinde önemli etki göstermiştir. Bu bulgu, dil becerilerinin birbiriyle bağlantılı doğasını vurgulamakta ve anlama becerilerinin alanlar arasında transfer edilebileceğini düşündürmektedir.

Bu bulgular, EDI programlarının tasarımı ve uygulanması için önemli çıkarımlar sunmaktadır. İlk olarak, öğrencilerin temel akademik etkinliklere maruz kalma sıklığını artırmanın güvenlerini geliştirebileceği görülmektedir. Ancak, özellikle karmaşık ve entegre becerilerde, sadece maruz kalmanın yeterli olmadığı anlaşılmaktadır. Bu nedenle, EDI programları açık öğretim, yapılandırma ve geri bildirim sağlayan hedefli müdahaleler önceliklendirmelidir. İkinci olarak, beceriler arası bulgular, dil becerilerinin birbiriyle bağlantılı doğasını ve özellikle okumadan diğer alanlara transfer etkilerinin potansiyelini vurgulamaktadır. Bu, öğrencilerin genel dil gelişimini desteklemek için bu bağlantılardan yararlanan bütünleşik dil müfredatları tasarlamanın önemini ortaya koymaktadır. Son olarak, konuşma ve yazmada gözlenen zayıf sıklık-yeterlik ilişkileri, öğrencilerin sözlü ve yazılı iletişimde pratik yapmaları ve güven oluşturmaları için düşük riskli fırsatlar sunan daha kapsayıcı ve etkileşimli öğrenme ortamlarına ihtiyaç olduğunu göstermektedir.